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EDITED BY

WILLIAM J. MORTON, M.D., NEW YORK

PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM, UNIVERSITY OF VERMONT; ASSOCIATE PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM, AND OF MEDICAL ELECTRICITY, NEW YORK POST-GRADUATE MEDICAL SCHOOL; PHYSICIAN TO DEPARTMENT OF NERVOUS DISEASES, METROPOLITAN THROAT HOSPITAL, N. Y.; ETC., ETC.

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THE

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Nervous and Mental Disease.

Original Articles.

REASONING MANIA: ITS MEDICAL AND MEDICO-LEGAL RELATIONS; WITH SPECIAL REFERENCE TO THE CASE OF CHARLES. J. GUITEAU.

By WILLIAM A. HAMMOND, M.D.,

SURGEON-GENERAL U. S. ARMY (RETIRED LIST), PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM IN THE UNIVERSITY OF THE CITY OF NEW YORK, ETC.

(Read before the New York Medico-Legal Society, March 1, 1882.)

ALTHOUGH it is scarcely possible that so well-marked a mental disorder as that which forms the subject of this paper could have escaped the notice of the earlier observers, no distinct account of it appeared till Pinel,[1] in 1801, published the first edition of his remarkable work. Under the head of "Mania without Delirium" he gave excellent accounts of several cases, and then, in a few words, summed up his description of the affection. "It may," he says, "be continuous or characterized by the occurrence of periodical accessions. There is no marked change in the functions of the understanding, the perception, the judgment, the imagination, the memory, etc., but perversion of the emotional faculties and blind impulsions to the perpetration of acts of violence, or even of sanguinary fury, without its being

[1] Traité médico-philosophique sur l' aliénation mentale, Paris, An. ix, p. 155.

possible to recognize the existence of any dominant idea or any illusion of the imagination to which the acts in question can be ascribed."

In the second edition, published in 1809, he treats more fully of the subject.

"We know that one of the varieties of insanity, called in the asylums reasoning mania, is especially characterized by the most marked coherence of ideas and correctness of judgment. The lunatic reads, writes, reflects as though he enjoyed his normal reason, and yet he is liable at any time to perpetrate some act of violence."

Further on he says, speaking of these cases:

"The lunatic makes the most correct answers to the questions addressed to him without the least incoherence of ideas being noticed."

He gives the following instance:

"A badly directed or neglected education, or rather a perverse and undisciplined nature, produces the first symptoms of this species of mental alienation. An only son of a weak and yielding mother was indulged in every whim and caprice which an irritative and violent temper could suggest. The violence of his disposition increased with his years, and the unlimited amount of money with which he was supplied removed all obstacles to the gratification of his desires. If resisted, he became furiously angry and attacked his adversary with ferocity. He was, therefore, continually embroiled in disputes and quarrels. If a sheep, a dog, a horse, or any other animal offended him he immediately killed it. If he went to any public meeting he was certain to come away bruised and bleeding from the blows he had received in the quarrels he excited. On the other hand, when he arrived at manhood, he came into the possession of a large property which he managed with discretion, performing all his duties to society, and even indulging in

some acts of benevolence. Wounds, law-suits, and heavy fines were generally the consequences of his numerous disputes. Finally, an act of especial violence put an end to his career. Enraged at a woman who had used abusive language to him, he seized her and threw her into a well. He was arrested and tried, and, on the testimony of many persons acquainted with his character and furious deportment, he was adjudged to be insane, and was committed to the Bicêtre for life."

Yet although Pinel had some idea of the affection under consideration, he did not have a very exact conception of it. He seemed to be under the impression that a tendency to the perpetration of unwarrantable acts of violence is its most marked feature, whereas we know very well that such acts are often done by its subjects after very thorough deliberation and from what are deemed ample motives.

Esquirol,[1] under the designation of "Reasoning Monomania," describes the disorder more accurately. He says:

"In reasoning monomania the patients are active, continually in motion, speaking a good deal, and with vivacity. They were good-tempered, frank, and generous; they have become peevish, deceitful, and wicked; they were affectionate and kind to their relations and friends; they have become discontented and abusive of those they once loved; from having been economical they are changed to spendthrifts; their actions were reasonable and right; they are now inconsiderate, venturesome, and even reprehensible; their conduct, which once was in accordance with their social position, has become incongruous and at variance with their position and their means. They are guided entirely by their own wishes; but by their bearing and their conversation these people impose on those who have had no previous acquaintance with them, or who only see them occasion-

[1] Des maladies mentales, etc., t. i, p. 355, Paris, 1838.

ally, so well do they know how to restrain themselves and to dissimulate their real feelings."

The younger Pinel[1] had a still clearer though yet not an exact idea of reasoning mania. The subjects of it, he says, "are turbulent, indocile, quick to anger, committing outrageous acts, which they are always ready to justify by plausible reasons, and who are to their families, their kindred, and their friends constant subjects of anxiety and grief. They are continually doing wrong, either by neglect, by malice, or by wickedness. Incapable of mental or physical application, they destroy and subvert and unsettle every thing with which they are brought into contact and which they can injure."

Pinel calls the affection "Mania of Character," although he appears not to regard it as exactly insanity properly so called. In this opinion he is very evidently inconsistent with himself.

Speaking of the subjects of the disorder in question, Morel[2] says:

"Some have great ambition and pride, and consider themselves as being destined to the performance of acts of momentous importance. No consequence, however absurd, to which their insanity leads them shakes their confidence in themselves. Others are impelled by bad tendencies to the perpetration of the most extravagant or monstrous acts. They rebel against all family and social obligations and duties, and are constantly considering themselves the victims of misunderstanding or injustice. For the persecution of which they imagine themselves the subjects they seek to revenge themselves on their relations, their friends, and the world at large by making a parade of their immoral conduct, thinking to compromise the interests of those who ought to be

[1] Traité de pathologie cérébrale, Paris, 1844, p. 330.

[2] Traité des maladies mentales, Paris, 1860, p. 546.

dear to them by the shameful exhibition of their depravity. They go into the streets and other public places in a filthy and ragged condition. They let their hair grow, and endeavor to attract attention by all kinds of ridiculous and improper acts. Others apply their brilliant intellectual faculties, notwithstanding the fact that they are marked by an irregularity and incoherence of action, to the production of literary works, of which the extent and the plan exceed the limit that it is possible for human power to reach. These works are often in their teachings contrary to public morality and feeling. They are dreamers, utopians, false guides, who, in their mental conceptions and in the results of their intelligence and imagination, exhibit the same eccentricity, the same shamelessness as in their acts."

Dagonet[1] says of them, under the head of "Reasoning Mania."

"Left to themselves they are led by the most contradictory considerations. The first sudden impression, an idea occurring by chance, an accidental circumstance, influences them and becomes the point of departure for their conduct. There is with them not only a considerable amount of irritability and, thus to say, a furnace ready to be kindled, but, in addition, they are habitually dominated by impulses of various kinds. They follow blindly the passionate instincts which trivial circumstances are constantly provoking. Sexual desires, jealousy, ambition, vengeance, influence them at every moment of their lives, and, notwithstanding their wishes, prompt them to the commission of acts to be subsequently regretted. With the best intentions the individual cannot subdue himself or stop his headlong descent along the fatal declivity which leads to disorder.

[1] Nouveau traité élémentaire et pratique des maladies mentales, Paris, 1876, p. 202.

"In the institutions to which they may be committed they incite the patients against each other and urge them to acts of insubordination. They take pleasure in wearying the attendants with their complaints, and never cease their animadversions on the directions or advice given them. The most odious sentiments, suspicion, malevolence, and calumny, are the elements in which they live, and without which they could not exist."

I have quoted thus extensively from other authorities in order to present at the beginning some idea of the characteristics of reasoning mania, as well as to show that such a mental disorder is well recognized by medico-psychological writers. I have confined my citations to French writers, for the reason that the affection was first differentiated by alienists of that country; but I might have drawn fully as largely from English and German writers. Indeed Prichard, Connolly, Bucknill, and Maudsley among the former, and Hoffbauer, Caspar, Griesinger, Liman, and Kraft-Ebing, and others of the latter, have written quite as strongly in support of the actuality of the affection in question as those I have cited. In this country the most distinguished authority in the affirmative is Dr. Isaac Ray.

Before proceeding to the consideration of the medico-legal relations of reasoning mania, it will be well to give a somewhat systematic description of the affection as it has been portrayed by others and as I have observed it in my own experience.

The most prominent characteristic of the disease is an overbearing egotism, which shows itself on all, even the most unimportant occasions. The individual without social position, without wealth, and without political influence conceives that he has only to make his wishes known to those in authority to have them granted. He does not hesitate to push himself forward as an applicant for high office,

and this when he has no one qualification fitting him for the position he seeks; refusals do not dismay him, the most pointed rebuffs do not abash him. He is sure that his application will be favorably considered, and any little act of common politeness that may be shown him is at once construed into a promise of assistance. He is invariably sure his appointment is about to be made, and when, as always happens, some other person is selected his chagrin is of short duration. He has some plausible excuse for his failure, and at once directs all his energies toward another and perhaps still higher position.

It may be said that these are the characteristics of all office-seekers, but this I emphatically deny. We have in this country ample opportunity to study the natural history of the class in question, and I think all who hear me will bear me out in the assertion that it is the rarest thing in the world to find a person applying for an office for which he is totally unfit, and for which he could not obtain the indorsement of any intelligent person.

Not long since a young man was under my professional charge who for several years had been a source of great anxiety to his friends on account of his vagaries and general impracticability. His father had a large shoe factory, and the attempt was made to instruct him in the details of the business. It was found, however, impossible to make him give his attention to the subject. He was firmly convinced that Nature intended him for something better than a shoemaker, and he destroyed a good deal of valuable property, leather, tools, etc., in order to induce his father to abandon the project. Finally he succeeded.

He had received a tolerably good education in the branches usually taught in the public schools, and was, moreover, exceedingly quick in his perceptions of things which he desired to understand. As he told me the story

of what he considered to be the wrong done him by his father in trying to make a shoemaker of him, he reasoned with great plausibility, and tears came into his eyes as he detailed the story of the indignity which had been attempted to be put upon him. "The fact is," said he "that when I went to school I paid great attention to the study of languages. Now, if I had known that I was going to be a shoemaker I would have turned my attention to the study of the human foot, and then I should have been qualified to make the best shoes this country has ever seen. I have thought over the matter, and to-morrow I am going to Washington to ask the President to appoint me a Commissioner of Emigration, and send me to all the nations of Europe to see after the emigrants and instruct them in their duties as American citizens. I shall give lectures on the subject in all the principal cities of Great Britain, France, and Germany."

"But," said I, "do you speak French?"

"Well, I studied French; I can't say I speak it, but I can learn it on the way over."

"You understand German?"

"No, but as soon as I am in Germany I shall go to a private family to board and I will soon pick up that language."

"Do you know any thing of political economy?"

"That is not essential. Emigrants do not require a knowledge of that science."

"Now won't you tell me your idea of the duties of an American citizen in which you are going to instruct these people?"

"I shall simply hand them the Constitution of the United States in their own language and then distribute copies of it among them. That paper," he continued, "contains the germs of all that a citizen requires to know."

"But," I remarked, "there is not a word in the Constitution about the duties of citizens. It relates to quite different matters."

"Nothing about the duties of citizens in the Constitution! Well, then, I 'll supply the omission; I 'll make it right; I know just what I 'm about, and I 'm just the man for the place."

He drew up his application, went round among prominent persons asking for letters of recommendation, and though he did not get a single one, he proceeded to Washington and sought an interview with the President. His father, however, followed him, but could not bring him home without the assistance of the police. He is now an applicant for the command of an ocean steamship.

The intense egotism of these persons makes them utterly regardless of the feelings and rights of others. Everybody and every thing must give way to them. Their comfort and convenience are to be secured though every one else is made uncomfortable or unhappy, and sometimes they display positive cruelty in their treatment of persons who come in contact with them. This tendency is especially seen in their relations with the lower animals.

Another manifestation of their intense personality is their entire lack of appreciation of kindness done them or benefits of which they have been the recipients. They look upon these as so many rights to which they are justly entitled, and which in the bestowal are more serviceable to the giver than to the receiver. They are hence ungrateful and abusive to those who have served them, and insolent, arrogant, and shamelessly hardened in their conduct toward them.

At the same time if advantages are yet to be gained they are sycophantic to nauseousness in their deportment toward those from whom the favors are to come.

The egotism of these people is unmarked by the least trace of modesty in obtruding themselves and their assumed good qualities upon the public at every opportunity. They boast of their genius, their righteousness, their goodness of heart, their high sense of honor, their learning, and other qualities and acquirements, and this when they are perfectly aware that they are commonplace, irreligious, cruel, and vindictive, utterly devoid of every chivalrous feeling, and saturated with ignorance. They know that in their rantings they are attempting to impose upon those whom they address, and will even subsequently brag of their success, as I have had them do to me.

It is no uncommon thing for the reasoning maniac, still influenced by his supreme egotism and desire for notoriety, to attempt the part of the reformer. Generally he selects a practice or custom in which there really is no abuse. His energy and the logical manner in which he presents his views, based as they often are on cases and statistics, impose on many worthy people, who eagerly adopt him as a genuine overthrower of a vicious or degrading measure. But sensible persons soon perceive that there is no sincerity in his conduct, that he cares nothing whatever for the cause he is advocating, that his cases and statistics are forged or intentionally misconstrued for the direct purpose of deceiving; in short, that the philanthropy or morality which he affects is assumed for the occasion. Even when his hypocrisy and falsehood are exposed he continues his attempts at imposition, and even when the strong arm of the law is laid upon him prates of the ingratitude of those he has been endeavoring to assist, and of the disinterestedness and purity of his own motives. Many of those who hear me will call to mind a recent notable case in point, in regard to which the public was enlightened through the agency of one of the daily newspapers. Indeed several

contemporaneous instances will doubtless readily be brought to mind.

Again, the reasoning maniac, as Campagne[1] says, may go still further in his career as a redresser of all kinds of possible and impossible wrongs, past, present, and future. "He displays in the performance of his part a degree of energy, activity, and caution which would be really admirable if his mission had any foundation whatever. Unfortunately his warfare is waged against windmills, and he takes for incontestible truth that which is altogether a figment of his imagination. Truth with him becomes error from the exaggeration, the depreciation, or the distortion to which it is submitted. He regards virtue through the medium of his own degraded passions, and never as it ought to be seen. Thus estimated it cannot direct him to any good purpose."

The subject of reasoning mania is always more influenced by the emotions than by the intellect. In fact he rarely judges calmly and dispassionately on any matter brought before him. The slightest cause produces in him an intense degree of excitement, and he manifests his emotional disturbance by loud exclamations, vehement gestures, and the most foul and abusive language against those who have incurred his resentment. But even when apparently most inflamed and in the very midst of his maledictions, he becomes, under the influence of some different circumstances, good-natured and smiling, and finishes his cursing with a joke or a hearty laugh. There is no depth or sincerity either in his imprecations or his blessings.

This facility for passing from one state of feeling to another, both of which may be manifested by all the char-

[1] Traité de la manie raisonnante ; ouvrage couronné par la société médico-psychologique de Paris (Prix André, 1867), Paris, 1869, p. 98.

acteristics of intense passionate purturbation, is a striking peculiarity of reasoning maniacs. Of all people in the world they seem to be most capable of "blowing hot and cold with the same breath." A patient of mine, a young man, would in my presence declaim in the most vehement manner against his father, accusing him of all the sins of the decalogue and of many others not found in that code, and in the next instant would declare that he was only trying to test his father's patience and forbearance, and that in reality no one could be kinder or more virtuous than he. But ere these latter opinions were fully expressed, I caught him making faces and shaking his fists at his father when his back was turned. It was impossible to get at his real feelings.

All authors have observed this symptom. Campagne says of the reasoning maniacs:

"Passing without the slightest transition from one extreme to the other they felicitate themselves to-day of an event which they sneered at the night before. In the course of a single second they change their opinions of persons and things; novelty captivates and wearies them almost at the same instant. They sell for insignificant sums things they have just bought, in order to buy others, which in their turn will be subjected to like treatment; and, strange to say, before possessing these objects they covet them with a degree of ardor only equalled by the eagerness they exhibit to get rid of them as soon as they become their owners. To see, to desire, and to become indifferent are the three stages which follow each other with astonishing rapidity."

Although reasoning maniacs are not subject to morbid and irresistible impulses to commit motiveless crimes they are prone to acts of violence from slight exciting causes,

[1] *Op. cit.*, p. 88.

and these may be perpetrated both in the heat of passion and after such deliberation as they are able to give to any matter. Generally they are directed against those who they suppose have injured them, and against former friends with whom they have quarrelled. Again, they may be committed solely for the purpose of gratifying the morbid feelings of pleasure which they experience at the sufferings of others. In the first category are embraced the many instances of arson, maiming, homicide, and other crimes in which the motive alleged has been so slight as to be ridiculous.

Thus, in the case of William Speirs,[1] who attempted to destroy by fire the State Lunatic Asylum at Utica, there was a motive, though a very insufficient one, for the act. On the fourteenth of July, 1857, the cupola of the institution was discovered to be on fire. The central building was almost entirely consumed before the flames were subdued. Four days afterward, in the afternoon, the store, barn, and stables were discovered to be on fire, and a man at the time was seen going from them, This man was William Speirs, who had been a patient in the asylum from 1850 to 1856, and then having been discharged by an order of a Justice of the Supreme Court had been employed up to the time of the fire as a messenger and otherwise. He had been committed to the asylum on the ground of insanity, after a trial for arson, so that he had perpetrated at least three separate acts of incendiarism. He confessed to both the attempts at Utica, and was committed for trial on the charge of arson.

At the trial it was shown, by his own confession, how and for what reasons he had set fire to the asylum. His motives were the facts that one of the assistants, Dr. Chapin, had sent him away from where they were making balloons and

[1] *American Journal of Insanity*, vol. xv, 1858–9, p. 200.

would not let him help, and that Dr. Gray, the superintendent, had taken away his keys. These acts made him angry.

It was also shown that Speirs had previously been in the lunatic asylum on Blackwell's Island; that he had had a sunstroke; that after that he would go out and stay whole days and nights, on one occasion remaining absent from home eight days, sleeping in wagons. During this period he went into a house and got some things and was going to set it on fire when he was discovered. He was tried and sent to the Blackwell's Island asylum. Then he came to the city and got some work at a saloon. "Did some depredation there," was tried and sent to the asylum at Utica. A sister was also insane and had been in an asylum. Drs. Day and Dering, of Utica, and Dr. M. H. Ranney, the superintendent of the Blackwell's Island asylum, testified to the insanity of the prisoner. The latter, under whose care Speirs had been, was very positive as to his insanity. "I discovered no delusion," he says; "think he has no uncontrollable impulse; I believe the act resulted from a perverted condition of the several moral faculties of the mind, with a propensity to burn buildings, and a feeble intellect. * * * * Perhaps any thing that would excite the prisoner would induce him to burn buildings, or even might stimulate him to commit an assault with intent to kill. I judge that he is a pyromaniac because he has committed these acts, and is insane."

Drs. Gray, Cook, and Bell, however, testified to the sanity of the prisoner. The former stated that he had never believed him to be insane. We have seen, however, that he was kept in the asylum under the charge of lunacy for six years. Speirs was convicted.

Joseph Brown,[1] as stated by Dr. Harlow, entered his own

[1] *American Journal of Insanity*, vol. xiii, 1856-7, p. 249.

house on the morning of the 16th of April, 1856, shortly after breakfast, where his wife, Annie Brown, was engaged with her domestic duties. Their little daughter, aged twelve, was also present. Brown went to his daughter, and taking out his wallet containing twenty dollars, gave it to her. On turning toward his wife, she kindly said to him: "Joseph, I am afraid of you," on which he immediately seized a long sharp knife with one hand and with the other threw her upon the floor; while in this position, lying upon her back, he cut her throat, severing the jugular vein, from which she shortly died.

It is stated that Brown at this time was about forty years of age, a member of the church, taking a prominent part in the religious exercises, and speaking loudly and vehemently. It was noticed, however, that his outside conduct did not comport well with his teaching. He indulged more or less in the use of stimulants. He was irritable and quarrelsome. His bad temper was particularly exhibited toward his wife, who was a feeble woman. He had been known to strike her with his fist and to kick her from a chair, and this though there had been no provocation. Subsequently he again, without cause, kicked her from the chair on which she was sitting, and struck her violently on the head with a pair of boots. On this occasion he left the house, but soon returned and gave his little daughter a piece of money. He was not intoxicated, and there had been no exciting conversation.

After this he frequently threatened his wife with assault, and she was obliged to flee from the house to escape him.

Immediately before the murder he had had a quarrel with his brother and tried to choke him. On being prevented, he laughed heartily and left the house. Shortly afterward he returned, and breaking open the door, threat-

ened the whole family with violence. After sufficiently alarming them, he ran away rapidly for several hundred feet.

He accused his wife of infidelity, but exhibited no indignation or excitement at the idea.

The day before the murder he went to Belfast, but before going, placed the following inscription on paper upon the door of his own house: "Farewell house, wife, and blessed little children." At Belfast he drank, as he said, a quart of gin. On Wednesday morning at 2 o'clock he left for home, and arrived there at about seven o'clock. Shortly afterward he committed the murder.

He then, after making two futile attempts to drown himself, was secured and lodged in prison.

Brown's grandfather was subject to fits of depression, and once nearly succeeded in cutting his throat. His grandmother lived to be over seventy, and during the later period of her life was demented and under the care of legal guardians. His mother was passionate and irritable, and her peculiarities were the subject of remark by the neighbors. An uncle was found drowned, and was supposed to have committed suicide. A brother had an attack of fever, which was followed by mental aberration.

At the trial, Dr. H. M. Harlow, superintendent of the insane hospital at Augusta, testified strongly in favor of the prisoner's insanity. He was, however, found guilty, and was sentenced to be hanged. Before the sentence could be executed he committed suicide by cutting his throat with a piece of glass; thus adding, as Dr. Harlow says, the capstone to the accumulation in favor of the prisoner's irresponsibility.

Hélène Jégado, a Frenchwoman, between the years 1853 and 1857 killed twenty-eight persons by poison, besides making several unsuccessful attempts. In none of her mur-

ders was any cause alleged or discovered, though undoubtedly the pleasure derived from the perpetration of crime was the chief factor. Her victims were her masters and mistresses, her fellow-servants, her friends, and several nuns, for whom in their last moments she displayed the utmost tenderness and care. The plea of monomania was set up in her defence, but no evidence of insanity was brought forward by her counsel save the apparent want of motive for her crimes. It was shown, however, that she had begun her career of crime when only seventeen years old, by attempting to poison her confessor; that she had, while perpetrating her wholesale murders, affected the greatest piety, and was for a time an inmate of a convent; that she had committed over thirty thefts; that she had maliciously cut and burned various articles of clothing placed in her charge; that when asked why she stole things that were of no use to her, she had replied, "I always steal when I am angry"; that she was subject to alternate periods of great mental depression and excessive and unreasonable gaiety; that she was affected with pains in the head and vertigo; that when she was angry she vomited blood; and that while in prison awaiting trial she was constantly laughing and joking about indifferent subjects. She was found guilty, and on being asked if she had any thing to say why sentence of death should not be passed, made an answer so much like one given more recently by another criminal that I give it here. "No, your honor, I am innocent. I am resigned to all that may happen. I would rather die innocent than live guilty. You have judged me, but God will judge you." Her last words on the scaffold were directed to accusing a woman as her instigator and accomplice, whose name was not even mentioned during the trial, and who, upon inquiry, was found to be an old paralytic whose life had been of the most exemplary character.

The case of Dumollard is in some respects similar to that of Hélène Jégado. This man, a peasant of a low order of intellect, but by no means an imbecile, was plunged in the lowest depths of ignorance and want. The moral sense appeared never to have been developed in him; he was a savage pure and simple; he was out of place among civilized people. This monster had a *penchant* for murdering servant-girls, whom he pretended to hire, and then conducting them to unfrequented places put them to death. Six thus disappeared, and nine others barely escaped. Indeed, it is probable that many more than these were murdered, for on searching his premises twelve hundred and fifty articles of women's apparel were found, of which only fifty were identified. Insanity was urged in his defence, but he was found guilty and executed. On the scaffold he behaved with the utmost insensibility. His last words were addressed to an officer, and were a request to tell his wife that a man, Berthet by name, owed him twenty-seven francs less a sou.

The most noted case of similar character occurring in this country is that of Jesse Pomeroy, the boy torturer and murderer of Massachusetts. The plea of insanity here was of some avail, for his sentence of death was commuted to imprisonment for life.

These cases are sufficient to illustrate the nature of the relations of reasoning mania to crime. They show also how slight may be the extraneous motive which prompts to the perpetration of criminal acts, and how strong is the innate feeling of personal gratification, born as it is of supreme selfishness, which leads in the same direction. Dr. Ray[1] has touched the exact point when he relates the following incident.

[1] A Treatise on the Medical Jurisprudence of Insanity, 5th edition, Boston, 1871, p. 223.

"I once asked a patient who was constantly saying or doing something to annoy or disturb others, while his intellect was apparently as free from delusion or any other inpairment as ever, whether in committing his aggressive acts he felt constrained by an irresistible impulse contrary to his convictions of right, or was not aware at the moment that he was doing wrong. His reply should sink deeply into the hearts of those who legislate for, or sit in judgment on, the insane. 'I neither acted from an irresistible impulse, nor upon the belief that I was doing right; I knew perfectly well I was doing wrong, and I might have refrained if I had pleased; I did thus and so because I loved to do it; it gave me an indescribable pleasure to do wrong.'"

As Campagne says: "The intellectual power of reasoning maniacs is not great. Loquacious or unusually taciturn, heedless or morbidly cautious, dreamers, wearisome to all brought in contact with them, capricious and unmitigated liars, their qualities are often in a certain manner brilliant, but are entirely without solidity or depth. Sharpness and cunning are not often wanting, especially for little things and insignificant intrigues; ever armed with a lively imagination and quick comprehension they readily appropriate the ideas of others, developing or transforming them and giving them the stamp of their own individuality. But the creative force is not there, and they rarely possess enough mental vigor to get their own living.'

As to derangement of the intellect, I am quite sure, that though the emotions and the will are primarily and chiefly involved, there is more or less aberration of the purely intellectual faculties in every case. Certainly this has been so in every instance that has come under my observation. To a superficial examination the intellect may appear to be unaffected, as it very generally happens that there is an absence of marked delusion.

But a ready susceptibility to be impressed by slight exciting causes, an unquestioning faith in their own powers, when in reality these are far below the average, and an entire disregard of their duties and obligations and of the ordinary proprieties of life, are certainly indications of intellectual derangement. Most authors who have described the affection appear to think that it invariably exists without the participation of the intellect; others, perceiving that the intellect participates to some extent in all cases of mental derangement, refuse to admit the existence of reasoning mania. The question is a mere quibble—for whether the intellect is involved or not is by no means a matter of prime importance, and is resolved affirmatively or negatively according to the idea of what constitutes intellectual derangement, entertained by the disputants. In any event the reasoning maniac is, as Dr. Spitzka declared while on the witness-stand in the Guiteau trial, and as Campagne[1] said seventeen years ago, "a true moral monstrosity."

Relative to the bodily peculiarities of reasoning maniacs, I have only space for the résumé of Campagne[2] as follows:

1. That the head is smaller than that of persons of sound mind.

2. That it is smaller than that of lunatics in general.

3. That as regards size it is about equal to that of persons of weak minds.

4. That it is larger than that of idiots.

5. That the antero-posterior curve, and particularly the posterior curve of the cranium are less than those of persons of sound mind, lunatics in general, the weak-minded, and even of idiots. It may be said that reasoning maniacs have a congenital atrophy of the posterior lobes of the brain, and that the cranium has been diminished in size to the detriment of the occipital region.

[1] *Op. cit.*, p. 105.

[2] *Op. cit.*, p. 146.

And now to apply the foregoing remarks to the assassin of President Garfield. To do so fully would require me to traverse the whole record of the trial. But I scarcely think it is necessary to do this to get a definite opinion of the mental condition of the man now under sentence of death. We have only to take the hypothetical question proposed by the District Attorney, and which was answered by every one of the medical witnesses for the prosecution in positive language, that if the statements therein contained were true, the prisoner was sane. Let us see what these statements are:

That he had had several insane relatives; that while at college he abandoned his studies and entered the Oneida Community; that he left it and subsequently returned; that he again left it and went to New York to establish a newspaper devoted to the dissemination of peculiar religious ideas; that he abandoned this project; that he studied law and was admitted to the bar; that he was married and then divorced through his own procurement; that he became interested in religion and delivered lectures on the subject; that while thus engaged he attempted to strike his sister with an axe; that though a physician could find neither illusion, hallucination, nor delusion he pronounced him insane, "because of exaltation of the motives and explosions of emotional feeling, also excessive egotism, and that he was the subject of pseudo-religious feeling," and advised his confinement in a lunatic asylum; that he soon afterward gave up lecturing; that he associated himself with the National Republican Committee and prepared a speech which, however, he only delivered once; that after the election of General Garfield he asked by letter for the appointment of Minister to Austria; that he went to Washington to urge his claims; that not getting the position he applied for that of Consul to Paris; that he "earnestly and persistently followed up his application by verbal and written requests, having no special claims for this place except his own idea of the value of

his services," and having the recommendation of but one person; that he unwarrantably inferred from a remark of the Secretary of State that he might be appointed; that in spite of rebuffs from the officials in authority he continued to expect the appointment; that he made inquiries about a pistol which he subsequently purchased, borrowing money to pay for it; that he practised with it by shooting at a mark; that he followed the President on two occasions for the purpose of killing him, but was deterred, once because his wife, who was sick, was with him; that finally he lay in wait for him at the railway station, and shot at him twice, intending to kill him, and inflicting a mortal wound.

That after the shooting he attempted to get to the jail for protection; that he was arrested, and that a letter to General Sherman, asking for troops to protect him, was found upon his person; that in two letters written several days before the shooting, he declares the President's nomination was an act of God, that he has just shot the President, "that his election was an act of God, his removal an act of God"; that in another document addressed to the American people, and dated as early as June 16th, he used this language: "I conceived the idea of removing the President four weeks ago; I conceived the idea myself, and kept it to myself," and other words of like character.

That he subsequently claimed that he was inspired by the Deity to kill the President, and that he had had previous inspirations; that for years before the shooting he had procured a precarious living, not paying his board-bills, borrowing money, evading the payment of his railroad fares, retaining money collected by him as a lawyer, and being several times in prison on charges of fraud; and that on the stand he stated that he felt remorse for his deed so far as his personal feelings were concerned, but that his duty to the Lord and the American people was paramount.

On such a statement of facts, and with a knowledge of the

manner in which the prisoner conducted himself while being tried for his life, his abuse of his friends who were endeavoring to save him, his praise of judge and jury and opposing counsel at one time and his fierce denunciation of them at another, his speech in his defence, his entire lack of appreciation of the circumstances surrounding him, his evident misapprehension of the feelings of the people toward him, his belief in the intercession of prominent persons in his behalf and of his eventual triumph, and the many other indications with which you are all familiar, especially his conduct after sentence was pronounced,—I have no hesitation in asserting that Guiteau is the subject of reasoning mania, and hence a lunatic. There is not an asylum under the charge of any one of the medical experts for the prosecution that does not contain patients less insane than he.

What is to be done with such persons as Speirs the Utica incendiary, Brown the Maine wife-murderer, Jégado the poisoner, Dumollard the killer of servant-girls, Pomeroy the boy torturer, and Guiteau the assassin of the President? That all these people were lunatics I have no doubt; that all were fully worthy of the punishment awarded them I am quite sure. Ten years ago I wrote as follows:[1]

"The only forms of insanity which, in my opinion, should absolve from responsibility and therefore from any other punishment except sequestration, are such a degree of idiocy, dementia, or mania, as prevents the individual understanding the nature and consequences of his act, or the existence of a delusion in regard to a matter of fact [not an inspiration or a command from the Diety, or any other incentive based solely on faith] which, if true, would justify his act. Persons suffering from either of these forms of mental derangement and perpetrating crimes should, in the

[1] Insanity in its Relations to Crime: A Text and a Commentary, New York, 1873, p. 73.

interest of the safety of society, be deprived of their liberty.

"But the individual who has sufficient intelligence to know that pointing a loaded pistol at a human being, cocking it, and pulling the trigger, are acts which will cause the death of the person against whom they are directed, should be subjected to the same punishment for a homicide as would be awarded for a like offence committed by a sane person. And the insane person whose delusions are not such as would, if true, justify a homicide, should come under the same rule.

And again, seven years ago, I said,[1] speaking of cases such as those now referred to:

"That individuals thus affected are insane, that is, of unhealthy minds, is undoubtedly true; but there is none the less any reason why, when convicted of crimes, they should not be made to suffer the full penalty which the law awards. There is no evidence to show that a crime committed through a morbid impulse, based upon a still more morbid emotion of pleasure, could not have been prevented had the individual chosen to combat the desire of self-gratification. Those morbidly constituted persons who commit crimes because it is pleasant for them to do so should be treated exactly like other offenders against the laws. The absence of motive is apparent only. The fact that the criminal experiences pleasure from the committal of the act is as strong a motive as any other that can be alleged, and is entitled to no more extenuating force than the pleasure of revenge or acquisitiveness or other passions. 'Lord, how I do love thieving,' said a London vagabond; 'if I had all the riches of the world I would still be a thief.' The plea, 'I could not help it,' is one which every member of the criminal classes can urge with as much force as the subject

[1] A Treatise on the Diseases of the Nervous System, sixth edition, 1876, p. 340.

of emotional morbid impulse, and when it stands alone in an otherwise sane individual should be absolutely disregarded by juries and judges."

In a paper on "Morbid Impulse," read before this Society May 28, 1874, I enunciated like views.

For this opinion I have been abused by certain ultra-humanitarians and emotional philosophers, who believe no doctrines and accept no statements that are not agreeable to them—the same class of people, in fact, who, during the President's suffering, slandered all who, looking at his condition through the medium of medical and surgical knowledge, were forced to the conclusion that recovery was almost out of the question. With such individuals black is white and white is black, according to the pleasure to be derived from either belief.

It is a source of satisfaction to me to find that the views which for nearly ten years past I have endeavored to promulgate have at last received practical endorsement by the conviction of Guiteau. The emotional philosophers, desiring him to be sane, still endeavor to persuade themselves that their wishes and facts are the same thing, and to the disgrace of American psychological medicine, they are sustained by certain physicians who appeared as witnesses for the prosecution. The charge of Judge Cox shows what *he* thought, and it is doubtless to his very emphatic declaration that insanity, unless of such an extent as to destroy the knowledge of right and wrong, or prevent the accused knowing the nature and consequences of his act, does not absolve from responsibility for crime, that a verdict of guilty was rendered.

The admirable charge of Chief Justice Davis of the New York Supreme Court, in the Coleman case, leaves nothing to be desired. "Emotional insanity," he says, "impulsive insanity, insanity of the will, or of the moral sense, all vanish into thin air whenever it appears that the accused party

knew the difference between right and wrong at the time and in respect of the act which he committed."

This is very different from the law as laid down by Judge Hogeboom in the case of Cole, tried for the murder of Hiscock. Here it was declared that "an insane impulse, leaving the mind incapable of exertion, holding the individual incapable of exercising his mind, so far as I have defined it to you, exempts him from responsibility, and if, under the influence of such a want of mind, the prisoner commits the act, whether you call it irresponsible impulse or any thing else, it exempts him from responsibility."

As I have endeavored to show quite recently,[1] there is no necessary connection between medical insanity and legal insanity.

Let Guiteau suffer the full legal penalty for his crime, but let him be executed with the distinct understanding that he is a lunatic deserving of punishment. To shut our eyes to his exact condition, and to try to flatter ourselves that he was of normally constituted mind when he shot the President, is not only cowardly but it is impolitic. The conviction and execution will be without the force of an example upon hundreds of others of unsound minds who may be contemplating the commission of crimes. And it will lead to the erroneous conclusion that there was a sane man, a man in the full possession of his mental faculties, capable of killing the President of the United States for the purpose of uniting the two wings of the Republican party, when both had never failed to show their contempt for the assassin whenever he had given them the opportunity. Was there ever a more insane motive than this, and was there ever a man whose whole career from childhood to the present day has afforded a more striking example of that form of mental derangement called reasoning mania?

[1] The Punishability of the Insane. *International Review*, November, 1881.

THE PHYSIOLOGICAL ACTION OF HYOSCYAMINE.

By Dr. J. C. SHAW,

MEDICAL SUPERINTENDENT, KINGS COUNTY INSANE ASYLUM, ETC., BROOKLYN, N. Y.

THE use of hyoscyamine has received a good deal of attention of late, but its physiological action has not been studied; this fact has induced me to undertake the study of its physiological action. An examination of the literature on the subject shows that up to this time our knowledge of its physiological and therapeutical action is quite imperfect, and the statements in regard to it quite conflicting, and mainly based upon its supposed identity with atropia.

Before detailing my own experiments with the alkaloid I shall give a brief sketch of what has been written about it.

After Peschier, in 1821, and Payen, in 1824, had indicated the probable existence of an alkaloid in hyoscyamus niger, Geiger and Hesse (1833) succeeded in extracting pure hyoscyamine. It is found most plentifully in the seeds, in less quantity in the leaves, of hyoscyamus niger and hyoscyamus albus.

According to Geiger, hyoscyamine crystallizes slowly in star or brush-like clusters of silky, sometimes transparent, needles, which have no smell; less pure it forms a viscid amorphous mass, hard to dry, which, as long as it is moist, has a disagreeable, overpowering, tobacco-like odor; it

tastes exceedingly acrid and unpleasant. With gentle heat it melts to an oily-like liquid, and evaporates with careful heating, for the most part undecomposed.

Wadgymar states that hyoscyamine with careful heating will sublime unchanged ; by sublimation he obtained white silky needles from 1½ to 2 lines in length.

According to Thorey, hyoscyamine crystallizes out of chloroform in rhombic tables, out of benzole in fine needles, while out of ether and amylic alcohol it remains amorphous. In a pure state it is constant in the air, with difficulty soluble in cold water, more soluble in warm ; impure it is hygroscopic, and much more soluble in water ; it is further soluble in alcohol, ether, chloroform, amylic alcohol, benzole, and diluted acids. Hyoscyamine saturates the acids completely ; its solution in hydrochloric, sulphuric, nitric, phosphoric, and acetic acids give easily and good crystallizing salts. The hydrochloric salt forms cross-like crystals, whilst the rest crystallize in fine straight needles.

The watery solution of the free base decomposes slowly in the air, more rapidly with slight warmth and alkalies, becoming a brown color and developing ammonia.

The action of hyoscyamine, says Wirkung, upon which its medicinal and toxic action seems to rest, is qualitatively similar to that of atropia ; quantitatively, far superior to it, as far as the pupils show on local application, which are more rapidly and persistently dilated. Schroff states that the $\frac{1}{8000}$ grain caused mydriasis in fifteen minutes in an albino rabbit, which reached its maximum in forty minutes and ended in five or six hours, whereas atropine in this solution did not work mydriatically.

Lemettre finds atropia act more powerfully mydriatically than hyoscyamine. In 1825 Reisinger determined the mydriatic action of the still impure hyoscyamine by means of experiments on animals. As regard the remote appear-

ances, according to Schroff, hyoscymine produces only exceptionally the erythema of the skin and scarlatina-like exanthem so frequently brought out by atropine. It does not bring on the furious delirium and the increased restlessness as well as the staggering and muscular weakness which are peculiar to atropine, or only after very large doses; on the contrary, there are rest and sleep, and finally no paralysis of the bladder and anus. Whether these differences in the action of hyoscyamine and atropine do not partially rest upon individual peculiarities, we do not dare to decide, although the experiments which Frommüller made on patients with hyoscyamine as a hypnotic proved the presence of such peculiarities. In these experiments there occurred as accompanying manifestations, with a preparation of Buchner's, but few narcotic symptoms. After a preparation of Merck's they were more constant; sweating and mydriasis were frequently present. After Buchner's preparation the frequency of the pulse and respiration was lessened, and the temperature rose in the following night. As regards pulse, respiration, and temperature, Frommüller found no difference between it and morphia. After Merck's hyoscyamine mydriasis was constant, and once the frequency of the pulse rose unusually high in the night, and in one case there was even agitation and increase of motion after 0.006 gram.

Schroff noticed in himself after about 0.003 gram, dryness in mouth, pharynx, and larynx, slight mydriasis, diminution of a few beats of the pulse, fulness of head, dizziness, unsteadiness of gait; later a rise in the frequency of the pulse, and then quiet sleep; swallowing was difficult; the perception of taste and the sense of touch of the tongue were diminished.

Düllnberger took twice 0.002 gram. Whereupon the pulse sank at first, then increased in frequency, then fol-

lowed fulness in the head, diminished salivation, dryness in mouth and throat, difficulty in swallowing, weakness, and mydriasis. After 0.005 mgram. there were diminished smell, taste, and headache, in addition to the symptoms of the smaller dose; in all cases there was an inclination to sleep, which was quiet and deep.

Rabbits die from 0.3 gram. twenty-four to forty-eight hours after of dyspnœa, acceleration of respiration, and mydriasis.

Binz says: Hyoscyamine (C_{15} H_{23} N O_3) (?) is a body chemically and physiologically allied to atropia. Owing to the differences in the preparations which have been hitherto used for experiment, it is impossible to say more. There is no proof of its inferiority to atropia.

Wood says: It has a very similar if not identical action with atropia. Indeed, at present it seems probable that the active principles of belladonna and hyoscyamus are really one alkaloid. Wood appears to doubt that hyoscyamine has a more powerful hypnotic effect than atropia.

Bartholow says: As atropia, daturia, and hyoscyamine are similar, if not identical, in chemical composition and in physiological action, the remarks already made in regard to the actions and uses of belladonna are applicable to stramonium and hyoscyamus.

The following conclusions, to which Oulmont and Laurent have been conducted, appear to the author (Bartholow) to be thoroughly well grounded:

1. Hyoscyamia and daturia act especially on the sympathetic nervous system.

2. In small doses they reduce the capillary circulation (contraction of the arterioles); in large doses they produce paralysis of the vessels (exhaust the irritability of the vasomotor system).

3. The arterial tension is increased by the administra-

tion of weak, and is diminished by powerful, doses. These effects are not modified by section of the vagi.

4. The frequency of the pulse is increased and its fulness diminished.

5. Hyoscyamia renders the movements of the heart regular; when applied directly it ultimately arrests the beats.

6. Both always accelerate the respiration.

7. Neither has any direct action on the nervous system of animal life.

Sensation and motor power are not modified by them. In toxic doses they blunt cutaneous sensibility.

8. These alkaloids have no action on the excitability of striated muscles; they do not modify their structure.

9. In small doses they accelerate the movements of the intestines; in large doses they paralyze them.

10. The general phenomena observed when these alkaloids are given are due to modification of the circulation, and disappear rapidly. The alkaloids are soon eliminated, especially by the urine, in which they may be found.

11. The dilatation of the pupil which is produced is due to stimulation of the sympathetic; the third pair of nerves is not concerned in its production.

12. Small doses generally give rise to slight increase of temperature; large doses diminish the central temperature.

Stillé and Maisch say in animals they cause dilatation of the pupil, and in full doses dryness of the mouth and a dull and lethargic condition, with loss of power in the hinder legs; in moderate doses they slow both respiration and circulation, rendering the pulse fuller and stronger; in full doses they have the opposite effect. They increase the discharge of urine.

On man the following effects are produced by henbane and hyoscyamia. The sense of touch is blunted, the vol-

untary muscles are apt to be cramped, or to be affected alternately with spasm and paralysis. No direct narcotic effect is produced in the greater number of cases; but rather a loquacious subdelirium, with hallucinations, which may merge into a restless and dreamy sleep. Only in large doses is it decidedly hypnotic. Its power to produce a peculiar talkative and pugnacious delirium was fully described by ancient writers. From an experimental point of view it must be concluded that, unless in very large doses, hyoscyamine is not so much a narcotic soporific as that it is anodyne or anæsthetic; that it excites the cerebral and depresses the spinal functions, and that it is mydriatic. Harley gives the following conclusions:

1st. Hyoscyamia differs somewhat from atropia in not accelerating the pulse as much, and by a greater effect on the cerebrum and the motor centres.

2d. Small doses will reduce the pulse rate by 10, or even 30 beats; larger doses cause a rise.

3d. Sleep and great muscular relaxation are produced.

4th. The action on the cerebrum is very similar to that of opium, except that it does not cause excitation of the motor centres. No antagonism exists between the two.

5th. It is excreted by the urine.

Lawson summarizes by saying:

1st. The smallest active doses when administered to animals cause numerical depression of the pulse, and increased arterial tension, reduce the temperature, dilate the pupil, and have little effect on the respirations.

Large doses elevate the pulse without previous depression, and this quickening is maintained for six or eight hours; great fall of temperature, diminution of respiration, loss of motor power, delirious excitement, and sometimes prolonged but interrupted sleep succeed, and are in their turn followed by sudden reduction of the pulse toward the

initial point, and sometimes below it; this fall precedes complete recovery from the operation of the drug.

The drug usually causes increased urinary and diminished alvine secretion. In rabbits, pigeons, and others of the lower animals, hyoscyamine is almost, if not altogether, as active a poison as to man.

Long-continued use of the drug causes loss of weight, quickening of the pulsation with increase of arterial pressure, quickening also of respiration, and increase of temperature. Subsequently there is restoration of weight, but persistence of heightened pulsation, respiration, and temperature.

In man the cerebral symptoms are more marked than in the lower animals, and the motor, cardiac, respiratory, and thermal symptoms less so. With small doses the pulse is first slightly reduced, and at the commencement of the cerebral and motor excitement is elevated about 20 beats above the initial index. Nothnagel and Rossbach state that its action is similar to that of atropia.

This gives most of what is known about the physiological action of the drug. It is impossible for me to speak of each person who has written on this subject; a bibliography of the subject will be found at the end of this paper.

I will now proceed to the detail of my own personal experiments.

They were made in the physiological laboratory of Dr. Isaac Ott, Easton, Pennsylvania, and under his direction.

I always used Merck's preparation of hyoscyamine; the first experiments on frogs were made with the amorphous alkaloid, a brown, thick, syrupy-looking material of an oily feeling when rubbed between the fingers; later experiments on frogs were made with Merck's crystallized hyoscyamine; and all but one of the blood-pressure experiments and those on the muscles were made with the crystals.

It may be stated here that no difference was observed in the action of these preparations, except that the crystals were more rapid in action.

Experiment 1 (to determine the *general action* of the drug).—A large green frog, at 11.15 A.M., was given subcutaneously $\frac{1}{3\,5}$ grain amorphous alkaloid hyoscyamine.

11.24 A.M., no special effect, so another $\frac{1}{3\,5}$ grain is injected.

11.30 A.M., frog less energetic.

11.33 A.M., another $\frac{1}{3\,5}$ grain is injected.

11.41 A.M., frog still jumps vigorously when irritated, but is disinclined to move; appears dull.

11.45 A.M., another $\frac{1}{3\,5}$ grain injected.

At 11.50 A.M., no further change, so another $\frac{1}{3\,5}$ grain is injected.

12.04 P.M., no further change. Another $\frac{1}{3\,5}$ grain is injected, and at 12.05 another $\frac{1}{3\,5}$ grain given.

At 12.10 P.M., the apathetic condition has increased, but frog still jumps with vigor when disturbed.

12.14 P.M., frog has ceased to jump when disturbed; if one hind leg be irritated he jerks it away, but makes no attempt to jump. Another $\frac{1}{3\,5}$ grain is injected.

12.16 P.M., another $\frac{1}{3\,5}$ grain injected.

12.19 P.M., slight muscular weakness of hind legs.

12.25 P.M., when frog is irritated, jumps away; is given another $\frac{1}{3\,5}$ grain,and at 12.28 P.M. another $\frac{1}{3\,5}$ grain injected.

12.34 P.M., another $\frac{1}{3\,5}$ grain injected.

At 1.13 P.M., frog very much paralyzed. Muscles of leg twitch when irritated.

At 1.20 P.M., $\frac{1}{3\,5}$ grain injected.

1.45 P.M., very much paralyzed; tries to draw away hind extremity when it is irritated, but does so only very little. Another $\frac{1}{3\,5}$ grain injected.

3.30 P.M., frog has up to this time received $\frac{2}{5}$ of a grain of the alkaloid, and is now very much paralyzed, but still makes ineffectual efforts to move.

4.20 P.M., in same state; absolutely paralyzed everywhere; at night frog left completely paralyzed and stupid, one would think dead.

The next morning frog is found to have entirely recovered from the paralysis. Jumps about vigorously if touched; there has been no effect on the pupils at any time.

At 8.30 A.M. of the second morning, frog is found to have developed tetanus during the night; legs are extended and body slightly arched backward; touching the foot or a tap on the table near the frog throws all the muscles into tetanic convulsions; in the afternoon this condition has increased to a tonic spasm, and when the feet are struck all the muscles are thrown into violent convulsions. Frog is found dead the next morning.

Experiment 2.—At 4 P.M., small black spotted frog given subcutaneously $\frac{1}{4}$ grain hyoscyamine.

At 4.11 P.M., another $\frac{1}{4}$ grain given.

At 4.20 P.M., frog very much paralyzed; another $\frac{1}{4}$ grain injected; no change.

4.35 P.M., another $\frac{1}{4}$ grain given; frog left at night absolutely paralyzed and apparently dead.

8.30 A.M. next morning, frog still absolutely paralyzed, and at 10.25 A.M. another $\frac{1}{4}$ grain injected. Frog has now received $\frac{5}{4}$ grain hyoscyamine; at night he is still absolutely paralyzed and apparently dead.

These experiments show that the alkaloid has a marked paralyzing effect; it is now necessary to determine what this paralysis is due to—an action on the motor or sensory nerve or on the muscles. It is desired to kill a frog as rapidly as possible.

At 9.30 A.M., a small black-spotted frog has some of the amorphous alkaloid, without any dilution, injected subcutaneously, quantity unknown.

9.25 A.M., frog much paralyzed.

10.25 A.M., some disposition to oposthotonus.

10.30 A.M., more amorphous alkaloid injected (unknown quantity, about 4 or 5 drops).

12.15 P.M., completely paralyzed and in a stupid state; sciatic exposed and tested with DuBois Raymond coil; nerve is found irritable at 333 mm.

At 1.30 P.M., sciatic of the other leg is tested and found irritable at 60 mm.; frog is apparently just dead.

Experiment 3.—Small green frog in which vessels of right leg have been ligated.

At 2.05 P.M. are given, dissolved in water, with one drop of muriatic acid, $1\frac{1}{2}$ grains crystallized hyoscyamine, subcutaneously.

At 2.17 P.M., paralyzed in all extremities; on irritation of both hind legs they are drawn away, but the right leg (the one in which the vessels are ligated) much more than the left; the left leg is seldom moved on ordinary irritation, but a drop of sulphuric acid causes it to be jerked away violently; ordinary irritation causes movement of the leg in which the vessels have been tied, and no movement of the leg in which the vessels have not been tied.

At 3.45 P.M., sciatic nerve of the leg in which the vessels have been ligated is exposed and tested with DuBois Raymond coil and is found irritable at 180 mm., or, according to galvanometer scale, at 6° (Fick's method of graduation). The sciatic in which the vessels have been ligated is also tested and found irritable at 255 mm., or, according to galvanometer scale, at 2° (Fick's method).

These two experiments demonstrate a marked diminution in the irritability of the motor nerves and partial paralysis of them. The fact that the paralysis is not so great in the leg in which the vessels have been ligated as it is in the leg in which the vessels are not tied, indicates that the motor nerves must be poisoned by the alkaloid being carried to them in the blood supplied to the legs.

We now desire to determine if this paralysis of the motor nerves is peripheral or central.

Experiment 4.—Small green frog, in which the abdominal aorta was ligated.

At 2.45 P.M., was given, subcutaneously, 1½ grains crystallized hyoscyamine, dissolved in water, with one drop muriatic acid.

At 3 P.M. it is found that the front legs are very much paralyzed.

Experiment 5.—Green frog, in which the spinal arteries are ruptured and hyoscyamine is given subcutaneously, becomes paralyzed, as in frogs without any arteries having been ligated.

These experiments demonstrate that the paralysis of motor nerves is peripheral and not central.

REFLEX ACTION.

Experiment 6—Small green frog without spots, cerebrum separated from medulla, and, after sufficient time had elapsed to al-

low the irritation to subside, reflex irritability was tested with the sulphuric acid test; time taken on a metronome vibrating 100 beats a minute; the average beats are 18, at which the reflex is displayed; the frog is then given $\frac{1}{14}$ grain hyoscyamine crystals, subcutaneously; after a sufficient time the reflex excitability is tested and found as follows:

5.05	P.M.	26
5.10	"	45
5.15	"	57
5.20	"	40
5.25	"	45
5.30	"	46
6.00	"	36

Experiment 7.—Frog with spinal cord separated from medulla. Average beats 17. Subcutaneous injection of amorphous alkaloid hyoscyamine given; after a sufficient time had elapsed the reflex was taken with acid test.

3.50	P.M.	23
3.55	"	24
4.00	"	27
4.05	"	17
4.10	"	17
4.15	"	17
4.20	"	14
4.25	"	18
4.30	"	17
4.35	"	18

These two experiments taken together demonstrate a slight decrease in the reflex excitability.

SENSIBILITY.

Experiment 8.—Large green frog; blood-vessels of right leg ligated.

At 12.30 P.M., $\frac{1}{14}$ grain crystallized hyoscyamine injected subcutaneously.

At 1 P.M., appears to be equally sensitive in both legs.

1.20 P.M., frog becoming paralyzed, no difference in the sensibility of the two legs detected.

1.55 P.M., no disturbance of sensibility noted.

2.05 P.M., frog very much paralyzed; when put on his back is unable to turn over; there is no apparent difference in the sensibility of the two legs. This was the uniform result of all experiments made with regard to sensibility, and indicates that there is no material diminution of sensibility.

MUSCLES.

Experiment 9.—In the study of muscles the gastrocnemius of a frog was employed, and Marey's myograph; the contractions of the muscles registered on the drum of a Foucault regulator; the time of contractions taken with a tuning-fork. It was found that the alkaloid has no effect whatever on the muscles.

ACTION ON THE CIRCULATION.

These experiments were made on rabbits, usually of large size; the alkaloid was dissolved in water and injected into the jugular vein toward the heart; the arterial tension was registered by Ludwig's kymographion, and the time registered by an electro-magnet, and Ludwig's clock apparatus to break the current every second; the pulse and pressure are given for periods of fifteen seconds.

Experiment 10.—Large albino rabbit.

TIME.	PULSE.	PRESSURE.
2.15. 0 P.M.	47	108
2.15.15 "	$\frac{1}{32}$ grain H. injected.	
2.15.30 "	54	104
2.15.45 "	54	100
2.16. 0 "	54	100
2.16.15 "	50	120
2.16.30 "	53	120
2.16.45 "	56	120
2.17. 0 "	52	120
2.17.15 "	50	120
2.17.30 "	47	120
2.17.45 "	54	120
2.18. 0 "	51	120
2.18.15 "	52	120

TIME.	PULSE.	PRESSURE.
2.18.30 P.M.	45	116
2.18.45 "	48	116
2.23.30 "	52	120
2.28.45 "	54	112
2.29. 0 "	56	126
2.29.15 "	54 $\frac{1}{32}$ grain injected.	128
2.29.30 "	54	114
2.29.45 "	52	108
2.30. 0 "	51	108
2.30.15 "	56	112
2.30.30 "	52	118
2.30.45 "	52	116
2.31. 0 "	52	120
2.31.15 "	50	120
2.31.30 "	53	120
2.31.45 "	53	120
2.32. 0 "	50	120
2.32.15 "	56	120
2.38.45 "	50	116
2.39. 0 "	54 $\frac{1}{32}$ grain H. injected.	120
2.39.15 "	54	112
2.39.30 "	54	118
2.39.45 "	54	112
2.40. 0 "	50	114

Total amount of amorphous alkaloid hyoscyamine injected, $\frac{30}{35}$ grain.

Experiment 11.—In this experiment and all hereafter, crystallized hyoscyamia was used and always injected into the jugular vein toward heart.

Rabbit of large size.

TIME.	PULSE.	PRESSURE.
12. 0. 0 M.	55	104
12. 0.15 P.M.	41 $\frac{1}{32}$ grain H. injected.	108
12. 0.30 "	60	108
12. 0.45 "	64	100
12. 1. 0 "	67	104
12. 1.15 ".	65	92

TIME.	PULSE.		PRESSURE.
12. 1.30 P.M.	59		92
12. 1.45 "	65		100
12. 2. 0 "	66		100
12. 2.15 "	66		104
12. 2.30 "	61		110
12. 2.45 "	62		110
12. 3. 0 "	62		100
12. 3.15 "	—		100
12. 3.30 "	63		112
12. 3.45 "	73		100
12. 4. 0 "	70		112
12. 4.15 "	70		110
12. 4.30 "	61		110
12. 4.45 "	67		116
12. 5. 0 "	68		116
12. 5.15 "	66		116
12. 5.30 "	68		108
12. 5.45 "	65		108
12. 6. 0 "	63		104
12. 6.15 "	66		104
12. 6.30 "	64		104
12. 6.45 "	64		104
12. 7 0 "	62		104
12. 7.15 "	63		104
12. 7.30 "	61		104
12.17. 0 "	64		106
12.17.15 "	71		106
12.17.30 "	66		106
12.17.45 "	67		110
12.18. 0 "	—		104
12.18.15 "	64		104
12.18.30 "	65		104
12.18.45 "	63	$\frac{1}{15}$ grain H. injected.	100
12.19. 0 "	66		104
12.19.30 "	—		102
12.19.45 "	65		104
12.20. 0 "	64		106
12.20.15 "	67		108
12.20.30 "	67		112
12.20.45 "	63		112
12.21. 0 "	67		106

TIME.		PULSE.		PRESSURE.
12.21.15	P.M.	66		108
12.21.30	"	—		106
12.21.45	"	65		104
12.25.30	"	58		102
12.37.45	" interval of 12 minutes.	73		80
12.38. 0	"	60	Vagus irritated.	68
12.38.15	"	68		70
12.38.30	"	62		88
12.38.45	"	58		74
12.39. 0	"	56		70
12.39.15	"	63		80
12.40.30	"	60		72
2.52.45	"	65		70
2.53. 0	"	51	Vagus irritated.	62
2.53.15	"	56	Vagus irritated.	60
2.53.30	"	59		70
2.53.45	"	49		64
2.54. 0	"	54		68

Total amount of hyoscyamine given, $\frac{2}{35}$ grain. The first dose of hyoscyamine given was followed by an increase (104 to 108) of the blood pressure, and an increase in the number of arterial pulsations. Nineteen (19) minutes after the first injection was given another $\frac{1}{35}$ grain was injected. It is followed at once by a fall of the blood pressure, but no difference in the number of pulse beats; the blood pressure gradually sinks; and eighteen (18) minutes after the last injection, when the vagus is irritated with a current from Du-Bois Raymond coil, there is a slight fall in pulsation from 73 to 60; fifteen minutes after, when the vagus is again irritated there is again a slight fall in the pulsation from 65 to 51, and hereafter it continues to sink.

This experiment is decisive; it shows that hyoscyamine in large doses causes in the beginning increase of pulse and arterial tension, followed by a diminution of the blood pressure and a partial paralysis of the vagus, as strong electrical currents were used for nearly thirty seconds.

Experiment 12.—Large albino rabbit.

TIME.	PULSE.	PRESSURE.
4.15. 0 P.M.	70	106
4.15.15 "	60 (?)	110
4.15.30 "	64 ½ grain H. injected	106
4.15.45 "	60	60
4.16. 0 "	65	44
4.16.15 "	65	42
4.16.30 "	59	50
4.16.45 "	66	56
4.17. 0 "	66	56
4.17.15 "	60	62
4.17.30 "	63	66
4.17.45 "	60 Vagus irritated	07
4.18. 0 "	—	82
4.18.15 "	—	76
4.18.30 "	—	80
4.18.45 "	—	80
4.19. 0 "	—	80
4.19.15 "	—	80
4.19.30 "	—	90

Upon the injection of the hyoscyamine, there was at once a very marked fall in the blood pressure and a slight diminution in the pulse rate, followed by a slight recovery in the blood pressure; toward the last the tracing was so indistinct that the pulse rate could not be ascertained. This experiment demonstrates that hyoscyamine partially paralyzes the vagi, as the pulse fell from 63 to 60. We desire now to discover, if after section of the vagi, hyoscyamine has any influence on pulse and blood pressure.

Experiment 13.—Rabbit of large size; vagi cut.

TIME.	PULSE.	PRESSURE.
2.15. 0 P.M.	71	130
2.15.15 "	69	128
2.15.30 "	66	130

TIME.	PULSE.	PRESSURE.
2.15.45 P.M.	66 $\frac{1}{100}$ grain H. given	120
2.16. 0 "	65	128
2.16.15 "	66	120
2.16.30 "	68	120
2.16.45 "	67	114
2.17. 0 "	69	112
2.17.15 "	63 (?) Convulsive movement	124
2.17.30 "	76	120
2.17.45 "	77	120
2.22.45 "	77	120
2.23. 0 "	68	120
2.23.15 "	67	120
2.23.30 "	66	118
2.23.45 "	69	124
2.24. 0 "	72	116
2.24.15 "	60	116
2.24.30 "	70	114
2.24.45 "	71	114
2.25. 0 "	70	114
2.25.15 "	67	112
2.25.30 "	65	130
2.25.45 "	72	116
2.26. 0 "	72	120
2.26.15 "	71	118
2.26.30 "	72	120
2.26.45 "	61	118
2.27. 0 "	70	118
2.27.15 "	68	116
2.27.30 "	69	130
2.27.45 "	72	116
2.28. 0 "	69	118
2.32.15 "	—	120
2.32.30 "	69	114
2.32.45 "	72	116
2.33. 0 "	71	116
2.33.15 "	69	116
2.34.45 "	—	114
2.35. 0 "	69 $\frac{1}{100}$ grain injected	112
2.35.15 "	69	104
2.35.30 "	69	106
2.35.45 "	—	110

TIME.	PULSE.		PRESSURE.
2.36. 0 P.M.	—		112
2.36.15 "	70		116
2.36.30 "	71		112
2.36.45 "	71		114
2.37. 0 "	69		112
2.37.15 "	—		110
2.37.30 "	67		110
2.37.45 "	68	Convulsive movement	120
2.38. 0 "	71		114
2.38.15 "	67		114
3.41.45 "	60		112
3.42. 0 "	58		112
3.47.45 "	65		112
3.48. 0 "	65		110

This experiment indicates that after section of the vagi there is a slight increase, for a time, in the pulsations, and a fall of arterial tension. To eliminate the inhibitory action of the vagus, atropine was employed, and the effect of hyoscyamine studied.

Experiment 14.—Large albino rabbit; given an injection of atropine thirty-one (31) minutes after tracings were begun.

TIME.	PULSE.		PRESSURE.
1.30.15 P.M.	62		92
1.30.30 "	58		92
1.30.45 "	58		90
1.31. 0 "	55		92
1.31.15 "	52		90
1.31.30 "	61		90
1.31.45 "	56		100
1.32. 0 "	58		92
1.32.15 "	57	½ grain H. injected	92
1.32.30 "	53		92
1.32.45 "	59		88
1.33. 0 "	56		92
1.33.15 "	59		96
1.33.30 "	59		100
1.33.45 "	58		92

TIME.	PULSE.		PRESSURE.
1.34. 0 P.M.	58		94
1.34.15 "	65		94
1.34.30 "	60		94
1.34.45 "	61		112
1.35. 0 "	55		100
1.35.15 "	61		100
1.35.30 "	73		108
1.35.45 "	55	Sciatic irritated	118
1.36. 0 "	64	Sciatic irritated	148
1.36.15 "	68		120
1.36.30 "	62		112
1.36.45 "	62		110
1.37. 0 "	61		120
1.37.15 "	60		120
1.37.45 "	60		110
1.38. 0 "	62		106
1.41.45 "	61		100
1.47.15 "	66		92
1.47.30 "	67		96
1.47.45 "	63		100
1.48. 0 "	64		100
1.54.30 "	61		100

In this experiment, the vagi having been previously paralyzed with atropia, the injection of hyoscyamine produces but little effect that could be ascribed to hyoscyamia.

The irritation of the sciatic causing a rise in the blood pressure indicates that the vaso-motor system is still irritable

Experiment 15.—Large gray rabbit; all the nerves going to the heart divided in the neck. Medulla divided between occiput and atlas; artificial respiration instituted.

TIME.	PULSE.		PRESSURE.
3.15. 0 P.M.	65		66
3.15.15 "	66		64
3.15.30 "	67	$\frac{1}{15}$ grain H. injected	60
3.15.45 "	70		66
3.16. 0 "	68		60

TIME.	PULSE.	PRESSURE.
3.16.15 P.M.	74	60
3.16.30 "	68	60
3.16.45 "	67	56
3.17. 0 "	74	56
3.17.15 "	72	76
3.17.30 "	69	56
3.19.15 "	67	40
3.19.30 "	69	40
3.26. 0 "	69	36
3.26.15 "	68	36
3.26.45 "	69	34
3.27. 0 "	75	34
3.31.45 "	64	30
3.32. 0 "	66	30

In this experiment, after division of all the nerves going to the heart, any effect observed after injection of the drug must be due to its action on the ganglia in the heart or on the cardiac muscle.

The tracings show an increase of pulsations from the injection of hyoscyamine, and no rise of blood pressure, except momentarily; the gradual diminution in the blood pressure is due to the section removing the monarchial vaso-motor centre.

ACTION ON RESPIRATION.

Studied with the aid of Marey's polygraph and Marey Foucault regulator.

Experiment 16.—Large albino rabbit.

TIME.	RESPIRATIONS.	
3.30. 0 P.M.	15	
3.30.15 "	17	
3.30.30 "	14	
3.30.45 "	14	
3.31. 0 "	13	
3.31.15 "	15	
3.31.30 "	16	$\frac{1}{35}$ grain H. injected.

TIME.	RESPIRATIONS.
3.31.45 P.M.	18
3.32. 0 "	17
3.32.15 "	17
3.32.30 "	17
3.32.45 "	17
3.33. 0 "	20
3.33.15 "	18
3.33.30 "	18
3.33.45 "	18
3.34. 0 "	18
3.37. 0 "	19

This experiment shows a very slight increase in the number of respirations.

Experiment 17.—Large albino rabbit; vagi cut.

TIME.	RESPIRATIONS.	
4.15. 0 P.M.	9	
4.15.15 "	8	
4.15.30 "	9	$\frac{1}{35}$ grain H. injected.
4.15.45 "	9	
4.16. 0 "	10	
4.16.15 "	10	
4.16.30 "	9	
4.16.45 "	9	
4.17. 0 "	9	
4.17.15 "	10	
4.17.30 "	9	
4.17.45 "	9	
4.18. 0 "	9	
4.18.15 "	9	
4.18.30 "	9	
4.18.45 "	9	
4.19. 0 "	9	
4.21.45 "	10	
4.22. 0 "	9	
4.22.15 "	10	
4.22.30 "	9	
4.27.45 "	10	
4.28. 0 "	9	

TIME.	RESPIRATIONS.
4.28.15 P.M.	9
4.28.30 "	9
4.35. 0 "	9
4.35.15 "	9
4.35.30 "	8
4.35.45 "	10
4.36. 0 "	8

This experiment demonstrates that after section of the vagi hyoscyamine produces no effect on the respiration; hence the increase in respiratory movements must be due to stimulation of the centres of respiration.

These experiments demonstrate that:

1. Hyoscyamine causes paralysis if taken in sufficient dose; that this loss of motor power is due to paralysis of the motor nerves.

2. It exercises no visible effect on sensibility.

3. It has no effect on the muscles.

4. It decreases reflex excitability and afterward increases it; it tetanizes by an action on the spinal cord, acting in this respect like atropine.

5. In the beginning it causes a rise of pulse and arterial tension, which finally is followed by a fall of both.

Section of the vagi does not prevent either the preliminary rise of pulse rate or its subsequent fall.

6. After the use of atropine the changes produced by hyoscyamine in pulse rate are not in any way characteristic.

7. Irritations of the vagi reduce the pulse rate, but it is small compared with what normally takes place, so that it is inferred hyoscyamine partially paralyzes the inhibitory fibres of the vagi.

8. The increase of pulse rate is due to a partial paralysis of the inhibitory fibres of the vagi; the fall, to an action on the heart itself.

9. The rise of arterial tension is due to a stimulation of the monarchial vaso-motor centre; the rise is trifling after section of the medulla between atlas and occiput.

10. The fall of pressure is due to partial paralysis of the main vaso-motor centre, and probably to an action on the heart itself.

(*To be continued.*)

MICROSCOPIC STUDIES ON THE CENTRAL NERVOUS SYSTEM OF REPTILES AND BATRACHIANS.

By JOHN J. MASON, M.D.,

NEWPORT, R. I.

ARTICLE IV.

DIAMETERS OF THE NUCLEI IN THE NERVE CELLS WHICH ARE RELATED TO MOTOR NERVES (*continued*):[1] CHELYDRA SERPENTINA (SNAPPING TURTLE); IGUANA TUBERCULATA (IGUANA); PHRYNOSOMA CORNUTUM (HORNED TOAD); MENOPOMA ALLEGHENIENSE (HELLBENDER); SIREN LACERTINA (SIREN); DIEMYCTYLUS TOROSUS (SALAMANDER) AND SERPENTS.

AS in former articles, the average diameters are given in divisions of Nachet's micrometer eye-piece with his objective No. 5, and as most of the nuclei are oval, as seen in sections, two dimensions are noted.

CHELYDRA SERPENTINA.

Spinal cord, cervical enlargement, . . .	7. x 8.
" " lumbar "	7. x 8.
Origin of the motor root of the trigeminus .	7. x 8.
" " oculomotorius and trochlearis .	4. x 5.

IGUANA TUBERCULATA.[2]

Spinal cord, cervical enlargement . . .	5.5 x 6.
" " lumbar "	6. x 6.5

[1] Jan., 1880, July, 1880, and Jan., 1881, this JOURNAL.

[2] The writer is aware that these figures are at variance with some statements published recently by Dr. E. C. Spitzka, this JOURNAL, April, 1881; *Science* vol. i, No. 7, and vol. ii, No. 34.

Origin of the motor root of the trigeminus .	. 5. x 5.5
" " oculomotorius and trochlearis .	. 4. x 4.5

In phrynosoma the ratio of the nuclei dimensions is about the same as in the iguana, with the exception of the spinal cord, where little or no difference exists between the average size of the cervical and lumbar nuclei.

1. While in the snapping turtle the nuclei in the cells of the two spinal-cord enlargements do not differ materially in size, in the iguana those of the lumbar are half a division larger than those of the cervical region. This corresponds with the apparent power of the extremities.

2. While in the snapping turtle the nuclei in the cells of origin of the oculomotorius are more than three divisions smaller than those in the motor-trigeminal cells, in the iguanidæ this difference in size is reduced to one division.

In Article III of this series I have given the diameters of the cell nuclei of the alligator (three feet long) as follows:

Spinal cord, cervical enlargement . .	. 6.5 x 7.5
" " lumbar " . . .	. 6.5 x 7.5
Origin of the motor root of the trigeminus .	. 6. x 7.
" " oculomotorius . . .	. 5. x 5.

The specimen of iguana which I have studied measured 3 feet 2 inches in length; the antero-posterior diameter of its eyeball was ¾ of an inch, and its jaw muscles were not strikingly well developed.

The comparative differences in size between the oculomotor and motor-trigeminal nuclei, therefore, correspond more closely with jaw-muscle development than with that of the eye-muscles.

I find nothing in the nervous system of the iguanidæ but evidence additional to that already observed in favor of my views, and doubt whether a more striking confirmation of my conclusions can be found than is furnished by the facts

denoted by the above measurements, giving due consideration to the habits and conformation of the different animals.

The relative size and arrangement of the cerebellum, optic and cerebral lobes in the iguanidæ are shown in my photograph of a vertical longitudinal section through the brain of phrynosoma. This plate was published in November, 1880, and can be examined at several libraries, including that of the New York Academy of Medicine. The cerebellum is seen to curve forward over, and to be closely applied to, the optic lobes. The same thing is true in the iguana, although the cerebellum is more flattened and extends a little farther forward.

In heloderma this organ also curves forward but is not closely applied to the optic lobes.

In anolius the cerebellum very closely resembles that of phrynosoma in all respects.

The spinal cord of the iguana, in external form, differs from that of the alligator in one interesting particular, viz., the horizontal transverse diameter of the lumbar enlargement. While in the latter animal the diameters of the two enlargements are practically equal,[1] in the former the following variations are observed:

Cervical enlargement	vertical	3.	mm.
	horizontal	4.5	"
Lumbar "	vertical	3.	"
	horizontal	5.	"

The gray matter also occupies more space in sections from the lumbar than in those from the cervical enlargement. The increase is also in the horizontal transverse d mension.

Cervical	vertical	1.75	mm.
	horizontal	2.5	"
Lumbar	vertical	1.5	"
	horizontal	3.	"

[1] Rabl-Rückhard, *Zeitschrift für Wissenschaftliche Zoölogie*, Bd. 30, H. 2, p. 341.

In this connection it may be important to record a fact which I have observed, with reference to the comparative thickness of the two enlargements of the spinal cord in nearly all the types of reptiles and batrachians. The thickness of the lumbar enlargement bears a certain relation to the power developed in the tail, exclusive of the comparative size of the posterior extremities, for example:

Alligator—Lumbar equals cervical.
Iguana[1]—Lumbar exceeds cervical.
Anolius—Cervical equals lumbar.
Skinks—Cervical exceeds lumbar.
Heloderma—Cervical exceeds lumbar.
All Turtles—Cervical exceeds lumbar.
Tailed Batrachians—Cervical equals lumbar.
Tailless Batrachians—Cervical exceeds lumbar.

The skinks and heloderma have very feeble tails. Among turtles the snapper is provided with a powerful tail, and in this animal we find a development of the lumbar enlargement intermediate, in size and shape, between that of the common land turtle, for example, and the alligator.

TAILED BATRACHIANS.

I would here ask attention to an important clause in the law about the comparative size of nuclei, which I have elsewhere ventured to formulate. "The nuclei of the so-called motor cells of the central nervous system have, *in the same individual*, average diameters, which are proportional to the power developed in the related muscles." The nuclei in the nerve cells of the mouse may be found to be twice as large as those in homologous cells of the elephant without affecting the above proposition. No claim is made, as one critic has inferred, that powerful or active animals have larger nuclei in their nerve cells than weak or sluggish ones,

[1] As already stated, the posterior limbs are larger, and, compared with the anterior limbs, more powerful in the iguana than in the alligator.

but simply that, in one and the same individual, these nuclei vary in average size, in accordance with the muscular energy to which, by means of their cell prolongations, they are supposed, in some way, to be related.

To show that I am not alone in regarding the nucleus as probably constituting the true nerve-cell, I take the liberty of quoting the following passage from an able article by Dr. H. D. Schmidt "On the structure and function of the ganglionic bodies of the cerebro-spinal axis," published in this JOURNAL for January, 1879, p. 20: "It seems obvious that nature should have assigned a particular function to a body of a constitution as complicated as that of the so-called nucleus of the ganglionic cell'; and I cannot forbear to point again to the fact, that if any part of the ganglionic body deserves the name of a nervous cell at all, it is the nucleus; for it alone represents an organic cell in the true sense of the word."

In the three species of tailed batrachians enumerated in the heading of this article, hellbender, siren, and salamander, the nuclei present a remarkably large appearance. The same peculiarity has been noticed by Stieda[1] in the axolotl, Schmidt[2] in amphiuma, and Spitzka[3] in menobranchus.

According to the measurements of Stieda the cells of the spinal cord (axolotl) have nuclei from .024 to 030 mm. in diameter. In the batrachians which I have studied the nuclei in spinal-cord cells measure as follows:

Rana Pipiens, lumbar enlargement . .	.025	x .030	mm.
Average, 7 x 9 divisions, $\frac{1}{400}$ mm. each, or .	.0175	x .0225	"
Rana Halecina, average . . .	.015	x .02	"
Menopoma, largest nuclei . . .	.025	x .0325	"
Average, 7 x 9 divisions, or . .	.0175	x .0225	"
Siren, largest nuclei	.025	x .0275	"

[1] Ueber den Bau des Centralnervensystemes der Amphibien und Reptilien, 1875.

[2] *Loc. cit.*, this JOURNAL, Jan., 1879.

[3] Transactions of the American Neurological Association, June, 1878.

Average	.915 x .025	mm.
Salamander (5 in. long), largest	.025 x .0275	"
Average	.015 x .025	"

It is probable from the above table that there is a remarkable similarity in the dimensions of the nuclei in the nerve cells of batrachians, at least for the spinal cord. The following represents the variation in size to be observed in one of the tailed orders, menopoma.

	AVERAGE.
Spinal cord, cervical region	7. x 9.
" lumbar "	7. x 9.
" middle caudal region	6. x 8.
Probable origin of motor root of trigeminus	8. x 9.
Nuclei in cells near oculomotorius	5. x 7.
Nuclei of connective tissue	(5. x 5.)—(6. x 7.)
" in blood globules	3. x 4.
" " ce ls of superior horns	6. x 7.
" " " " corpus striatum	6. x 7.

Compared with the neighboring masses of nuclei, those which appear to be related to the oculomotorius are smaller in menopoma than in rana pipiens. The optic lobes in the siren, seen in vertical transverse section, resemble closely fig. 14 in Stieda's work on the axolotl. In menopoma, instead of being elliptical as in siren and axolotl, the aquæductus Sylvii opens laterally much as in frogs and turtles.

In the spinal cord the homologue of the ligamentum denticulatum, elsewhere recently described by me as existing in ophidia and sauria is present, but in a still less degree of development than in the iguanidæ.

SERPENTS.

Since my last publication on this subject I have measured the nuclei in nerve cells from the various parts of the nervous system of three species of serpents.

The gopher snake (Spilotes Erebennus), water snake (Nerodia Fasciata), and the rattlesnake (Crotalus Adamanteus).

Grimm[1] does not publish measurements of the nuclei, but gives for the dimensions of the large spinal-cord nerve cells .024—.04 by .009—.015 mm.

I have recorded the following average dimensions for the rattlesnake, and, as usual, in eye-piece divisions.

Nuclei in cells of origin of trigeminus motor root .	4.5 x 5.
" " " oculomotorius and trochlearis,	2.5 x 3.
" " spinal cord	4. x 5.
" " basal group near and in front of hypoglossus	5. x 6.

They apply to all three species.

Since writing the foregoing pages I have received three fine specimens of menobranchus (Necturus Lateralis). Portions of the spinal cord from one of the specimens were devoted to the study of the nerve cells in the fresh state. Minute sections, including the gray substance, were removed by scissors, and after remaining a few minutes in carmine, were teased apart with needles, and the ganglion cells brought into view and isolated by agitation in glycerine and water. No other reagent was employed. Several slides were obtained, each showing a large number of cells, with large, well-stained granular nuclei. Although the protoplasm of the cell was but feebly colored its granular structure was apparent. A fibrillary arrangement of the granules, like that so well represented by the plates of Schmidt, was not visible, this being doubtless due to the absence of bichromate. Under the object-cover the nuclei appeared like broad ovoid bodies, and measured from 9 x 10 to 13 x 14 divisions.

[1] J. Grimm, "Ein Beitrag zur Kenntniss vom Bau des Rückenmarkes von Vipera Berus," *Archiv für Anat. u. Phys.*, 1864, p. 502.

A slight excess of menstruum was used in all cases, and was pressed out beyond the edges of the cover, carrying with it many of the large isolated cells.

Examination of these uncovered portions of the liquid revealed the fact that the nuclei were much flattened in form. There being here little impediment to the free motion of the elements, by inclining the stage of the microscope, and giving a judicious lateral inclination to the slide, many of the cells could be made to rotate, and so slowly in many cases that I was able to measure accurately all three diameters of their nuclei. It is almost certain that many, if not all, of the largest nuclei in the spinal-cord cells of menobranchus have the shape denoted by the following measurements:

Length,	13 x 14 divisions	Equivalent to, say,
Breadth,	9 x 10 "	9 x 10
Thickness,	5 x 6 "	when spheroidal.

If the correctness of this observation be confirmed in other specimens, it will be evident that the immense size of these nuclei, seen in sections and in covered preparations, depends solely upon the area of surface which, under these circumstances, is most often presented to vision, or is most often noticed.

It is certain that no such degree of flattening of the nuclei is to be observed in anourous batrachians, even when the cells are freshly prepared and by the same method as just described.

CASES OF PACHYMENINGITIS, CEREBRAL AND SPINAL, WITH RECORDS OF POST-MORTEMS.

By C. L. DANA, A.M., M.D.

NEW YORK.

THE following cases occurred at Bellevue Hospital, and the histories were written or collected by me when interne there. The notes were made with no expectation that they would be published, and they are not so complete as could be wished. The fact however, that autopsies were made in all the cases except one renders them of some importance, and will justify, I trust, their publication.

CASE 1.—HYPERTROPHIC CERVICAL MENINGITIS.

Comments.—The first case is one of cervical hypertrophic pachymeningitis. This disease was first described by Charcot in 1871, and later by Jeoffroy in 1873. Since then the contributions to the literature have been, so far as I can learn, entirely from French and American writers, except one case reported by Sciamana.[1] Dr. V. P. Gibney has reported three cases occurring in children.[2]

The disease is particularly worthy of study on account of its slow progress and the opportunity it gives to watch the gradual involvement of different portions of the cord. Jeoffroy describes two stages, a meningitic, or "période douloureuse," and a myelitic stage, characterized by paralyses

[1] *Italia Med.*, Genova, 1881, 2 S., xv, 81–84.

[2] *Med. Record*, Sept. 25, 1880, p. 340.

and atrophies. The disease may begin in either of two ways: With a predominance of localized cervical symptoms (cervical form), or with the symptoms chiefly in the extremities (peripheric form). The case whose history is related here belongs to the latter and rarer category. A further peculiarity of my case is that the meningeal and myelitic stages can hardly be distinguished.

The prominent symptoms, as the case progressed, may be enumerated as follows, those which are rarer being put in italics: Peripheral disturbances, such as parasthesiæ, hyperæsthesia, anæsthesia, and pains initiating the disease; rigidity and contraction of extremities; muscular atrophy; paralyses of upper extremities and of *intercostal muscles;* exaggeration of reflexes; *hyperæsthesia of lower extremities;* digestive disturbances; progressive involvement of all extremities; articular pains; tremors; *no marked "main en griffe";* rigidity and some pains in neck and back; *brief, violent muscular spasms of whole body.*

In regard to the location of the lesion: the early impairment of the hands and deltoids and non-involvement of trapezii and sterno-mastoids, would indicate that the part of the cord between the sixth cervical and second dorsal was most affected. From the comparative non-impairment of reflexes, the slight muscular atrophy, absence of delayed sensation and of pupillary disturbances, and from the presence of coördinating power, one infers that there was only a slight involvement of the gray matter, and this chiefly in the anterior parts. The rigidity and spasms show some lateral degeneration. The lesion was plainly more upon the left side, and involved from the beginning both the anterior and posterior roots. The presence of anæsthesia in the arms and legs shows the gradual involvement of the deeper parts of the lateral columns up which sensations tactile are carried.

In regard to the cause of the disease, it is interesting to note that here, as in other cases, there was a remotely traumatic element. The patient had had syphilis thirteen years before. The course of the pachymeningitis was not influenced by anti-syphilitic treatment, however, and I think that errors are sometimes made in considering all post-syphilitic affections as due to that disease.

The patient has recently developed symptoms which resemble somewhat those described by Dr. W. S. Searle as belonging to "A new form of nervous disease."

History.—The patient[1] is an Irishman aged 40. The family history is unimportant. Patient has been a strong, healthy, hard-working man, drinking moderately. Sixteen years ago his left eye was injured by a piece of iron; iridectomy was performed, and his sight restored. Thirteen years ago he had syphilis. Six years ago he was greatly injured by a fall. He was at the top of a double ladder, 50 feet high, and was trying to remove a circular iron window-frame four feet in diameter. By accident the window fell over on him; his head went through one of the panes, so that he was caught round the neck by the sash and thrown to the ground. He struck between the beams of an unfinished floor, the strength of the blow coming upon the lower part of the lumbar region, on the right side. His neck was also cut on the left side and considerably injured. He was laid up in bed for three months by this injury. He had no paralysis, but so much pain and stiffness in his back that he could not use his limbs. His urine was passed more slowly and in a feebler stream, and his bowels were obstinately constipated. He got over his cervical injuries rapidly and completely. He also recovered from the injury to his back, except that it has always been weak since, and he has been unable to lift heavy loads. Constipation and some atony of the bladder persisted.

In March, 1877, about seven months before admission, the ends of the left middle and ring fingers were accidentally cut off. He recovered from this, and returned to work in May, and continued until Sept. 17th, about three weeks before admission. On Sept. 1st he first noticed a numbness in the two mutilated fingers of his

[1] Admitted to Bellevue Hospital in the service of Dr. E. G. Janeway; now under my care.

left hand. This gradually extended to the other fingers and up the arm to the shoulder. It was accompanied with tingling and weakness. About the same time he noticed that his knees were weak. Two or three days later the right arm became involved just as the left had been. Then his legs grew weaker; they seemed sore, and after exertion the muscles trembled. After this all of the extremities grew progressively weaker. Within a month rigidity set in. These symptoms continued and disabled him for work. There was not much pain. Constipation and paresis of the bladder were present. His appetite continued good, and he lost no flesh.

He was admitted to the hospital Oct. 8, 1877. He then presented the appearance of a well-nourished man. His gait was slow and careful. There was marked rigidity of the muscles of the legs, so that the feet could not be lifted entirely from the floor. His arms were stiff also. There was no atrophy. There was considerable loss of sensation in the upper extremities, while the lower were, if any thing, hyperæsthetic. He complained of numbness and coldness of the hands, and could not raise them much higher than the shoulders. Tendon-reflex and antero-clonus present.

He felt tingling in the arms and legs, but had no pain. Examination of thorax, abdomen, and urine revealed nothing abnormal. Application of the faradic and of the galvanic current produced well-marked contractions. After the use of the latter, rigidity was much less. There was some rigidity in the neck, and the head was held slightly forward, but no pain or swelling.

Patient was ordered constant current three times a week, occasional applications of actual cautery to the neck, dry cups along the spine, blisters, and potas. iodide.

Dec. 14th.—Under treatment patient has obtained temporary relief from rigidity, but his general condition is much worse. The rigidity is now greater; he cannot lift his hands and arms to a level with his shoulders. The deltoids are somewhat atrophied, as are also the thenar or hypothenar muscles of the left hand. His gait is stiffer and slower; the anæsthesia of the upper extremities has increased, so that he can feel only one of the points of the æsthesiometer, however far apart they are placed. He can flex the fingers moderately well, but can only feebly extend them. The hands are held in a half-flexed position. There is an increased loss of power in the muscles of the extremities. His bowels are constipated. His appetite continues good.

He has a tight-band feeling about his thorax, especially on the left side. Tendon and simple reflexes of lower limbs normal.

Dec. 17th.—Patient was ordered to lie in bed, as movement increases his pains.

Dec. 20th.—Patient thinks that the tight-band feeling is easier, but the stiffness of arms and knees is worse.

Dec. 21st.—Patient allowed to sit up and walk about again. Is stiffest in morning when he has just risen. Has fallen several times, not having sufficient power in his hands to hold a cane. Examination to-day showed that the left hand, which is the more anæsthetic, has improved slightly. Sensation in the right hand and arm is somewhat worse than it was.

He can still flex both of his hands, and he has moderate strength of grip. There is a numb, aching sensation in his arms, but no sharp shooting pain, though this he has had occasionally. He has no headache or disturbance of vision. There is a loss of power in the intercostal muscles, and he breathes mostly by the diaphragm. His knees have become more stiff and feel sore, but show no swelling or redness. Sensation in the lower limbs is not impaired; reflexes here are also present. Electro-contractility good.

Jan. 10th.—Rigidity, anæsthesia, paralysis, and pain seem to increase. Patient walks with difficulty, and has had bad falls. For last few days has kept in bed. Has shooting pains in arms and legs, but less when they are kept quiet. Anæsthesia is beginning to appear in the legs—more in the right. Has headache sometimes. Mind clear; appetite fair; bowels kept regular by pills; urine normal. Lower limbs not atrophied; arms slightly so.

Feb. 27th.—Patient is slowly growing worse. Walks but little, and can just push his feet along. Stomach gets disordered at times; medicines are then discontinued. His left hand is quite helpless, and the grip of his right is weaker. His legs retain sensibility, but reflex action is slightly impaired. He at times has tight-band feeling in chest, especially on left side. He has pains in his joints whenever he moves them.

April 1st.—Muscular atrophy has increased, especially in the left arm. Otherwise patient is the same as at last note.

April 6th.—Patient's bowels are obstinately constipated; the bladder is paretic. Complains of more pain than he has ever yet had. It is chiefly in the joints. The sense of constriction around the thorax is oppressive. Patient feels sensations on soles of feet as of blisters and needle-pricks. The pains in the joints are aggra-

vated by movement. There is some numbness of legs; reflex action poor; but sensation of touch is normal in feet and is not delayed; the left hand is almost completely anæsthetic; the right hand is still sensitive. Atrophy of muscles progressing slowly, especially on the left. The elevators of arm and the palmer muscles are most affected. Electro-contractility fair. Rigidity of shoulders and elbow joints present.

April 11th—At 2 P. M. patient had a severe attack of dyspnœa and pain in the thorax, especially in the region of the heart; said he felt as though his chest and arms were fastened in a vice. The attack lasted an hour. During this time patient felt a strong desire to vomit, but could not. He was unable to see with either eye. On assuming a sitting posture he felt better. He had ♏ x of Magendie's sol. morph. Patient's stomach has for some days rejected almost every thing introduced into it. He was, therefore, to-day put upon rectal alimentation.

April 12th.—Enemata well retained. Every thing taken by mouth is at once rejected. Patient had three passages during the day.

April 16th.—Enamata discontinued. Patient takes brandy and milk freely. He complains of burning in soles of feet.

April 17th.—Patient has much pain all over. Ordered pill morph. sulph. (gr. $\frac{1}{4}$) every four hours. There have been no pains especially localized in neck; no tenderness or deformity. No torticollis, but head continues to be held slightly forward. Patient can rotate neck somewhat, but cannot bend the head backward.

April 19th.—Integument over sacrum being reddened and oedematous it was dressed with iodoform, and sheet-lint and an oakum ring-pad employed. Nourishment taken by mouth and retained.

April 22d.—Patient is sitting up. Appetite better. Pains less.

April 27th.—Patient sits up part of the time. Can walk with difficulty. He now has a water-bed. Digestion good. Bowels regular. Electricity has been given three times a week (generally galvanism), when patient is not suffering great pain. Potassium iodide has been given irregularly in varying doses according to the sensibility of the stomach.

May 6th.—Complains of great pain between the scapulæ. Electro-muscular contractility (faradic) very feeble on the left side, but fair on the right. More muscular atrophy of chest and arms. Lower limbs slightly and uniformly atrophied. Sensation still tolerably good in right hand and left foot, poor in right

foot, and almost absent in left hand. It is not delayed. Reflex action poor in all the members, especially on the left side.

May 11th.—Patient walks better than he has done for a long time. Pain between the scapulæ is intense. No medicine is now given. Electricity continued.

May 16th.—Pain much diminished. Bowels constipated, requiring cathartics. Electro-muscular contractility (faradic) fair on the right, but gradually diminishing on the left side.

May 20th.—Vomited once. Has a feeling of tight band around left epigastrium reaching to middle line.

May 22d.—Bad attack of dyspnœa last night. Much nausea.

May 24th.—Patient vomited several times to-day. He is very weak.

May 27th.—Respiration is very imperfectly performed. There are occasional spasmodic attacks of dyspnœa. Bowels are obstinately constipated, and appetite very poor. No vomiting to-day or yesterday.

May 31st.—No vomiting since last note. Condition unchanged.

June 28th.—Has been suffering from gastric troubles and on the whole getting worse.

July 15th.—Patient cannot stand upon his feet. Muscular electro-contractility still very fair, especially on the right side.

July 25th.—No change. Patient now has the battery (faradic) daily. Feels less stiffness and soreness after it.

Aug. 4th.—Patient's respiratory movements have been growing feebler since last note. This afternoon he has great difficulty in respiration, and complains of inability to expel mucus produced by a slight bronchitis recently contracted. The respiration is almost entirely abdominal ; the intercostal muscles continue paralyzed.

Aug. 6th.—Patient has been comparatively comfortable since last note. At noon to-day he had another spasmodic attack of dyspnœa, which was relieved by morphia hypodermically. He is obliged to remain in bed, but can sit up. Can move lower limbs somewhat. His left arm is almost paralyzed, and hangs half-flexed by his side. He can slightly move the fingers. At rest they remain semi-flexed, but the wrist is not drawn back. The hand does not present the typical *main en griffe* as in Charcot's cases. The right hand is not deformed at all.

Aug. 19th.—Gets weaker daily. Bedsore over sacrum getting larger. Requires hypodermics night and morning on account of pains in back of neck and extremities.

Aug. 24th.—Has had occasional attacks of dyspnœa. There is almost complete paralysis of extremities, with some rigidity, most in the arms.

Aug. 28th.—No particular change, except that patient is growing weaker gradually. For pains in back and neck he has had hypodermics of morphia. He has involuntary evacuations of fæces and urine. Can sit up in bed only a short while. Is in a critical condition. Has not been able to take medicine for some time.

Sept. 10th.—Patient complains that the vibrations of his bed, caused by the walking of any one across the floor, give him very great pain in all parts of his body.

Sept. 19th.—No change, except that appetite is better.

" 25th—General condition rather better. No paroxysms of dyspnœa.

Oct. 10th.—Morphia discontinued. Patient suffered at first, but pain soon ceased to trouble him. He gradually improved after this, and in a few months was able to walk slowly; could use his hands and arms to feed himself; was not troubled by pains.

His improvement continued very gradually until May, 1881. He took no medicine during this time. At the date mentioned he began to get worse again, though very slowly. He was discharged from the hospital last summer. Lately he has been under my care. I made a careful examination of him Dec. 27, 1881.

He was confined to bed most of the time, but could walk a little. Appetite and digestion fair. Constipation and atony of bladder present. Facies, mind, and special senses normal. Some motion had returned to intercostal muscles. Both deltoids atrophied, the left the more. Some general atrophy of left arm, less of right; left thenar and hypothenar muscles considerably affected. Can flex and extend both hands, but there is little power in the left. It hangs with fingers semi-flexed and wrist slightly drawn back, just suggesting the *main en griffe*. Left forearm half-flexed, left elbow and shoulder rigid. Considerable anæsthesia in left arm, a small amount in right; paræsthesiæ in both extremities; also pains felt, especially in hands. Reflex action is above the normal. Tremor is excited by percussing left arm, and by voluntary movement.

Lower extremities not much atrophied, the left more of the two. Anæsthesia present to moderate extent in both. Tendon-reflex and simple reflex exaggerated. Ankle-clonus could not be obtained. Sensation in legs (or arms) not delayed appreciably.

Left limb has been improving, right limb getting worse since May. Tremor is often excited in left leg by attempts to use it.

Electro-contractility (faradic) absent in left arm and both legs. Elsewhere it is normal.

In the past two weeks the patient has had, while dozing or as he is about to wake, sudden powerful and painful contractions of the arms and legs. He is drawn all into a heap, as he expresses it, for half a minute or less. The spasm then passes off. There is a sharp pain and sensation of fulness in the occiput at the same time.

Patient now has pains in chest and limbs. There is no notable pain, tenderness, or deformity in the neck. Patient still carries his head forward, as he used to do.

CASE 2.—PACHYMENINGITIS HÆMORRHAGICA CHRONICA—INVOLVEMENT OF CORTEX—GRANULAR EPENDYMA—NO SYMPTOMS.[1]

A. L., single ; age, 35 ; nativity, Scotland ; occupation, moulder. Family healthy. Patient had variola three years ago ; has had no other sickness. Has drunk very much ; denies syphilis. His occupation exposes him to great heat, and calls for great exertion. Of late he has been drinking hard.

Seven days before admission he was taken with severe headache, stomach-ache, vomiting, and pain in right side. Had no chill, fever, cough, or expectoration. He continued to feel ill and to drink hard until Jan. 2d, when he was admitted to the cells as a case of alcoholism.

He was a medium-sized, strongly-built man ; was weak, tremulous, and disturbed in mind. He complained of no especial pain, and nothing abnormal was found in chest or abdomen. This was in the morning. In the afternoon he had a chill, severe pain just below the right axilla, a slight cough, no expectoration, a temperature of $103\frac{1}{4}°$. On examining him in the evening a small spot of consolidation was found in the middle lobe of right lung. He was still very restless and tremulous. Ordered quinine, gr. xx, and pil. opii., gr. i, whiskey, ℥ iv per day.

Jan. 3d.—Pulse, A.M., 130 ; resp., 27 ; temp., 102°.
" " P.M., 110 ; " 22 ; " 103°.

Patient slept greater part of the night. No expectoration, and only occasional cough. Well-marked consolidation of right middle lobe. Bowels open ; eats well. Mind dull, but no delirium. Cheeks not flushed. Respiration not panting. Pulse full, com-

[1] In the service of Dr. A. Flint.

pressible ; skin dry ; tongue moist and white ; urine pale, acid ; sp. gr., 1020. Ordered quinine, gr. x, *t. i. d.*

Jan. 4th., A.M.—Pulse, 128 ; resp., 31 ; temp., 104¼°.
" P.M. " " " 102°.

Patient did not sleep last night, and has not done so to-day. Has pain in right side and headache, occasional cough, and in afternoon spits up a little tenacious, brownish sputa. Crepitant râles heard in right lower lobe behind. Toward night patient grew very wild and delirious. At about 10 P.M he received gr. j of opium. This did no good. At 12.30 he had gr. xxv of chloral, and three quarters of an hour later gr. xv more. His pupils became finely contracted ; his respiration labored and irregular ; his heart beat very feebly ; he was given atropia sulph. and whiskey.

At 8 A.M., Jan. 5th, he died.

AUTOPSY.

Body.—Frozen.

Lungs.—Right middle lobe in third stage ; lower lobe passing into second. Left lung intensely congested, and there was a point in both lobes where red hepatization was beginning.

Pericardium.—Cavity filled with serous fluid to amount of ℥ ii–℥ iii.

Brain.—Over the inner surface of the dura mater, especially at the sides, was a thin membrane of organized lymph, and in it at various points were hemorrhages.

The hemorrhages were of various ages, but none very new. When there were no marked hemorrhages the membrane was stained yellow with pigment. The dura mater was not adherent to the pia.

The skull was sound, the crista galli very long and sharp ; the orbital plates of the frontal bone bulged up markedly, and on the under surface of the anterior lobe, corresponding to these plates, were points where the brain tissue was sclerosed in part, and in part a little softened. These places were the size of a half dollar.

There was another point on the surface of the left ascending parietal convolution, the size of a dime, where there was staining, sclerosis, and softening, with pachymeningitis in the dura mater over it. The lateral ventricles were enormously distended and filled with serous fluid. The lining membrane was thickened, and had a granular appearance. The venæ Galeni were large, but there was no obstruction. The brain substance was atrophied.

Spinal cord.—Could find no change.

Liver.—Large, with long left lobe and slight cirrhotic change.

CASE 3.—PACHYMENINGITIS—INVOLVEMENT OF CORTEX—SYMPTOMATIC EPILEPSY.

John D., single, Ireland, age 32, stone-cutter. The patient belongs to a healthy family. He himself never had any sickness before the present one. He has been a moderate drinker, and denies having had syphilis.

Three years before admission he caught his foot on the curbing and fell, striking the back of his head on the flag-stone. He was stunned by the fall, but recovered enough to walk home, and in a few days seemed to be perfectly well.

About two years ago he began to have the convulsions, which have continued and increased upon him ever since. They at first occurred only every three months, but soon came on every month, and that was the rate of frequency on admission. He had but one at a time. The attacks, as nearly as could be ascertained, were characterized by headache and dizziness, with occasional vomiting (which lessened the intensity). Following this, clonic spasms of the extremities and loss of consciousness. In five or ten minutes he would come out of them, and sleep, or remain quiet. As the fits continued his mind became affected. He was dull and forgot things easily. His speech was slow and embarrassed. His eyesight became less perfect. Though he could recognize every thing about him readily he could not see to read easily.

He had headaches accompanying each attack. These at first left him with the attack, but since eight months ago they have been nearly constant. He has felt some tingling and numbness on the left side of the body, but he had no loss of power. His bowels have been obstinately constipated, and he has used "salts" to keep them open. When they were open the attacks were less severe.

The patient's general condition becoming worse, he was, on Oct. 31, 1877, admitted to the hospital.

The patient, on admission, was a large robust man, somewhat anæmic but not emaciated.

The dull, fixed look of his face was noted. The pupils were normal; the tongue did not deviate on protrusion.

There was no loss of power in the extremities, nor was any anæsthesia detected. The thorax and abdominal organs were normal. Pulse, respiration, and temperature were normal. The patient was too dull to make complaints. He could only speak a

few words. He was distinctly aphasic, seeming to have lost the memory of words.

His urine was very dark, acid, sp. gr. 1021, and contained no albumen. He was ordered potas. iodide and potas. bromide.

Patient has a fractured clavicle for which he was treated with a Sayre's bandage.

Toward night of the day of entrance he was attacked with one of his usual convulsions. These were at first tonic then clonic in character. They affected the whole body, and lasted one or two minutes. The upper extremities were affected most. There was loss of consciousness.

Nov. 5th.—The patient is a little brighter than on entrance. He does not complain of headache, and has had no more convulsions.

Nov. 6th.—The patient has short attacks of delirium in which he tries to tear off his splints, while his language is frequent and painful and free.

Nov. 8th.—The patient has been more quiet, but he is still out of his head and aphasic. He answers all questions with "No, sir." His urine has to be drawn morning and night.

Nov. 10th.—The patient is becoming indecent and ungovernable at times. Last night he vomited on the floor; tried to get into another man's bed, and then went and climbed up on the medicine table.

Nov. 12th.—Patient was transferred to the cells, where he has been quiet. He managed to loosen even the plaster of Paris bandages fixing his clavicle, and a new dressing was put on to-day.

Nov. 14th.—Patient has been quiet since entering the cells. He now talks a good deal, but always in a wandering way. He considers the tying of his hands all nonsense; is easily affected to tears. He has no pain. He managed to get his hand out of the bandage, and six plaster-of-Paris rollers were put on over it.

Nov. 17th.—Patient is improving. Talks almost sensibly at times, though he still has some aphasia.

Nov. 30th.—Patient is about the same.

Dec. 2d.—Patient has been slowly improving since last note. He has had no more convulsions or headaches. His mind was quite clear, though not very active. His aphasia has improved, but he still hesitates in speech and has difficulty in recalling words. He has had a cough at night which disturbed him for a time, but feels relieved to-day. His fractured clavicle has united, and his shoulders are in good condition.

March 2, 1878.—Patient had been steadily improving, and

seemed to be convalescing until recently. He has not been feeling well for one or two days. This evening he was found to have croupous pneumonia. His condition is unfavorable; pulse weak and rapid, and mind not very clear. He had no initial chill. He was ordered whiskey and quinine, and was transferred from cells to Ward 19.

March 3d.—He was very weak during the day, and part of the time unconscious. Temperature, at 11:30 A.M., 102½°; gr. x quinine are given. At noon ℥ ss whiskey every two hours was ordered; at 3:30 P.M. temperature 102½°; 5:30 P.M., 102½°; 7:30, 102½°. During the night œdema of lungs came on. He was cupped; whiskey, milk, digitalis, and oxygen were given, which measures temporarily relieved him.

March 4th.—Patient grew very weak toward morning. At 6 A.M. ordered whiskey, ℥ ss every half hour. At 7:30 temperature 100¼°. Patient lay unconscious; pupils not responding; breathing stertorous; face very pale and covered with perspiration. Some œdema of lungs; pericardial friction sound; pulse weak. Ordered oxygen, which relieved him for a while. At 10 A.M. temperature 98½°; at 2:35 P.M., died.

AUTOPSY.

Body.—Very rigid.

Brain.—The dura mater over the anterior part of occipital lobe and posterior part of temporo-sphenoidal lobe on left side was thickened and adherent to pia mater, and that to the cortical substance of the brain. These membranes were involved to the extent of a space half as large as the palm of the hand. Its centre was near the augular gyrus. The brain tissue beneath the affected membranes was involved. The gray matter appeared indurated and worm-eaten, as did also the white substance beneath it. It presented the appearance of an old laceration.

The rest of the brain was normal, including island of Reil, etc. Other organs not examined.

PACHYMENINGITIS (HÆMORHAGICA)—SYMPTOMS OF PRESSURE—EPILEPTIFORM CONVULSIONS.[1]

Annie L., married, Ireland, age 30. No family history could be obtained. Patient's husband stated that three days before admission patient was very drunk; that night she was taken with

[1] Service of Dr. Austin Flint.

convulsions ; these were repeated more or less frequently till admission. On admission to office patient appeared stupid. The left side of the face was paralyzed, also the left arm. The examination was incomplete. Patient was sent to lodging-house. While there she had several convulsions, and in the morning was found in a semi-comatose condition. The convulsions were thought to be epileptic, and patient was sent to the French cells—as she was in a very filthy condition.

On admission to wards patient is found in a comatose condition, with pulmonary œdema ; hypodermics of whiskey were given, and 50 or 60 cups applied to chest. Patient's tongue was lacerated in several places, and the lips covered with blood. Shortly after admission into ward the coma became less, and patient would open and close the eyes and move extremities. Reflex action was imperfect ; there was no complete paralysis of face or any of the extremities ; but the left arm would fall with a deader weight than the right, yet patient would move it when irritated or at will ; at times the right arm was rigid, but never the left. Prolonged pricking of the right arm would not cause motion, showing anæsthesia ; yet the patient could move the arm ; irritation of the left arm would cause motion ; the lower extremities responded to irritations and were not rigid. The pupils were normal and responded till toward latter part of the day, when they both became contracted and remained so till death.

Patient would open and shut the eyes ; once attempted to talk, and made motion for drink ; no paralysis was present at any time whilst in the ward ; temperature on admission was normal, but commenced to rise in the P.M.; the pulse was full, beating at about 90 till the latter part of the afternoon, when it became more frequent ; the urine contained a small amount of albumen, and two epithelial casts were found ; urine was passed several times in bed, and in quite large quantities. The pulmonary œdema cleared up by cupping and whiskey ; kidneys also were cupped. During the P. M. patient had three or four convulsions, limited to the face and arms, also some movements of the body ; the convulsions were clonic in character, and lasted a minute or so ; during them the mouth was widely distended and face drawn over to left side ; the eyes of both sides would open and shut rapidly, and patient made loud sounds at the commencement of the attacks.

After they had passed off patient would become unconscious, from which condition she would partly rally. The pulse during the attack would become very rapid, but finally would slow

up, the force remaining the same. With the exception of sonorous râles, physical examination of lungs revealed nothing. The first sound of the heart was loud and sharp, the second almost imperceptible. The pupils were normal at the time of the convulsions that occurred early in the P. M., but in the evening they were evenly contracted and remained so after the convulsions had passed off. Ordered whiskey hypodermically, ℥ ss every hour and ol. tiglii gtt. ii every hour till bowels moved. At 11.30 P.M., bowels not moving, the oil was increased to gtt. vi every hour. This treatment produced no passage from the bowels.

6.30 P. M., temp. 102° 9.30 P. M., pulse 152
7.30 " " 103° 10.30 " temp. 104¾°
12.30 A. M., pulse 140, temp. 104¾°, resp. 40.

Patient had some five or six convulsions after admission into ward; she gradually became more stupid, coma developed, and at 2.30 A. M. she died. AUTOPSY. *Brain.*—A large surface clot (recent) on right side of brain below dura mater and arachnoid, causing greater pressure just posterior to the ascending parietal convolution. In the right posterior fossa a false membrane was peeled off from the dura mater, said membrane containing nucleated fusiform cells and bloodvessels and a large number of young cells.

Other organs normal.

PACHYMENINGITIS HÆMORRHAGICA—SYMPTOMS OF PRESSURE.[1]

A. L., widow, Ireland, domestic. No family history obtained. Patient's friends state that she has been for a long time addicted to the excessive use of alcohol. No history of any past diseases was obtained.

Patient had been suffering for a long time from severe frontal headache. Lately she has complained of cramps in stomach, and has occasionally vomited. She has used tr. opii camph. for her pain. Aside from above, patient has been healthy and strong, except for rheumatism in her right arm some time since. Of late all symptoms of rheumatism have disappeared.

On Wednesday, April 10th, patient was about as she had been for some time. On the 11th she was found in a semi-comatose condition, in which she remained up to time of admission, three days later. She had taken nourishment quite readily, and had

[1] Service of Dr. E. G. Janeway.

roused from her stupor a little at times. Face was œdematous when she was first found comatose, but there were no evidences of injury.

On admission, April 14, 1878, patient was in a semi-unconscious state. None of her limbs were paralyzed, nor was her face. Both her arms were rigid ; her legs were very slightly so. She had slight emprosthotonus.

Sensation and reflex action normal. Pupils normal. Patient swallowed well. Pulse regular and strong. Urine contained a moderate amount of albumen. Lungs and heart normal. Pulse, 104 ; resp., 29 ; temp., normal.

Patient's kidneys were at once cupped. During this operation the countenance manifested pain. Ordered ol. tig., gtt. iv, with tr. digitalis, gtt. xv, in glycerine, and hot-air bath ; also whiskey, ℥ ss every three hours, and as much milk as she would take. A blister was applied to her neck, and directions given to administer tr. digitalis, gtt. x, at 2 A. M., and U. S. morph. in case of pain. As no diaphoresis was produced by hot-air bath, patient had tr. jaborandi, ℥ i, at 11 and 12. This caused sweating at 12.30. Bowels moved freely. At 1 A. M. the pulse began to grow weaker ; slight twitchings were observed, and at 2.15 A. M. patient died. AUTOPSY. *Kidneys*.—Small. Capsule adherent over parts of surface. Malpig. bodies fewer than in health. Red and white lines in cortex not well defined. Granular degeneration.

Brain.—Dura mater not abnormally adherent to bone. On inner surface of dura mater, on right side, was a large hematoma, covering the anterior and middle lobes, flattening and narrowing the convolutions of that side, and flattening and widening those of the opposite side.

The innermost part of the clot was still in a semi-fluid state. External to this was an older coagulum, and beneath the latter was a fully organized false membrane, evidently quite old, which, under the microscope, showed fully formed connective-tissue elements and thin-walled blood-vessels.

The arachnoid and pia mater were normal.

The spinal cord was normal, with the exception of a few small calcareous plates found in the arachnoid of the lower part of the cord.

Other organs normal.

LUCILIO VANINI: A BIOGRAPHICAL AND PSYCHOLOGICAL STUDY.

By the Marchioness CLARA LANZA.

THE frightful tragedy recently enacted in this country has caused attention to be directed to the mental characteristics of the perpetrator. By some it is contended that he was actuated by diabolical influence. Others see in him a disappointed office-seeker, and one moved by a natural, if unwarrantable, spirit of revenge. By others again he is considered to be insane and irresponsible for his crime; while he himself pleads that he was inspired by God to take the life of President Garfield, in order that the republican party might be saved from disruption, and the country from a second civil war. Whichever of these views be correct, no one who has observed his conduct since his arrest, and especially during his trial, and studied his life as revealed by himself and the witnesses who have appeared for and against him, can fail to see that he is possessed of an exceedingly ill-regulated mind.

Remarkable as is this man in whatever aspect we regard him, he has had his counterpart in the person of one who, nearly three hundred years ago, when theology was a more important factor in society than it is in our day, kept a great part of Europe in commotion, and finally suffered the extreme penalty of the law for his opinions.

Among the celebrated atheists whose lives and peculiar

doctrines have been faithfully recorded in the pages of history, none perhaps is more worthy of extended and unbiassed criticism than Lucilio Vanini. Though no less a victim to persecution and hardened injustice than Giordano Bruno, Savonarola, or Servetus, it would appear, nevertheless, that all those who have undertaken to chronicle his life and character, were incapable of generosity toward him, or even impartiality. He has been considered too base and depraved a creature to be entitled either to respect or justice. Whether this opinion is warranted, or whether, in addition to other trials, he was forced to endure being cruelly misunderstood, will be seen from a careful study of his thoughts and actions.

Lucilio Vanini was born at Torasano in the kingdom of Naples, in 1585. His father was steward to a nobleman of high rank, and his mother a Spanish woman of distinguished family.

Lucilio, their only child, grew up to be a handsome youth, of strong, healthy physique, and extraordinary mental qualifications. He had, he says himself, with conscious superiority, a great and sublime intellect, conversational powers of a high order, and agreeable manners. His love of study amounted to a passion, and at an early age he was sent to Rome to learn philosophy and divinity from a Carmelite friar, who, at that time, was a famous teacher. He returned to Naples when his studies were completed, and devoted himself to natural philosophy. His wonderful ambition, called vanity by many, made the longing to rise above all who had preceded him or who were his contemporaries, the one aim of his life. To those of inferior mental capacity and torpid aspirations, Vanini appeared a mere mass of presumption, but the opinion entertained of him by others had little weight with him. Learning was the god he worshipped. Aristotle he regarded as the father of phi-

losophy and the sovereign of the wise. Prejudiced in favor of this author whose works had planted in him the first seeds of the atheism which later was apparently developed into such an immense growth, he could relish no other system of philosophy. The weakness displayed by Thomas Aquinas and the scholastics early became subjects for his contemptuous ridicule. His native religion, interpreted and practised as it then was by both clergy and people, did not cause him to regard it with favor. He beheld everywhere, to use his own words, "artifices and grimaces on the part of the laity, and extreme cupidity among the priests." Although himself a priest, and notwithstanding that for some time he had exerted his mind to the utmost on behalf of religion, he finally refused to admit the doctrines taught by the Church, and he resolved to use his powers of eloquence henceforth, not in upholding what he was convinced was erroneous, but in combating it.

Naturally, at a time when freedom of thought was denied, such a resolution drew upon him bitter cries of hatred and anger. To the world at that period ambition was but another name for hypocrisy and impiety, while a simple recognition of personal merit constituted shameless arrogance.

A little later, perceiving the dislike with which he was looked upon, Vanini conceived the strange idea of going out into the world with twelve companions to preach atheism, adopting for himself the name of Julius Cæsar. Although it does not appear that the project was productive of any result, the mere fact of his changing his name caused him to be loaded with opprobium. "Is this man so swelled with pride," it was asked, "that no name but that of Cæsar is worthy of him? Has the last remnant of his Christianity become so intolerable to him that he must needs deny his baptism?"

Vanini suddenly gave up preaching and went to Padua, where, finding the place and the society of various literary men to his liking, he remained for some years, devoting himself with increased ardor to his studies. He was extremely poor, but a life of deprivation by no means stifled his zeal. So great, indeed, was his thirst for knowledge, that he passed through severe winter weather, clad in threadbare garments, without experiencing any discomfort. "My desire to learn," he would say when reminded of this fact, "animates my soul and warms my body—what more do I need?"

With that peculiar restlessness exhibited by Vanini throughout his life in more ways than one, and which may be attributed rather to an insatiable desire for notoriety than any thing else, he decided to leave Padua and travel. He went to Germany, Holland, Switzerland, and England, displaying everywhere the somewhat unsettled state of his mind, by bizarre conversations which he held or pretended to hold with numerous people. While at Amsterdam he had several discussions with an atheist whose ideas and sayings he records with severe condemnation. It is probable, however, that all he ascribed to the atheist were Vanini's own thoughts, which it did not suit him at the time to reveal.

At Lyons he undertook to preach philosophy, but was suspected of heresy and forced to flee in order to escape being burnt. The inconsistency which about this time began to be observed in his opinions is very remarkable. Often he would boldly assert theories which perhaps a week later he would deny ever having heard of, denouncing them as indicating the height of folly on the part of their originator.

In London he drew upon himself the persecution of the Protestants, who put him in prison. Here he remained forty-nine days, "prepared," he says, with admirable resigna-

tion, "to receive the crown of martyrdom, for which I long with all the ardor imaginable." If this were really true we cannot help asking why did he escape in such haste from Lyons? This happened in 1614, the second date we find in his life.

Seeing that he made no resistance to the unjust treatment to which he was submitted, Vanini was released from prison and permitted to return to Italy. Here he instructed the young, receiving scholars of all degrees; and with that supreme independence which everywhere made him an object of suspicion and exposed him to danger, he made the philosophy of Averroës the subject of one of his first lectures. Next to Aristotle, Vanini reverenced Averroës, but unfortunately the latter was regarded with horror in Italy. He had written against the Christian religion, calling it false and absurd. The Jewish faith had been denounced by him as childish, and the Mohammedan as vulgar. A wild outcry of indignation mingled with disgust greeted Vanini's discourse. Again he was forced to flee that his life might not be taken by an outraged populace, who saw in him nothing but the lowest form of depravity.

The multitude had still another basis upon which to rest its suspicions. Vanini had written books which daily became better known and more questionable. His *Amphitheatre* and *Dialogues*, which already had served to implant new ideas in the minds which dared to think, caused the clergy, whose suspicions were the more acute in proportion to their ignorance, to look upon Vanini's writings as impious in the extreme. To use their own language, "religion was therein tied neck and heels together, and delivered into the profane hands of atheists." The books underwent examination and were finally condemned to be burnt.

For the first time, Vanini gave way to anger and de-

spair. He felt himself forsaken by the world at large, hated and shunned by all those men whose support and sympathy he most craved, persecuted by the Church, and forced to endure iron poverty. The desire for knowledge no longer served to cast bodily misery into oblivion, and with fatal impulsiveness he wrote to the Pope, stating that if the latter did not speedily show him some benevolence, he intended to turn the whole Christian religion topsy-turvy in three months' time. "I am inclined to believe, however," says the writer who records this fact, "that Vanini wrote the letter merely to give vent to his spleen and divert himself about it later with his friends. But there is hardly any likelihood of his having actually sent it to Rome. Princes have long arms, and the Popes yet longer ones than other princes. Vanini was not yet so disordered in mind as to insult in so daring a manner God's lieutenant upon earth. 'I would rather,' he says somewhere, 'draw upon me the anger of Horace than that of one of our inquisitors.'"

His *Dialogues*, written in Latin, contain at once the most elevated and the most fantastic ideas. It would be difficult to fathom the motives which inspired them. The dedication, which is addressed to the Marshal of Bassompierre, is a curious mixture of flattery and absurdity. "What shall I say," it reads, "of the charms of your beauty? 'T is by means of it that you have enjoyed the tenderness of an infinite number of ladies. 'T is also that same beauty which triumphs over the conceit of atheists, imposes silence upon them, and suppresses their impiety—for when they but contemplate the majesty and stateliness of your countenance, they must readily own that even among mankind some traces of divinity are to be found. Were I a disciple of Plato," he concludes, with a fresh burst of admiration, "I should kiss and adore you as the soul of the world!"

The value of this eloquence was somewhat impaired by a private letter from Vanini to the Marshal, humbly requesting pecuniary assistance. An advertisement follows the dedication, wherein Vanini is called the prince of philosophers and a second Aristotle; while in the first page of the *Dialogues* his interlocutor is introduced exclaiming: "Good God, Vanini, what a loss it must be to those who are deprived of your conversation!" The book deals rarely with religious matters, and much that it contains is pervaded with a general tone of frivolity. He introduces himself frequently as one of the personages, much to his own advantage. On one occasion he holds an imaginary conversation with Solomon, whom he denounces as the most insipid of moralists, to which Solomon replies by calling Vanini the god of true philosophy. The unhappy custom of attracting attention to his own merits, which so often brought him into trouble, must rather be regarded as the out come of his extreme youth and peculiar temperament, than actual vanity. When it is borne in mind that Vanini was but thirty-four when he was put to death, and when we consider his wonderful mental achievements during the few brief years he was permitted to exercise his talents, we cannot but admit that he was a man of extraordinary genius. That he was aware of his own superiority from the first dawning consciousness of intellect is evident, and that he gloried in it was but natural. Surrounded from the beginning by thousands who could neither appreciate his intelligence, understand his learning, nor pardon his faults, he had, nevertheless, sufficient courage to declare his opinions boldly, and endurance enough to suffer, uncomplainingly for the most part, the insult and persecution heaped upon him. That he was irresolute, often inconsistent, and always impulsive does not detract from his strong intellectuality, nor cause his steadfast adherence to the object he held in view to be forgotten.

To return to the *Dialogues:* "In what religion have the ancient philosophers adored God?" inquires Alexander, with whom he is conversing. "In the religion of Nature only," Vanini replies; "which Nature is itself God, since it alone is the origin of the motion impressed in the souls of all men. All other religions to those ancient sages were but illusions, not created by good or evil genii (for they never believed there were any such beings), but by princes and magistrates in order to curb the people. These illusions were fomented by ambitious and covetous priests, who, being unable to perform miracles to confirm its veracity, made use of certain Scriptures, the originals of which are nowhere to be found, and of which the rewards and punishments regard another life for fear that the imposture should be discovered in this. For who ever returned from beyond the grave? Thus it is that the vulgar are kept in slavery by the pretended dread of a Supreme Being who beholds all things and will reward and punish. Fear in this world," he adds, quoting from another philosopher, "has first occasioned Gods."

"Eternal punishment!" he exclaims further on. "What is it? Something that cannot be proved." "But the Scriptures"—his interlocutor begins. "A holy answer," interrupts Vanini, "that gives no uneasiness to atheists, for they have no more faith in that holy book than I have in Æsop's fables, old women's tales, or the superstitions of the Koran."

Although all these sayings are represented as emanating from anybody rather than Vanini himself, the deception was too transparent to remain hidden. He seems to have taken great delight in his *Dialogues*, however, which was not the case evidently with his *Amphitheatre*. He says in the former book that he had advanced many things in the latter which he did not believe. "Vanini," says Alexander, "you have given a physical reason why that child mentioned in

your *Amphitheatre* spoke immediately after its birth." "Pah!" cries Vanini, "I have said many things in that book which I don't believe myself. So goes the world." "I am not surprised at it," retorts Alexander; "I tell my friends every day that this world is but a nest full of fools. I can except, however, princes and popes," he adds judiciously.

It is probable that much that was written in his younger days and imbued with a spirit of boyish bravado, was actual truth to him as he grew older. His mind, however, became gradually so strangely unsettled that his thoughts lost every trace of reasonableness. Each day that passed seemed to lead him into fresh folly. He grew astonishingly reckless, and his free discussion of matters which brought him under the strictest surveillance was carried on with a marked assumption of independence.

He was more and more suspected and hated, indignation against him reaching such a pitch that he was finally arrested at Toulouse and condemned to be burnt. The best account of his trial and execution is that given by Gramond, of which a portion may be quoted:

"About that time," he says, referring to the formal accusation brought against Vanini for his writings, "was condemned to die, by order of Parliament, Lucilio Vanini, who was esteemed an arch-heretic, although I have always considered him an atheist. For I think a man who denies the existence of God deserves the latter rather than the former title. This wretched fellow laughed at whatever was sacred or religious. He abominated the Incarnation of Christ and denied God, esteeming all things to be made by chance. He adored Nature as a fruitful mother and first cause of all beings. This was his greatest error, and he had the boldness to teach it in a place so holy as Toulouse. He had a great number of followers among

those who just came from universities, and who, being young, were more susceptible of new opinions. Having been born in Italy, he began his studies in Rome, applying himself successfully to those particular branches: philosophy and divinity. But falling into impiety and despising holy things, he blemished his religious character by an infamous book in which he had the impudence to assert that Nature was the God of the Universe. Having retired to France on account of a crime[1] of which he had been accused, he made his appearance in Toulouse. There is not a town in France where the laws are framed with greater severity against heresy, and although the Edict of Nantes has granted to the Calvinists open liberty of trade between them and us, nevertheless those sectaries have not dared to trust themselves in this place. No person is tolerated in Toulouse whose faith is in the least suspected by the Holy See. Vanini concealed himself for some time, until vainglory induced him to treat some mysteries of the Catholic church problematically and afterward to deride them openly. The young men were at first struck with admiration, being weak enough to esteem those things which have few approvers. They valued whatever he said; they imitated and followed him. Being accused of corrupting youth, Vanini was cast into prison. He behaved at first as a Catholic and feigned orthodoxy, which put back the punishment he deserved. He was on the point of regaining his liberty, owing to the ambiguity of the proofs against him, when Franconi, a man of fortune and great merit, affirmed that Vanini had often, in his presence, denied the existence of God and scoffed at the mysteries of the Christian religion. The accused and the accuser were brought together, and the latter maintained what he had advanced. Vanini was brought before the Senate, and,

[1] The crime is not specified, but it probably refers to some misconduct of which Vanini was supposed to be guilty while sojourning in a convent.

being seated, was asked what were his thoughts concerning the existence of God. He answered that with the Church he adored a God in three persons, and that Nature demonstrated the existence of a Deity. Then, perceiving a straw lying on the ground, he took it up, and holding it in his outstretched hand spoke to his judges as follows: 'This straw obliges me to confess that a God exists. A grain being cast into the earth appears at first to be destroyed, and whitens. Then it becomes green and shoots forth out of the earth, growing imperceptibly. The dew aids it in springing up, and rain gives it still greater strength. It is furnished with ears, of which the points keep off the birds. The stalk rises and is covered with leaves. It becomes yellow and rises higher. A little while after, it withers and dies. It is threshed, and the straw being separated from the corn, the latter serves as nourishment for man, and the former is given to animals created for the use of man.'

"He concluded from all this that God was the author of every thing. For, in answer to an objection which might be raised to the effect that Nature was the cause, Vanini again took his grain of corn and reasoned thus: 'If Nature produced this grain, who produced the grain which preceded it? If that was also produced by Nature, let us consider its foregoer, and thus go to the very first grain, which must necessarily have been created, since we can imagine no other cause of its production.'

"He very amply proved afterward that Nature was incapable of producing any thing, whence he concluded that God was the creator and author of all things. But all this he said from vanity or fear rather than conviction. Notwithstanding, as the proofs against him were convincing he was, by decree of Parliament, condemned to die. I saw him in a cart when he was carried to execution, making sport of a friar who had been sent to comfort him and

reclaim him from his obstinacy. Vanini, wild and stubborn, refused the consolation of this friar, and even insulted him by saying, 'When your Saviour died, he sweated with weakness and fear. In going to suffer death, I die undaunted.'"

"However," Gramond continues, "this villain made a very ill use of that philosophy of which he boasted. His aspect, just before execution, was wild and horrible. His mind was uneasy and anxious, though from time to time he cried out that he died like a philosopher. That he died rather like a brute cannot be denied. Before they set fire to the wood-pile, he was ordered to put out his tongue to be cut off. This he refused to do, nor could the executioner take hold of it but with his pincers. When it was cut off he uttered a cry like the bellowing of an ox. His body was then consumed by fire and his ashes thrown into the air.

"Such was the end of Lucilio Vanini," concludes the historian. "That frightful scream he uttered proves his small share of constancy. I saw him in prison, I saw him at his execution, and likewise knew him before he was arrested. He was a wanton voluptuary in the world, but a devoted Catholic in prison. He went to execution destitute of philosophy, and at last ended his life raving mad. While living he penetrated to a great extent the secrets of Nature. When his goods were seized there was found a great live toad shut up in a large crystal bottle filled with water, upon which he was accused of witchcraft, but he answered that the toad when consumed by fire was a sure antidote against all diseases. During his imprisonment he often went to partake of the sacraments, cunningly dissembling his real sentiments. But when he found there was no hope of escape he disclosed them, and died as he had lived."

It is to be recollected, however, that the foregoing account was written by an avowed enemy, and that there is reason for concluding that Vanini, so far from exhibiting cowardice or want of fortitude under his sufferings, really displayed courage and endurance of the highest order. The moment sentence was pronounced upon him and a horrible death became inevitable, his vacillations ceased, and he assumed a degree of constancy and determination which never left him. As Barin[1] says, he asked for no pardon, he went to the stake with resolution, and he died with as much constancy as any man who had ever lived. For as he left the Conciergerie with a smile upon his face, he said in Italian: "Let us go joyfully to die for philosophy." If the utterance of a single cry when his tongue was cut off be evidence that "he died like a brute," there are many others whose deaths have passed into history as examples of fortitude whose reputations will have to be revised.

There is probably another error in the account as given by Gramond. He states that as soon as his tongue was cut off his body was consumed by fire, leaving it to be inferred that he was burned alive. The sentence of the court, as published for the first time by M. Cousin,[2] was that after making the *amende honorable*, he should be "taken to the *Place du Salin* and attached to a stake to be there planted, where his tongue should be cut off and he strangled, and after that his body should be placed on the pile to be there erected and burnt, while the ashes should be scattered to the wind."

In forming our estimate of Vanini's character, we are at once struck with the fact of his numerous and marked inconsistencies of conduct and language. In the matter of his religious belief, for instance, we find him at one time

[1] "Les Martyrs de la libre Pensée," Paris, 1880, p. 221, quoted from *Le Mercure de France*.

[2] "Fragments de Philosophie Cartésienne," p. 86.

uttering the most decided atheistical opinions, and at another, confessing that to doubt the existence of a God would be an act of supreme folly. Indeed, although he was burnt at the stake after having been convicted of atheism upon what was deemed, and probably was, for the period, ample evidence, it is exceedingly questionable whether he did in reality disbelieve in a Supreme Being, the creator of the world. Professor Blakey, of Queen's College, Ireland, declares that it is very obvious that Vanini was not an atheist in the common acceptation of the word, and, in support of that opinion, quotes a passage from the *Amphitheatre* in which the existence of a Deity is attempted to be demonstrated.[1] We have already seen how, at his trial, Vanini argued from the existence of a straw that there must of necessity have been a creator of the seed from which the straw was derived.

It is more than probable that he affected atheism and other doctrines which he did not really believe, merely from a spirit of bravado. In his *De Admirandis Naturæ*, etc., he declares that he had in his *Amphitheatre* written many things which he did not believe, and he then coolly adds, *così va il mondo*, "so goes the world." In this work, too, he displays the most sceptical and intolerant spirit, and expresses himself with a degree of bombast and vituperation which greatly detract from the originality, the courage, and the logical reasoning of his writings. Yet, when in prison, he assumed a depth of piety so profound that his jailers declared that they were guarding a saint.

This was undoubtedly due to his possessing a mind so ill-formed that had he lived at the present day he would have been classed among the insane. In his time, insanity was not studied as a branch of medical science, and only the most broadly marked types of mental

[1] "History of the Philosophy of the Mind," etc., London, 1850, vol. ii, p. 161.

alienation were recognized. Even then, if characterized by profanity or blasphemy, it was considered a form of demoniacal possession, to be treated by the strong arm of the law rather than by therapeutical agencies. That Vanini was endowed with genius of the very highest order not even the most virulent of his enemies have ventured to deny. But it is now a well-established fact that the possession of an intellect capable of strong manifestations in one or more directions is by no means incompatible with the existence of such a generally bad mental organization, that experienced alienists of the present day would not hesitate to pronounce a person so constituted insane. Under the name of "reasoning mania," medical science designates a condition in which those who are its subjects, though remarkable for the sharpness and often brilliancy of their mental processes, are nevertheless generally incapable of systematic and long-sustained intellectual effort in any one line of thought. They lack the sustained power of attention without which the strongest mind is of little avail. They are egotistical, impatient of contradiction, abusive of their best friends, intolerant of all opinions but their own, and while not subject to fixed delusions of such a character as to be recognized by those about them, are yet actuated by eccentric and erroneous beliefs altogether at variance with the idea of mental soundness. No obligations bind them, no inducement, unless appealing directly to their selfish instincts, restrains them. They are the pests of the age in which they live, and society, which once put them to death if their vagaries led them into the denial of God or other absurdities of belief, now scarcely knows how to deal with them otherwise than by letting them alone. They are often met with as the founders of new sects, as the discoverers of new and impossible motive powers, as the promulgators of all kinds of "advanced" ideas, and occasionally as the au-

thors of remarkable books or inventions for which the world will always be their debtor. Had Vanini lived at the present day, he would scarcely have been satisfied with the mild and hardly disreputable renown to be obtained by professing atheism. His active mind would have led him into some more startling and unexplored region of thought, and while it is not at all probable that the world would have been any the wiser or better for any thing he could have said or done, it is very certain he would have made a commotion in any part of it in which he lived. The desire for notoriety is but an exaggeration of that love of fame which urges great men to great deeds, and even influences the humble laborer in his daily toil. The individual of badly balanced mind, sharp-witted and clever though he may be, knows that he cannot obtain the distinction he craves by honest intellectual labor, for he feels himself incapable of such work. He therefore perpetrates some act which astounds the world, and for the time being draws all eyes toward him. He fires the temple of Diana, or kills a President.

" Whence comes it that we have so much patience with those who are maimed in body and so little with those who are defective in mind?"—PASCAL.

THE CASE OF GUITEAU—A PSYCHOLOGICAL STUDY.

BY GEORGE M. BEARD, M. D.,

NEW YORK.

IN regard to the case of Guiteau, the murderer of President Garfield, these conclusions are, to my mind, inevitable, and will, no doubt, be sustained by the experts of the future.

First.—Guiteau was taken insane at the age of eighteen years, while attending school at Ann Arbor, Michigan, and has been insane ever since.

Secondly.—The special type of his insanity is what is commonly and correctly called religious monomania. Although only a part of his delusions were of a distinctively religious character, they all, when traced to their ultimate radicals, had a religious origin, and were complicated with distinctive religious delusions from which he was never free.

This positive diagnosis is based solely on the conversation, conduct, and writings of Guiteau up to the time when he went to Washington to seek for office. His conduct while in Washington—including the murder of the President—is not taken into account in this opinion; neither, on the other hand, is his remarkable family history

of insanity and consumption. Even though he had never gone to Washington to seek for office, and had never murdered the President; though he had no family history of insanity or other forms of mental degeneracy; even if he had come as a waif from an unknown land, without a past, there would still be evidence sufficient—and more than sufficient—to convict him of insanity, in his conversation, conduct, and writings between the period of his residence at Ann Arbor and the time when he began to make application for office. Very few monomaniacs for whom I have been consulted have given as much evidence of monomania as he displayed in that period.

In the study of this subject, on which I had entered some time before I was summoned to testify,—I have looked up the histories of the most noted criminal lunatics of Europe and America, and I find that Guiteau went into court with a more abundant and more varied record of insanity than any criminal monomaniac that has ever been brought to trial in any country.

SCIENCE *vs.* POLITICS—HAD HE BEEN PROPERLY DEFENDED THIS FACT WOULD HAVE BEEN MADE CLEAR ON THE TRIAL.

In the presence of political assassination, science and law and reason are alike dumb; for politics like religion is rooted in emotion. Not until weeks had elapsed after the murder of President Garfield was it possible even for cold and resolute and disciplined natures to consider the question of the insanity of the murderer. Although it was a dishonor to jurisprudence that Guiteau should have been tried at all, inasmuch as, from a scientific point of view, it was as unnecessary, and grotesque, and comical an act to try him, as it would have been had he spent all his life in an asylum, where he belonged; yet as the trial must be held, it was a proof of the advance that has been made in American civilization that it was not anticipated by

lynch-law or vigilance committees, and that the prisoner had the same chance that he would have had if the victim of his insanity had been only a private citizen. A quarter of a century ago his trial would probably have been cut short, if not utterly frustrated, by an extemporaneous execution; or the jury would have considered their verdict—as long ago, in the case of Baker—in the presence of threatening bayonets.

It is a further evidence of the progress that our country has made in science, as well as in civilization, that authorities on the nervous system could be found to testify for science against the mob; and that of our leading authorities in diseases of the nervous system, not one testified that Guiteau was sane. The Salem witchcraft executions were not only not opposed by physicians, but were started and stimulated by them.

With politics, science in its relation to the present questions has only this concern—that it should ignore them. *Likewise, the question whether the insane should be punished like the sane; whether, indeed, they should not be doubly punished—first, for being insane, and secondly, for the crimes they may commit as a result of their insanity,—is a separate and legal issue, with which the question of the insanity of Guiteau has simply nothing to do.*

RECONSTRUCTION OF PSYCHOLOGY.

Although the reconstruction of psychology in its relations to insanity has been a long-standing want of science, yet such reconstruction was not necessary for a right understanding of the case of Guiteau. Long before most of those who were connected with this case were born, the main problems connected with the form of insanity that he represents had been analyzed, though not exhaustively, yet with intelligence and thoroughness, so as to eliminate

therefrom the elements of mystery and difficulty. Both in France and Germany, this special type of insanity—monomania—has been understood and described, with various illustrations, in authoritative literature, to which during the long trial but little reference was made.

But although the reconstruction of psychology is not necessary to solve the mystery either of the Whittaker or the Guiteau case, yet such reconstruction is a great aid in solving them; and he who clearly understands what such reconstruction should be, is better prepared to understand either of these cases. He who has a clear and correct definition of insanity,—which it is entirely possible to have,—he who knows and can state the symptoms of sanity, has already solved for himself half the problem of such cases; but he who has no definition, or who has a bad one, who does not know what either sanity or insanity is, or if he do know cannot tell, may study such a case as that of Guiteau for centuries, and never come near its solution,

Newly discovered seas require new charts to aid those who would navigate them, although one may, with difficulty, proceed without such charts, by soundings and observations made as he explores. But the case of Guiteau is not a newly discovered phase of insanity; it has been understood in a general way for decades, and the distinctive phenomena connected with it have been marked out, explained, and made clear by those who are well organized for right reasoning on psychological problems.

PERSONAL EXAMINATION NOT ALWAYS NECESSARY IN CASES OF INSANITY AND NERVOUS DISEASE.

There is a belief rooted in the profession and in the people, so deeply that it will probably remain for centuries, that all that is necessary is to see a patient in order to make a diagnosis. With many forms of disease, probably

with the majority of diseases as they occur—acute and chronic,—a personal examination of the patient is either necessary or at least a very great aid in making a diagnosis; but there are many cases of nervous disease, and particularly of functional nervous disease, and certain phases of insanity, where a personal examination is needless, provided all the facts of the patient's life bearing on the question of his disease can be obtained from trustworthy sources. *A physician who is not competent to make a diagnosis in certain forms of nervous disease without seeing the patient, is not competent to make a diagnosis after seeing him*, and would be quite as likely to err after making a careful examination as before; and this applies with full force to some cases of monomania, and it applies very well to the case of Guiteau. The physicians who gathered at Washington at the beginning of the trial had, or seemed to have, a hope that a personal and protracted examination of the prisoner would aid them in answering the question whether he was insane; but if an expert in this particular type of insanity could not make a diagnosis before going to Washington, he would not be very likely to make a correct diagnosis after going there; for there was little or nothing in his personal appearance, or in his conduct or conversation, to assist in making a diagnosis, *for one who had before him all the facts of his life, and his history from childhood and youth. Probably no monomaniac patient was ever put into an insane asylum with such a detailed history as has Guiteau;* and if from that history an expert could not judge whether he was sane or insane, I do not see how he could judge at all. *With all the facts before him—as they were correctly published long before the trial began,—an expert in monomania living in the heart of Germany or far up in the Appenines, can make the diagnosis as well as if he lived under the shadow of Washington jail.*

I had four interviews with Guiteau, at different times,—once in a private room in the court-house, and three times in the jail,—and I watched his conduct in the court-room at different times, and I cannot say that any information that was obtained from those interviews or from watching him in court was of any important assistance save in illustrating diagnosis. Probably no one of the experts summoned to testify spent as much time in studying Guiteau as I did.

When there is a question of feigning, special and repeated personal examination is necessary, and it may be necessary to keep it up for weeks, but in the case of Guiteau—as we shall see—the question of feigning these symptoms could not arise. In most or all of the cases of criminals that have puzzled experts for months there has not been a history of the case extending from childhood up to the time of the commission of the crime, and it has been necessary to rely in part upon personal examination in making up the diagnosis.

In the Whittaker case, on cross-examination, I was asked if it were possible to make a diagnosis without seeing the patient, and I replied that it was. If I could not make a diagnosis without seeing the patient in some cases of nervous disease I would burn my diploma.

The *treatment* of patients by medicine and hygiene is quite a different matter; for this, personal examination and watching may be necessary for weeks or months.

CONFINEMENT IN ASYLUM NOT THE ONLY SURE SYMPTOM OF INSANITY.

While the Guiteau trial was going on, an inmate of one of our asylums killed one of the physicians (Dr. E. A. Adams, of Michigan Asylum), and the murderer was not tried, nor, I believe, arrested; *and if Guiteau had been in an asylum, or had just escaped from one, at the time he com-*

mittted the murder, he would never have been tried. Some years since I went to visit the Blackwell's Island Asylum; I found that Dr. Parsons, the superintendent, had been stabbed in the neck by one of the patients, who had made a knife out of an iron bar that was in his cell, and had kept it secreted for weeks, in readiness to do this deed, showing not only great skill and ingenuity but also elaborate premeditation; this man was neither tried nor arrested. A few years ago, also, a well-known physician connected with one of our asylums was killed by a lunatic who, if I remember rightly, was not arrested or tried.

These facts suggest two professional and popular delusions relating to insanity.

First, that inmates of asylums are necessarily more insane than many who are out of asylums; and the fact that the murder is committed by a patient in an asylum is logically a reason why he should not be tried, convicted, and hanged.

The second delusion is that if an insane person has not yet reached an asylum, the presumption is that he is not insane, provided he commits no crime. There are in this country hundreds and thousands of monomaniacs, melancholiacs, and dipsomaniacs, some of whom are liable under excitement to kill some one; and many of these are quite as insane—by any standard of insanity—as many of the inmates of asylums. It will probably take many years to disconnect in the popular mind the idea of insanity with asylums, and to overcome this delusion—*that all those who are in asylums cannot know right from wrong.*

It is probable that if in any of the above-mentioned crimes and murders committed by asylum patients, the murderers had not reached the asylum, they would have been tried, and, unless they had strong influence in their favor, they might have been convicted of murder. The

asylum shields them, although a very slight amount of testimony—two physicians, non-experts in psychology—is needed to put them in an asylum. *It is quite safe to assert that there is not in any insane asylum in this country a person who had given as much evidence of monomania before he was committed as Guiteau had given before he murdered President Garfield*, or before he went to Washington to seek for office. On the trial several physicians testified to the insanity of Guiteau—far more than were needed to send him to an asylum.

Dr. C. L. Dana, of this city, presented at the last meeting of the "National Association for the Protection of the Insane and the Prevention of Insanity" an important statistical statement, that of the more than sixty thousand lunatics in this country, upward of twenty thousand were outside of asylums. If any one of these twenty thousand lunatics commit murder, he is to be arrested, tried, and, if possible, convicted, the distinctive diagnostic symptom of his insanity—moral decline—being brought in evidence against him. If any one of the forty thousand lunatics who happen to be confined in asylums commit murder, he is not arrested or tried, nor even hunted by the press or the people. If this be science, what is non-expertness? if this be justice, what is injustice?

These three facts, then, should not be forgotten by those who are trying to make themselves experts in the case of Guiteau.

First.—*Had he been in an asylum at the time he committed the murder, he would never have been arrested, nor even damned by the people or the press, even although he had not been half as insane as he is now.*

It was only by a series of accidents and neglects on the part of relatives and friends that he was kept out of an asylum during all these years. On his friends rests the real

responsibility for the assassination; Mr. Scoville is the real murderer of President Garfield.

Second.—*There is no asylum in the world—public or private—that would not have taken Guiteau at once, at any time during the past twenty years, and kept him as long as his friends desired to have him remain, on the certificate of any physicians who might, or might not have known any thing about insanity.*

One physician, Dr. Rice, was ready with his certificate years ago, but while waiting for another, Guiteau left the town.

Third.—*If he had murdered a common citizen instead of the President, he would probably never have been tried.*

In the case of the modern Abraham, Freeman, of Pocasset, who, under divine inspiration, murdered his favorite daughter, there was not even a trial, although he had not exhibited one thousandth as much insanity as Guiteau.

If Guiteau had failed to hit the President, it is probable that he would not have been tried.

PSYCHOLOGY IN COURT.

A court of justice is the last and worst of all places in which to attempt to make clear the facts of any science. Of all the processes known to the human mind for investigating scientific truth, this is perhaps the most awkward and amusing, being in all respects more non-expert than committees that in our societies are sometimes appointed to report on scientific problems.

All the science of the world has been originated, developed, and organized by men working mostly in obscurity and silence; and even for the comparatively inferior task of popularizing truths that others have discovered, a court of justice is, on the whole, the most unscientific arena that civilized non-expertness has ever yet conceived, or could con-

ceive. Two sides, two lawyers, neither trying to get the truth, but the opposite of the truth; both seeking not to inform, but to deceive the jury; non-expert experts hired as horses are hired, to go whither they are driven, to be harnessed and let loose as they are wanted; a jury whose chief and highest recommendation is that they do not read, or cannot understand what they do read, and have not understood sufficiently to form an opinion, and who serve because they have little else to do; a judge knowing less than the least of any science, and in this country not expected to question witnesses, only to attend questioning, as the witnesses are alternately insulted and pressed to perjury—like an umpire in a cock-fight, to call off one side or the other if too much blood is drawn;—such is science as it appears in English-speaking courts, and has always appeared, and for a long time to come is likely to appear; insanity faring no worse than any of its sister sciences, save in this, perhaps, that it draws more severely on the emotions, and is less understood than any other science, and one in which experts are very rare indeed. Not only scientific facts and philosophizings, but simple matters of every-day observation that relate to medico-legal cases can be better obtained outside of than in a court of justice, even when, as might possibly happen, the lawyers and the judge are men of force and culture and conscience.

The mysterious power that the oath once had has passed away, and many who will not lie will, under the pressure of emotion, cheerfully and conscientiously commit perjury; and if they do not so directly, will do so by suggestion, by telling half truths, the sections of which are so far apart that their connection cannot be seen by the jury. Conviction for perjury is hard and rare; and hell is doubtful or far away. A very graceful, attractive, and popular way of deceiving the jury, is for the witness to substitute his own

limited and oft-times useless personal experience and recollection for the recognized and established truths of science. In the case of Guiteau this was done to a degree unapproached in the history of Anglo-Saxon non-expertness. In this case, as in most of the great cases that come before the courts, many of the most important facts—those which are of the highest use to a scientific man who is aiming, not to gain a cause, but to solve a problem, rather than to serve an employer—were kept out of court entirely, and from the beginning to the close of the long trial were not referred to by either side.

Several times in my presence the lawyers in that case declared that an expert should not decide except on the facts obtained through the trial; but the trial—long as it was—brought out little on either side that was not well known before, and known to be substantially correct, and left out many of the most important and demonstrable facts that were far more worthy of credence than the testimony of any of the witnesses on the stand.

There is probably no disease known to medical science but can be disproved before an American court of justice, provided great interests are at stake, and hot passions and professional ambition aroused to prove the contrary. I am sure that I have never seen a case of nervous disease, organic or functional, local or general, mild or severe—insanity or any kindred affection, hysteria, epilepsy, neuralgia, or neurasthenia—that could be established before such a court as the one at Washington, however clear and sure the case might be—perhaps on the borders of death,—or of however long standing; and there would be no difficulty, if the emotions of the other side were on fire, and financial, political, or religious interests were involved, to produce hundreds and thousands of witnesses to swear unitedly, in caucus, as has been done in the case of Guiteau, that the patient was well

or nearly so, that he was shamming or might be shamming; and the jury, knowing no more of the subject than the chairs in which they sit,—the court knowing no more than the jury, the lawyers on either side knowing no more than the court,—would be as likely to decide against, as for, science and justice.

Such is the status of science in American courts in this latter part of the nineteenth century; such it must remain, until we reach a far higher civilization than now seems very near at hand.

Believing heartily in the principle of trial by jury—and by non-expert jurors, for psychological reasons to be stated elsewhere,—it is yet a question in protracted and complex cases, where science enters or professes to enter, whether a toss of pennies—heads or tails—would not often come as near to justice as a jury is likely to do.

THE FOUR CORNER-STONES OF INSANITY.

Insanity is a disease of the brain in which mental responsibility is seriously impaired.

The science of insanity has for its foundation these four corner-stones.

First.—*All insanity implies irresponsibility in some direction, if not in many directions; an insanity entirely responsible is a contradiction.* Mental responsibility may be impaired without being *seriously* impaired, but that is not insanity. If a person be mentally responsible in all directions at all times, he cannot be called insane, however severely he may suffer from physical disease. The instincts of the world recognize this fact, and, despite the charges of judges and the feeling of the people, juries will rarely convict a lunatic of crime, unless, as in the case of Guiteau, he be without money and without friends.

To be insane and to be responsible is a contradiction of

terms, since the very essence of insanity is irresponsibility. To say that a lunatic is responsible, is to say that a sick man is well, that a bad man is good, that vice is virtue, that error is truth, that black is white, and that what is is not. He who is responsible along the whole line of his being, and at all times, is no longer insane; the appearance of responsibility involves the disappearance of insanity.

Second.—*All insanity is partial insanity.* The belief in total insanity is one of the same delusions of our civilization. Even in the nearest approach toward a total eclipse of the mind, as in dementia, in raving mania, and imbecility, the light yet breaks through the cloud at times, if not all the time, and over the dark border appears the splendor of the corona. We cannot utterly shut out the mind any more than we can utterly shut out the sun; death is the only total insanity; and by the decisions of English judges, and by the talk of the streets, and the cries of the mobs, it is the only condition that should be urged in excuse for crime. Not only is all insanity partial insanity, but insanity is usually very limited and narrow in its range. The storm that sweeps through the forest does not prostrate every tree, but leaves many leaning or standing here and there, though perhaps shaken, their branches torn and fallen, the fruits, leaves, or blossoms scattered on the ground or flying in the air; successive storms appear, each more violent perhaps than its predecessor; and yet, after these, some shall be standing still. What we call insanity is really not insanity but the resultant of the struggles of insanity with sanity—a composition of forces, a resultant of the interaction of the elements of health with the elements of disease. While it is not true that no man is wholly sane, it is true that *no man is wholly insane.* To argue, as the world does, that because a suspected lunatic exhibits sanity, has memory, or reason, or acuteness

of intellect, or apparent physical health, he must, therefore, not be insane, is as unphilosophic and as inexpert, as to infer that all physical disease is a delusion, so long as a single atom of health remains. The worst cases of small-pox, or of yellow fever, or of leprosy, are only partially sick; cancer does not wholly eat us up, and the fatal poisons leave most of the body unaffected. All disease is partial disease; until we reach death, we are partly well.

If only those who are totally insane should be relieved from responsibility for crime, then no lunatic could ever escape.

As there is no such thing as total lunacy, and as what we see of the conduct of the insane—including their conversation and their writings — is but the result of the struggle of insanity with sanity, it follows that their statements in regard to themselves are likely to mingle truth with error, and so by experience it is proved; the insane man will sometimes admit his insanity, and quietly and scientifically recognize it. Not long ago, a man who was under my care for disease of the brain sent me word that he was crazy as he could be. This was almost the only true statement relating to himself that he made for weeks. Sometimes the insane will deny their insanity one minute, and admit it the next; but neither their denial nor admission of their insanity has of itself any scientific value.

In one remarkable case of artificial insanity that I know of, a letter was written by the patient while in an insane condition. Of the writing of this letter he had no remembrance; but about half his statements were true, and half untrue.

The changing and inconsistent talk of Guiteau in regard to his sanity and insanity was of as little worth as the inferences that were drawn from it.

In insanity those mental phenomena that are sane will be all the brighter and more conspicuous by contrast with

the insanity, as the corona on the border of the eclipse is more brilliant than the full light of the sun.

In insanity, as in trance, the force which is turned away from some channel that is blocked up by disease rushes through the channels of sanity that remain unobstructed, with heightened velocity.

In such cases as that of Guiteau there is in special and restricted spheres an abnormal brilliancy, a kind of compensation for the impoverishment and destruction of the rest of the moral nature. Those witticisms and epigrams of George Francis Train, Guiteau, and other monomaniacs of that kind, are paid for by the overthrow and dislocation of a large part of the faculties. These symptoms of sanity in a monomaniac may be preserved in their force and splendor for years and years: as the eyes of the Cuban beauty, it is said, retain their lustre long after all her other charms have faded.

In mental as in physical disease, health is in perpetual conflict with disease, and the forces of health are usually stronger than the forces of disease. Our bodies are battle-grounds for contending armies,—health on one side struggling with rheumatism, gout, neuralgia, cancer, consumption; on the other, cancer is cancer none the less though its phase be local and years may pass before the whole body becomes cancerous. One lung may be gone, eaten away by tubercles; the patient is a consumptive, and may die, though the other lung be sound. If the knee or the ankle be inflamed by chronic rheumatic disorders, the patient is a rheumatic, though the arms and back be well. *So insanity is still insanity though the mind be not wholly impaired.*

Third.—*In all insanity there is moral impairment.* The term "moral insanity" is as unscholarly and tautological as the term muscular paralysis; for as there can be no

paralysis without paralysis of the muscles, so there can be no insanity without moral impairment.

As well might one believe that a frost could smite a tree all filled with flowers and leave those tender blossoms untouched, as that insanity could smite the brain and leave the delicate and sensitive moral nature undisturbed.

Moral decline is indeed one of the forerunners—almost always the primary symptom—of approaching insanity, coming to the front long before any other symptom, and forcing itself even on non-expert eyes,—the first, as well as the last symptom of disease of the mind. *Insanity without moral decline is not insanity.*

The existence of insanity without disturbance of the moral nature is inconceivable to the human mind. In any case of mental disturbance, where responsibility is perhaps slightly impaired, the absence of moral decline would of itself establish the diagnosis, and make it clear that the person was not insane. While it is true that in some cases the moral nature is more affected than in others, yet in all cases the moral nature is, and must be affected.

The term "intellectual insanity" is as needless and tautological as the term "moral insanity," and should be disallowed for the same reason that the term "muscular paralysis" is disallowed.

Fourth.—*The insane, when they commit crimes, usually know right from wrong, not only in the abstract, but very often in the concrete; and it is this very knowledge that causes them to commit crimes.* When they murder they know that they are violating the law, and they are conscious of such violation before and after the commission of the crime and during the time of such commission. The sane commit crime for some purpose, to gain something, imagined or actual—money, fame, revenge,—to gratify love, hate, ambition, or greediness; *but the insane commit crime for crime's*

own sake, without hope or chance of reward; they kill, not to gain any thing, but simply *because killing is a dreadful thing* to do; they kill their dearest and most loved ones, because such murders are more terrible than ordinary murders. When the insane commit suicide, it is not always to relieve their distress or to escape from evil, but because self-murder is a horrid and criminal act; they kill themselves for the same reason that they swear, talk obscenity, and eat their own excrements, and defile themselves.

According, therefore, to the laws and decisions of courts no insane murderers should ever escape—in or out of an asylum,—but they should be punished more severely than the sane, since they not only know right from wrong, but do the wrong simply and solely because it is wrong; insane murders are more fiendish than sane murders.

INSANITY NOT SO MUCH LOSS OF KNOWLEDGE AS LOSS OF POWER.

Knowledge is weakness. Standing on a dizzy height we are sick and trembling, and perchance we fall, through our very knowledge that we are are on a height; if the eyes had been blinded, if we had not known where we were, we should have been safe. A man in the rapids of Niagara, borne down toward the falls, may know the danger just as well as his friends standing over on the shore; but it is this very knowledge that unnerves him; his whole force is concentrated in this knowledge, and in the fear that is the offspring of that knowledge, so that no force is left to escape the danger; did he not know that the falls were near he might, without aid, reach the banks in safety.

Such is the philosophy of the crimes of the insane: *their knowledge of the wrong makes them do the wrong.* The other day one of my insane patients took a beautiful prayer book, a valued gift from her husband, and tore it up leaf by leaf and put in the flames; and this she did *because* it

was so beautiful, *because* it had sacred memories and associations, *because* it was a precious gift from a husband whom she absorbingly loves; had it been but a common and cheap affair she might not have cared to burn it. For tearing and burning, substitute stealing and killing, and this tender and loving and most conscientious girl must, by the decision of Judge Cox, be hanged by the neck until she is dead.

Fortunately for lunatics and society, juries, except in the height of popular storms, usually give no attention to the charges of judges that a knowledge of the distinction between right and wrong is evidence of sanity, or the want of such knowledge insanity. *When a man has physical and mental force enough to commit a great crime, the presumption is that he knows right from wrong as well as a sane man;* and very often—though not always—he knows right from wrong in reference to the special act that he commits. *The moral impairment of the insane is not in knowledge, but in power,—in the capacity to abstain from doing what they know to be wrong.* Lunatics lose their power of originating, of discovering, of learning new truths, and striking out in new paths; but they do not lose entirely what they have already known of morals, arts, sciences, politics, or religion. Indeed, it is because these criminal acts are wrong, and they know they are wrong, that these lunatics commit them. Their delusions and impulses force them to seek relief by some terrible outward expression; just as a man in a passion finds vent for his feelings in profanity, or in walking up and down the room in a violent manner. And the more horrible the crime, the greater, oftentimes, the relief they obtain by committing that crime; so great indeed, that in many cases they are restored to reason thereby, and begin to take measures for escaping from the consequences of the act.

All the facts connected with Guiteau's history tend to

confirm his own statement that he was greatly relieved after the murder of the President; his own expression was, "I never felt so happy in my life."

If we could suppose a society in which murder was not regarded as a crime or a wrong, but a sweet and pleasant thing to do, it is doubtful whether lunatics would commit murder.

A powerful emotion, sane or insane, calls for a corresponding powerful expression of that emotion; whence it is that the crazy fancy themselves to be divinely commissioned, or in partnership with the gods; the natural is too small and mean for their feelings, which can only be gratified by taking hold of forces above and outside of nature. The more diseased the brain, and the more helpless, oftimes, the insane may be, the grander and more magnificent and more supernatural their delusions.

PSYCHOLOGICAL ANALYSIS OF GUITEAU.

In the investigation of the Guiteau case I have availed myself of various sources of information. I had given the subject my careful attention before I was summoned to testify. I spent three days in different weeks in Washington; had four separate interviews with the prisoner, at three of which prolonged conversations were held; I had numerous conversations with his brother-in-law and counsel, Mr. Scoville; his sister, Mrs. Scoville; and his brother, J. W. Guiteau; and also conversed with several other persons, whose names have not yet been brought before the public.

In my interviews with the prisoner at the jail and the court-house I have discussed many topics, and went over the leading events in his life; and at my first long interview, before he came on the stand, I subjected him to a cross-examination which was very much like that to which he was subjected to by Judge Porter, and he gave to my questions

very much the same answers that he gave on the stand.

I made minute inquiries in regard to his habits, his amusements, his reading, his friendships, his education, his disappointments, his love experiences, and his domestic life; and also made a detailed investigation in regard to the history of disease in the different branches of his family. Among the facts which I thus learned, and which were not brought out on the trial, are the following:

In his childhood and boyhood he was called studious, energetic, and very ambitious; he was an extravagant admirer of Henry Ward Beecher and Horace Greeley; when Mr. Greeley died he felt severely afflicted.

The writings of these men, the Bible, and the newspapers were about all the literary nourishment that he has ever had in his life. Of the poets and the classics he has known but little; and modern science—which has been more popularized in his day than ever before in the history of the world—is to him as though it had never been. I could not ascertain in my conversation with him that he had even known the names of the leading scientific men of the world. In his school days he was somewhat distinguished as an orator, and during the trial his oratorical ability was conspicuous, despite the craziness of his manner. There is no evidence that up to the time when he was at Ann Arbor, when he was eighteen or nineteen years of age, he had been other than a well-behaved boy; he had but very few friends, was retiring in his tastes, was obstinate, but, to say the least, was not a bad boy, nor did he promise to be a bad citizen.

These points were not brought out as clearly and in as much detail on the trial as they might have been. From his conduct and conversation during this period we have a standard by which to judge his conduct and conversation in later years, after he became insane.

In estimating the character of Guiteau we have three sources of information.

1. Evidence as to his character during boyhood.

2. Evidence as to his character from the time he left Ann Arbor to the present time.

3. Behavior since the assassination, in and out of court, including his conduct, his conversation, and his writings. On the trial he has been his own counsel, his own witness, his own expert, and his own judge, for he decided points of science and law, and gave an address and charge to the jury.

The facts gathered from all these sources, including those which are well known, and those that I have obtained myself and which have not been published heretofore, make it clear that Guiteau was originally a person of more than ordinary intellectual force.

There is no evidence that he had any genius for science; but he surely had qualities of thought and of expression that might have made him successful either as a public speaker at the bar or in the pulpit. He certainly is the flower of his family; his power of statement is far above the average of uneducated men, and has not been destroyed by his cerebral disease.

It is this power of putting things which has made his trial at once a disgrace and a comedy, and which has confused and puzzled and exasperated experts and non-experts; for it must be allowed that no one in that court-room could compete with him in the simple power of isolated statements, and this gift he has shown not only since the assassination, but in all his active life. His rhetorical strength, however, is in limited, single, detached statements; logical, profound, connected paragraphs are, and have been, beyond his capacity. In the immense amount of literature that he has given to the world, it is doubtful whether

twelve consecutive, clear, and coherent sentences can be found; certainly not in those that relate even incidentally to his delusions. All the links of the chain are there, but they are not joined, but rather tossed about hither and thither, singly, like quoits, each one good and strong of itself, but without relation to any other; he is incapable, and has all along been incapable, of prolonged argument or illustration; his insanity forces itself constantly to the front, breaking in upon his eloquence and his rhetoric. His utterances in and out of court that so startle the nation are like fiery shafts of sunlight breaking through the cloud, that seem all the stronger and more surprising from the contrast to the darkness through which they pierce.

The mind of Guiteau is never free from eclipse, though it is never totally eclipsed; but the splendor of the corona, the unexpected streams of light, keep us in constant surprise. His mind revolves rapidly and in obedience to law, but in a very narrow orbit that is easily calculated.

Analyze all that Guiteau has done during the past twenty years or more, and we find that he has been walking around and around in a peck measure; a repetition, without end, of words, thoughts, and arguments mostly borrowed, though often true and sagacious, but never coherent, when considered in relation to each other. Even his power of blackguardism is limited; he does not swear, he does not use obscene language, and his list of terms of reproach is as short as it is uninteresting and repelling. His memory is good, has always been good, as it usually is, in these cases of monomania; but of judgment that requires connected thought and the recognition of the relation of things to each other, and of one's self to external nature, he has little. The most unfortunate and unscientific defence that was at first attempted—that he was naturally an imbecile or fool—was abandoned; for very

soon it was found that, like George Francis Train, he was not originally a failure, but endowed with power of thought and of epigrammatic statement; and though he is now a ruin, yet an interesting ruin—the wreck of a ship that might have made a noble voyage,—amid all these flashes of smartness and unintentional wit Guiteau has been doing the most insane things that are possible to one afflicted with monomania. Insanity has been struggling with sanity, as it has been all his life, and the sanity has attracted more notice than the insanity; for the same reason that we are dazzled more by the light of the sun as it breaks through the cloud, than by the cloud itself.

Like all the insane, Guiteau has been immoral; he has been a cheat, an adulterer a murderer, a literary thief, a religious and political tramp; but if he were moral, he must be sane, *for the essence of insanity is immorality.* To bring up his immoralities as proofs of his sanity, as was done in the court, is as non-expert as it would be to point to the pitting in a case of suspected small-pox as a sign that the patient did not have the small-pox. While the immoral are not usually insane, *the insane are always immoral.* The philosopher who said that he learned manners from the unmannerly, by avoiding what they did, would do well to visit asylums for the insane, where love and tenderness, mercy and sympathy, charity and benevolence, kindness and reciprocity, forbearance and courtesy, sweet and delicate attentions and affections,—all minor, all major virtues are almost unknown. Insanity makes us children, makes us savages, makes us animals.

Guiteau is without malice, incapable of revenge; neither nature nor brain disease has given him the power of prolonged emotion, evil or good; he is, and has ever been, with all his insanity, an animal of impulses and transient attacks of passion. Under excitement he has used—very often uses

—language that seems to show that he hates his relatives, even his sister, who, alone of all his family, understands him, and his brother-in-law, who has given his time and strength to his defence; but I have seen the members of the family sufficiently, and talked with the prisoner and relatives enough to make it certain to my mind that his permanent feeling toward them is not unkindly, and that he appreciates in a fractional, disconnected way—as far as a lunatic can—what they have done and tried to do for him. In his relations to his friends, as in all other respects, he is out of harmony with his environment; he is violent because he is insane; but neither his temper nor his insanity makes him revengeful. His striking his father, and raising the axe against his sister, years ago, were the effects of transient exacerbations of insanity, and not of sustained and treasured ill-feeling. I have lately had under care a monomaniac that is a duplicate of Guiteau in this respect.

In the witchcraft trials and murders in Salem—between which and the trial of Guiteau there are interesting resemblances,—the very facts, which, to an expert in psychology, established the innocence of the victims, were held to be the stoutest proofs of their guilt. In the Guiteau trial the worst insanities of the prisoner were daily bulletined as proofs of his sanity. Had he kept quiet in court it is possible that some of the jury might have brought in a verdict in accordance with the evidence.

On the first of my three visits to Washington to study the case of Guiteau, I found that he was at that time composed in manner; he sat near his counsel, and although he interrupted occasionally, he spoke quietly, so that the court was interrupted but slightly. At that time I predicted that he might, and probably would, become worse as the trial proceeded; this prediction was fulfilled; for, afterward, when he was placed in the prisoner's dock, he became more

and more furious in behavior, declaiming with a loud and angry voice, so as to be heard all over the hall.

I see no reason—despite the history of his family—why, if he had gone to Yale College and completed his education, as he wished to do, instead of going to the Oneida Community, as his fanatical father forced him to do, he might not have grown up to be a respected and able citizen; for while the lower education, with its complications and repetitions, in early life may, and often does tend to develop insanity in a child, yet the training of the intellect in the higher branches of English study, rightly managed, and, indeed, in spite of the defects of our educational system, is one of the best preventives of insanity. Just the opposite course was urged and carried out by his father, who plied his son with superstition, and finally drove him to the Oneida Community, which has until lately existed as a survival of mediævalism in the midst of our civilization, where religious belief or profession of belief has been made the support of free-love and the violation of law. While the mere going to the Oneida Community was not in itself a proof of insanity, yet for an energetic, able, and ambitious man to leave his studies and break up all his plans of life, exile himself from home and friends and rush to this society, was as immoral and frantic an act as could well be committed; and, even without connecting this with his subsequent life and the murder of the President, is proof to my mind that his insanity began at Ann Arbor.

Guiteau is not specially heroic nor specially timid; he does not wish to be hanged, but he is willing to be hanged, and if necessary will go to the scaffold as he would go to the breakfast-table. If he must die, he would die dramatically, picturesquely, publicly; with insane attention to details, as the adjustment of the rope and the arrangement for the agents of the Associated Press; with insane inattention

to the main and only issue, the deprivation of life; and with an insane speech on his lips. Those who believe that the primary object of civilized punishment is revenge—to get even with our criminals,—and who insist, as some have done, that Guiteau should be tortured as well as killed, have only to abolish the newspaper and their triumph will be complete.

WORTHLESSNESS OF PHYSICAL SYMPTOMS BEFORE COURTS.

The physical examination of Guiteau gave no information to one seeking an answer to the question whether he was or was not insane.

In cases of this kind usually, and in all cases of asserted insanity before the courts, the physical symptoms are of no value, and should never be referred to by either side. The diagnosis of insanity for legal purposes is made only by the conduct and conversation, including the writings; contrasting them with the conduct, conversation, and writings of the same individual before he was insane, and that of other individuals of the class and order to which he belongs.

True enough, physical symptoms without number accompany insanity as premonitions, parts of the medical picture of the disease, but are not diagnostic of the disease, and have no value in court, except to confuse and confound judges and juries, and pervert science before the people. The hair may be stiff and long; there may be tumors in the external ear; the eye and the retina may be congested; the tongue very foul and coated; the face and head more or less asymmetrical; the pupils may be unequal, may flash, or glare, or be dull; the face may be very red, or very pale; the lips may twitch; the tongue may tremble, or turn to the right or the left, or may be protruded; there may be deviation of the palate; the skin may be harsh, cold, or dry; the nails may cease to grow, or grow more slowly, or

become fissured; hang-nails may abound; the reproductive organs of both sexes may suffer in ways beyond number; all the secretions may be perverted and disturbed; the perspiration may be increased or diminished, or become unpleasantly odorous, and the breath likewise; there may be profound constipation and great indigestion; the voice may be changed; the power of singing impaired; there may be drooping of the eyelids; there may be coldness of the extremities; there may be evil dreams and bad sleep, or no sleep at all. But not long, stiff hair; nor tumors in the external ear; nor congested eyes and retinæ; nor drooping lids; nor foul and coated tongue; nor asymmetrical face and head; nor unequal pupils; nor flashing, glaring, or dull eyes; nor very red or very pale face; nor twitching lips; nor trembling tongue, nor tongue turned to either side, or protruded from the mouth; nor deviation of the palate; nor dry, harsh skin; nor changes in the nails; nor hang-nails; nor disturbances of the reproductive organs; nor perverted and disordered secretions; nor increased, diminished, or malodorous perspiration; nor indigestion; nor constipation; nor changed voice; nor coldness of the extremities; nor analgesia, nor low body temperature; nor evil dreams, bad sleep, or no sleep at all;—not one of these symptoms, nor all of them combined, make for us a diagnosis of insanity.

If, in any case of insanity that comes before the courts, some one, or many, or all of these symptoms appear, there will always be enough of mental symptoms obtained from the conduct, conversation, or writings to make it possible for us to establish a diagnosis, provided we can get the facts in regard to their history; and if we cannot get these facts we cannot make a diagnosis.

In the case of Guiteau there was a facial asymmetry; but I have seen cases of asymmetry again and again in persons who were not insane, and never would be insane; and at

Dunlap's, where the experience in measuring heads is very great, they tell me that the only person whom they ever knew to have a perfectly symmetrical head was a fool.

I often see unequal pupils in persons in comparative health, or those who are simply neurasthenic.

In one of my visits to Guiteau, there appeared to be a slight inequality of one of the pupils; but one of the lawyers, who appeared to be a strong, vigorous man, had inequality of the pupils of a very decided character. Guiteau informed me, on my first visit to him, that in early life he had masturbated, and that since he had been troubled with emissions, and was especially troubled in that way while in jail; but thousands have such a physical history who are not insane, and who, however severely they suffer physically, are never to become insane.

To refer to the physical symptoms of insanity before a court is the worst possible mistake, both on scientific and popular grounds. Even in studying a case medically, physical symptoms are mere incidents; aiding us, it is true, in determining the precise nature of the insanity, but they are never indispensable to a correct answer to the question whether a man is or is not insane. In the Hayvren case, lately tried in Canada, the expert testimony was injured by reference to physical symptoms. (See Dr. Kiernan's excellent analysis. *Chicago Med. Review*, Feb. 5, 1882.) *Insanity is a mental disease, and is to be studied by mental symptoms.*

FACTS THAT PROVE THE INSANITY OF GUITEAU.

The facts in the life of Guiteau that establish his insanity, to my mind, may be arranged in three groups.

1st.—Those which were obtained through the press, and from other sources, previous to the trial.

2d.—Those which I obtained, after I was summoned to

testify, by a number of protracted interviews with the prisoner, and by conversations with his friends and relatives.

Some of these facts, which were of the highest importance, were not brought out at the trial, and were not made public until I called attention to them; some of them were not known even to the family of the prisoner; and are now published for the first time.

These facts alone—the facts that I obtained myself,—taken in connection with my personal examination of the prisoner, would convince me that he was a monomaniac, even although I had known nothing else.

3d.—Those facts which were brought out under oath on the trial.

These facts are, for the purposes of science, of the least importance of all; little or nothing was brought out on the trial that was not known before. The press and the people were substantially correct in their statements about the prisoner before the trial began, and little was done, or could be done on the trial, to make such statements more clear or more correct. On the other hand, some of the most important facts relating to the prisoner—facts which a scientific man trying to answer the question whether the prisoner was or was not insane, would consider of the highest importance—were not even referred to on the trial. This is usually the case with trials of this kind, where the question of insanity is raised. The rules of evidence and the custom of the courts in this country, as well as in England, whence we derive our laws, require the suppression and distortion of evidence both in fact and in expert opinion, in all cases where the question of insanity is presented; and yet, in spite of these hereditary difficulties under which the court labored, it succeeded in bringing out more proofs of the insanity of the prisoner than were ever before brought against any monomaniac arraigned for

crime either in England or America. It was indeed this excess of evidence that helped to convict him, for to the non-expert public many of the symptoms of insanity are thought to be the symptoms of sanity. The murder of the President was only one of thousands of his insane deeds, and scientifically it was of far less value than many other facts in the career of this lunatic. The one mistake of the defence was in trying to make the jury believe that Guiteau was insane at the moment when he fired the pistol. *If he was not insane twenty years ago he is not insane now.*

NEW FACTS OBTAINED INDEPENDENTLY BY MY OWN INVESTIGATIONS.

It had been stated in the papers that there was some woman whom Guiteau hoped to marry, and that one of his hopes in relation to securing the foreign appointment was that it would enable him to obtain the hand of this woman. Although I made many inquiries in various directions, I could get no information on this subject; but at my last interview with Guiteau at the jail, in the presence of Mr. Scoville, I put the direct question to Guiteau, and asked him to frankly tell me all about it. He was a little disposed to be reticent, and I doubt whether at any of my previous interviews, or on any other occasion, he would have given me a direct answer. He blushed like a woman, hesitated a little, but finally gave me the following facts.

While in New York last winter, after the election, he became infatuated with the idea of marrying the daughter of a millionnaire living on Fifth Avenue, whose name he would not give. This lady he followed—as so often happens with monomaniacs—wherever she went; he went to the church which she attended, passed by the house where she lived, up and down the street, went twice to the house and asked to see her, and was told that she did not know him;

he wrote letters to which she sent no replies; he watched and waited for her when she left her carriage; in short, he acted just as erratic maniacs generally do; and followed her thus for a long time, whenever and wherever he could find a chance.

The lady, on the other hand, according to Guiteau's own statement, never replied to his letters, never gave him a word or even a look of recognition, and, indeed, in all respects utterly ignored his existence. Guiteau afterward found, to his disappointment, that this lady was not, as he had supposed, a daughter, but some other relative of the family; the daughter whom he supposed he was running after being an invalid, and confined to the house.

Guiteau's statements in regard to his life are generally verifiable; in the heat of passion, under the influence of anger in court and out of it, he may say things that are not true; but when not angry, in his cool, calm moments, his statements in regard to himself are truthful, and have been confirmed by a large number of observers. He does not, as a rule, hesitate to tell the very worst things about himself, and does not appear to care about the way they may appear to others, or the impressions others may derive from them. As he told this story to Mr. Scoville and myself he laughed, as any one else would do, over the absurd, grotesque denouement.

This was not the only time in his life when he manifested this insane symptom. Out West, as Mr. Scoville told me, he followed a young lady in the same way, went to her house, and inquired for the lady, followed her repeatedly, paying—as in the other case—no attention to the snubbing he received, and was finally kicked or horse-whipped by the father of the lady.

Not a few cases of monomania have been sent to asylums for symptoms like these, when in other respects they were

perfectly well and sane. A daughter of one of the wealthiest men in New York City, a man whose name is known all over the world, was annoyed for months in this way by a man who was finally sent to an asylum and kept there for six months; and when let out and told that if he repeated the act he would be again sent to the asylum, he conducted himself in the same way as before, was returned to the asylum, and died there insane.[1]

A well-known merchant of this city had a clerk in his employ, a faithful, trustworthy, and useful man, who conducted himself every way properly, so far as is known, except that he was infatuated with his employer's daughter. This man also was sent to an asylum.

As New Yorkers will remember, Miss Nilsson, the singer, was annoyed in the same way by a man who persistently followed her, and she was relieved of his annoying attentions only by his being taken to an asylum.

I am informed by satisfactory authority—a prominent member of Congress—that about thirteen years ago Guiteau pleaded the case of a criminal in a court of one of our Western towns. The style of the plea and his conduct during its delivery were such as to convince all the lawyers who were present that he was a monomaniac. His talk was as senseless and grotesque as all his talk has been ever since he came before the public; and the whole speech in its matter was adapted best of all to injure his client, was indeed the speech of a lunatic; the manner was even worse than the matter; he talked and acted like a crazy man. There was a bar between him and the jury; he came up to this bar, jumped over it like a monkey, put his fist in the face of a juryman, and talked with great vehemence, to the amusement of the spectators; and his client was convicted, without the jury leaving their seats.

[1] My authority for these statements is Dr. T. H. Kellogg, who was then connected with the asylum.

Non-expert testimony of this kind would not be sufficient to convict him of insanity, but it is enough to call for investigation; and if his friends had brought such a fact to my attention at that time, I should have said the case demanded investigation. This is non-expert testimony; but nearly all the testimony on the trial was non-expert testimony, and by this he was convicted.

FACTS BROUGHT OUT IN COURT.

The facts under this head are so familiar that it is not necessary to repeat them in great detail; some, if not all of them, were contained in the hypothetical questions which were prepared by the prosecution; but were so stated and arranged as to give, in some instances, a wrong impression. The questions, however, as a whole, were sufficiently fair and correct to enable one familiar with this form of insanity to form a judgment, even without some of the inferences which were employed in a number of the phrases. I was, therefore, prepared to answer those hypothetical questions which had been prepared by the prosecution, and by them put to their witnesses, and to say that they were sufficient evidences of insanity, as they were. I went on the stand prepared with that testimony, as was stated in court, and should have given it if the court had allowed. The hypothetical questions prepared by Mr. Scoville for the defence I would not have answered, and I so told him; although the prisoner was insane, and I knew he was insane, I did not obtain that knowledge from the facts contained in the hypothetical questions of the defence, but rather from facts some of which were contained in the hypothetical questions prepared by the prosecution.

PHYSICAL ANALOGUES TO MONOMANIA.

A very good physical analogue to monomania is the dis-

ease called "writer's cramp," and the affections allied to it. Those who have had this disorder, or who have seen others suffering from it, know that while their muscles are apparently as strong, as firm, and as sure for all other movements as ever; while they may sew, knit, or play on instruments, or do various sorts of work requiring complex play of the muscular machinery of the fingers and hands, yet, in the severe cases, as soon as an attempt is made to grasp the pen and to write, cramp or convulsions follow; the writing becomes jerky, tremulous, and illegible, like that of very old age; the pen slips or drops from the hand, and in some cases is hurled involuntarily across the room. The mental faculties of the monomaniac, like the condition of the muscles of a person affected by this disease, are strong and under control for all or nearly all combinations of movements, perhaps, except one,—and for that one as helpless and irresponsible as are the muscles in the worst stages of writer's paralysis. Monomania is writer's cramp of the mind.

Yet another excellent physical analogue to monomania is in local St. Vitus' dance, limited twitching of the muscles, as of the eyes or the face. General St. Vitus' dance, where the whole body is thrown into convulsions, all know by observation; but these limited and protracted choreas, the special insanities of certain groups of muscles, the muscular monomanias of the nerves, as they might be called, are not quite so familiar to the laity, nor so well understood by physicians.

The facial spasms, which all have seen, are types of this special and limited chorea. And they are far harder to cure than general chorea, in which the whole body is thrown into spasms; partly because they are chronic, and are not treated until they have got strong, and become a fixed habit. Monomania is the local chorea of the mind.

When we look at a beautiful young lady, perfectly well in all other respects, and with no signs of chorea, except in a few muscles of the face, a twitching of the lips and eyebrows, and when even that is only shown under excitement, and stops entirely when we look at it and study it, or the patient is conscious that we are watching her, it is difficult to convince the observer that the person is really a sufferer, although she is afflicted with one of the most distressing and incurable of diseases. For the same reason it is hard to persuade any one that the monomaniac who appears healthy, whose mind even is strong and vigorous for certain acts in many directions, is thrown into spasms along certain lines of delusions, which are as much beyond his control as the muscular convulsions of the sufferer from writer's cramp or St. Vitus' dance.

Another good analogue for monomania is ataxy. The ataxic patient is not thoroughly paralyzed; his power of motion is not paralyzed at all, though the nerves of sensation may be much altered. The ataxic patient can take a single step as well as a person in health, perhaps two steps; but when he attempts to take a succession of steps he becomes irresponsible, for want of coördination; he walks like a drunken man. Insanity is ataxy of the mind; the lunatic has single thoughts that, in themselves, are as sensible, clear, just, and wise as those of any other man; but attempting to link a series of thoughts in a logical arrangement in the line where his delusion interferes, the insane man at once shows his infirmity, as the ataxic patient shows his ataxy when he attempts to walk across the room. Monomania is mental ataxy.

Guiteau, in his conduct in the court-room, was one of the best illustrations of this mental ataxy. In isolated statements of law, of fact, or even of science, as bearing on his case, he was as lucid and as wise as any one in that court

room; but during that long trial, in conversations touching the subject of his delusions, not once did he utter, nor could he utter, half a dozen sensible, rational sentences. He could ask a witness a single question, and there he stopped. A prolonged examination of a witness would have been as much beyond his power as it would be beyond the power of an ataxic patient to walk on a chalk line.

I have gathered details of a large number of cases of monomania more or less analogous to that of Guiteau. Some of these cases are derived from my personal experience with patients; others are gleaned from French and German authorities. These cases, together with facts in the differential diagnosis of vice and insanity, of fanaticism and insanity, of genius and insanity, and the symptoms of sanity, will appear at a later date.

A CASE OF SUBACUTE DIFFUSED CORTICAL CEREBRITIS.

Reported by Dr. H. C. WOOD.

Jno. C., age 58 years, was admitted into the surgical ward of the University Hospital August 30th, with double hydrocele. The radical operation was performed, and by the 10th of September the local symptoms had subsided. He now began to complain of peculiar sensation in the hands and feet, for which he was transferred to the medical ward September 13.

On entrance he was pale, anæmic, and feeble in appearance, with very poor appetite ; but no symptom of disease was discoverable, save only those now noted. In walking he suffered from a sensation as though he was stepping on rollers, and also had other indescribable podalic paræsthesia. Deep pressure upon the sole of either foot a little behind its centre caused, apparently, great pain, but no other evidence of local disease could be discovered. The hands at times had in them disagreeble sensations, and were somewhat tremulous, especially when he was excited. The muscular powers were unimpaired. He was very easily excited, especially when talking of himself, and on these occasions often passed into a hysterical condition, weeping and crying violently. There was distinct retinal hyperæsthesia. The sleep was very poor, and much broken by startings and jerkings of the muscles. The diagnosis at this time was hysteria developed by excessive genital irritation and general feebleness. He denied syphilis, but was put upon the use of iodide of potassium and bichloride of mercury ; bromide and other antispasmodics also being administered.

By the 20th of September there was no distinct alteration of his symptoms, except only that there seemed to be some hyperæsthesia of the whole lower extremities.

On the 23d he was found at the morning visit to be very irritable and fretful, crying out whenever feet or legs were touched. There was also marked intolerance of light and loud sound, which startled him very much ; but he made no complaint of headache, in fact denied its existence. About 11 A. M. he suddenly became maniacal, yelling at the top of his voice, tearing his hair and clothing, rolling and tossing about in his bed, in which he is only kept by physical force. At times he had distinct opisthotonos for a few minutes, followed by convulsive movements. The face and eyes were congested. The eyes closed, but the pupils sensitive to light. Sensation and consciousness were entirely lost. After some hours of this condition he became quiet and passed into sleep, from which he wakened greatly prostrated, partially conscious, and getting out of bed, walks his cells, in great dread and fear. The feet and legs were now extremely sensitive. Seizing his feet would cause him to cry out.

9:24 (from note-book).—During the night slept scarcely at all ; he is continually walking the floor, talking to himself ; offers no violence to any one, but expresses great fear, and attempts to run away when approached, but yields when taken hold of and spoken to in a firm voice ; shows no evidence of seeing visions ; takes his food, and will at times talk intelligently for a few minutes. Bromides and chloral given in very large doses.

9:25.—At the morning visit there was no perceptible change. He continues to walk room constantly, with wild and staring eyes, and anticipates injury all the time. In the night he had another violent attack in which he raved furiously, and made repeated attempts to bunt down the door with his head, producing several scalp wounds. Morphia, chloral given regularly ; bromides, milk punch, and supporting diet.

9:26.—No change.

9:27.—He slept well last night, and awoke without fear or excitement. Lies in a semi-stupor most of time ; will, when roused, speak intelligently for a few minutes, but soon begins to mutter and talk incoherently. Evening temperature 106°

9:31.—Since last note no change ; temperature a very fraction of a degree above normal ; somewhat more rational ; complains of light hurting him, and that objects appear very indistinct.

10:3.—No decided change in the symptoms. Hyperæsthesia pronounced ; most of the time patient somewhat irrational ; usually quiet, but sometimes gets restless and requires

some force to control. There are no local palsies, and the general muscular force is fairly maintained, and electro-muscular contractility and sensibility everywhere normal; still hyperæsthesia, especially in the feet.

10:5.—General erysipelas of the scalp.

From this time the erysipelas increased, typhoid state developed, and death in coma occurred 4 A.M. Oct. 7th.

Autopsy.—Organs normal in appearance except the brain. Entire surface of the brain very bright red; pia mater intensely injected; no exudation into the membranes. Gray matter of the cerebral lobes reddish, and with very marked puncta vasculosa.

Microscopic examination.—Sciatic nerve normal. Gray matter of the brain cortex with their vessels everywhere intensely engorged, choked up, and swollen out with blood corpuscles; in some sections numerous very minute microscopic hemorrhages existed in the gray matter. The ganglionic cells in some places normal; in other places with their peri-ganglionic spaces wanting; in many places the cells seemed entirely to have disappeared. No change in the white matter, except in close continuity with the cortical layers; in these parts much congested.

HYPERÆMIA OF THE MEDULLA OBLONGATA.*

By J. K. MULVANE, M.D.,

ISABEL, ILL.

I TAKE the liberty of reporting a case which is the subject of diverse and conflicting metaphysical and pathological speculations among practitioners and the laity in this locality. The attention of neurologists is especially invited to a study of this singular and interesting case, in some respects the most extraordinary of which I have any knowledge, not excepting that of the French soldier referred to by Prof. Huxley in his address before the British Association at Belfast in 1869, and others presenting similar phenomena described by Brown-Séquard.

The patient is a lad aged 12 years, the son of James Lay, a farmer living near Brocton in this county. The clinical history of the case dates from an attack of cerebro-spinal meningitis, which occurred four years ago. In regard to that attack, in the absence of clinical notes I will simply state that it was unusually severe, there being convulsions and opisthotonos, with the usual symptoms characteristic of that affection; also partial paralysis of the right side. The disease pursued its usual course, ending in recovery, the paralysis continuing for some time after convalescence was established.

* Read before the Esculapian Society of the Wabash Valley, at Paris, Ill., Nov. 16, 1881.

The paralysis was treated with nux vomica and phosphoric acid, which seemed to have the desired effect, and the case was discharged as cured, though prematurely perhaps, as subsequent events would seem to indicate. Besides some gastric disturbance he would frequently complain of pain, generally referred to the left parietal region, and other symptoms pointing more or less distinctly to intracranial and spinal irritation. Early last spring these symptoms became more alarming, and I was again called to see him. I prescribed, as before, for the paralysis nux vomica, supplemented with other mild tonic treatment and counter-irritation over the cervical vertebral column, using emplastrum cantharidis as the external application. Under this treatment his condition improved, and I again discontinued my visits, though his father consulted me once or twice afterward and got medicine. Since then he was treated for a short time by Dr. Wagner, of Newman, and more recently by Dr. TenBrook, of Paris, Ill., who still later became associated with me in the management of the case. The disease developed into its present form about eight months ago. In every respect, with a single exception, which is the distinctive feature of the case, the lad's health is even better now than it has been for the last three years. His appetite is good, he grows rapidly, looks well, and generally sleeps well of nights. Every day, however, about 9 o'clock he passes into a state which is neither sleep nor conscious wakefulness. Unlike somnambulism, the phenomena of which it resembles, this state of things occurs only in daytime.

When I first saw him in his abnormal state his eyes were closed as in sleep, he could neither see nor hear, yet he would go about performing feats of which he was incapable in his normal state. Now, in the crisis his eyes are only partially closed, though hearing is totally abolished. In

his lucid intermissions he has no recollection of what occurred in his deranged condition. On the contrary, in his abnormal state his recollection is uninterrupted, he remembers every thing. As a rule, these attacks come upon him without warning. The head droops, his eyes close, and he remains standing or sitting, as the case may be, for some seconds before the crisis develops. These attacks are of indefinite duration and varying degrees of intensity; sometimes mild and transitory, passing off in a few minutes; at others violent and protracted, lasting hours. During the crisis sight and hearing are partially or wholly abolished; the remaining senses are unaffected, except touch, which is preternaturally exalted. Other symptoms, more or less prominent during or after the attack, are paralysis of the inferior maxillary branch of the 5th pair, subconjunctival extravasation, internal strabismus, tetanic spasm of the portio dura of the 7th; and, in a slighter degree, paralysis of the pneumogastric, as indicated by embarrassed respiration; also of the hypoglossal and glosso-pharyngeal, as manifested by imperfect articulation and difficult deglutition. All these nerves have their origin along the floor of the 4th ventricle; the trouble is, therefore, somewhere in that part of the central nervous apparatus. The extent, nature, and gravity of the lesion are less easily understood.

As I have said, usually a brief hypnotic period marks the access of the abnormal state. At first, his father would try to arouse him from this state, thinking to interrupt the attack, but all such attempts proved ineffectual—as well try to awaken the dead.

In his destructive moods, the father still expostulates with him about his behavior as if he could hear, but the boy, if inclined, goes on with his mischief, and if forcibly restrained, flies into a rage and shows prodigious strength for one of his diminutive size. In regard to his habits, gen-

erally he is cleanly and chaste, sometimes filthy and vulgar, performing the acts of defecation and micturition in the house or in the presence of strangers, regardless of sex.

With regard to remedies the therapeutics of the disease has been wellnigh exhausted. Ergot has been given on the theory that it diminishes hyperæmia of the spinal cord and of the ganglionic nerve centres. Bromide of potassium has also been given as a capillary astringent. Iodide of potassium has been given unstintedly. A belladonna plaster, applied to the spine by Dr. TenBrook, apparently gave temporary relief, as did the cantharides blister. Apparently the best effects have been obtained from the nitrate of silver, though, like the other remedies, it seems to have lost its influence.

The disease steadily progresses toward a fatal issue.

With regard to the etiology of the affection there seems to be a predisposing cause traceable to his father's side of the family, though undoubtedly the meningitis four years ago stands in a causative relation to the disease in its worst aspects. A younger brother died at the age of five, of some spinal affection, before the family came to this State. A sister was paralyzed at three, but is now married and in comparatively good health. Parents living; and I may state that the boy resembles his father more than his mother, both physically and mentally. At present he is awaiting admission to one of our State asylums for the insane, having had his trial before Judge Trogdon, the verdict being in accordance with the facts stated.

A CONTRIBUTION TO THE SUBJECT OF NERVE-STRETCHING.

IN

1. LATERAL SCLEROSIS; 2. PARALYSIS AGITANS; 3. ATHETOSIS, 4. CHRONIC TRANSVERSE MYELITIS; 5. SCIATICA; 6. REFLEX EPILEPSY.

By WILLIAM J. MORTON, M.D.,

NEW YORK.

THE position of nerve-stretching as an operative procedure in medicine is not yet a fixed one. Its merits, its limits, its mode of action are yet undetermined. There are strong arguments for and against it. The operation suffers in credit, in certain instances, from incomplete performance, —the nerve now lifted from its position and laid back without being stretched at all, or again crushed on the edges of sharp instruments, as if the intention were to perform neurotomy instead of neurokinesis. The physiological action of the operation is not understood, though at this moment this aspect of the question is being studied in various lands. Pathological observations are few and conflicting. From a clinical standpoint alone is the operation well advanced.

In this state of affairs, the neurologist may well feel justified in pushing onward the inquiry to other diseases than those in which it has already been tried, and in attempting to determine by actual clinical experiment its range of usefulness.

Already established as a justifiable procedure in chronic sciatica and painful contractures, attention has been seriously directed during the last year to the treatment of locomotor ataxy by nerve-stretching. More than two dozen cases are on record in which remarkable benefit has been derived from stretching the sciatic nerve. And though the limited number of cases and the length of time that has elapsed since the operations do not yet warrant a final and general conclusion as to ultimate recovery, it must, nevertheless, be conceded that the operation in question has effected more than any previously known method of treatment. And we may note in passing that, in case the method should become established, it would be not a little curious that a disease which had been assailed by almost all known pharmaceutic remedies should at last yield, if even in a limited percentage of cases, to a simple surgical procedure.

Prompted by the success of this operation in locomotor ataxy I determined to make a trial of it in the analogous disease, lateral sclerosis, or spastic spinal paralysis. A preliminary report of the operation and of its immediately favorable results was made at the annual meeting of the American Neurological Society, June 16, 1881.[1] Sufficient time (eight months) has now elapsed to justifiy a detailed report of the case, and to demonstrate that the attempt was justified by the event. Several cases of nerve-stretching in spastic spinal paralysis have been reported since. In order that as many sides of the operation as is possible may be brought forward I will also report in the present contribution a trial of the operation in paralysis agitans, athetosis, and chronic transverse myelitis, three other diseases in which, as far as I know, nerve-stretching at the time of their respective operations had never been tried.

[1] JOURNAL OF NERVOUS AND MENTAL DISEASE, July, 1881, p. 618.

Additionally, I offer a case of nerve-stretching in a case of chronic, rebellious sciatica in which the cure was immediate and absolute, and therefore corroborative of previous favorable experience of the operation in this disease; and, lastly, a case of reflex epilepsy, in which disease previous favorable results would seem to justify a frequent repetition of the operation.

I will report these cases in the order in which they have been alluded to.

CASE I.—*Spastic spinal parlysis:* Paresis; spastic gait; muscular tension; exaggerated reflexes; absence of marked sensitive irritations; stretching, at different times, of both sciatic nerves with remarkable relief of all the symptoms.

April 30, 1881. Valentine Bennett, aged 50, a cooper, living in Williamsburg, came to the clinic for diseases of the nervous system at the Metropolitan Throat Hospital. As he entered the room he exhibited in a marked manner the peculiar spastic gait. The feet were shuffled along in a stiff and cramped manner, the back was bowed over from spastic condition of the anterior thigh muscles, and locomotion as a whole was painfully imperfect. He used a heavy cane for support. The patient complained of loss of power in his legs, of stiffness in all his movements, of a twitching of the arms and legs during the night, which he could not control. He gave in brief the following history: Present trouble began ten months ago, after exposure. He went to sleep in a cold cellar after being heated. At first he seems to have had pain which he thought was rheumatism. The joints, however, were not red, swollen, or hot. "All the bones in his body ached"; "his tongue was thick," the extremities cold; had also "tremendous stinging" and shooting pains along the track of the sciatic nerves. At the same time he had, as now, twitching and cramps in his legs and arms, and an interlocking of the heels in walking; his legs "were like stakes." Soon there supervened a feeling of numbness and tingling in the hands and feet, together with much loss of power. During the past four months the general numbness and tingling have ceased, but the loss of power has decidedly increased and settled almost entirely in the legs; they are heavy, stiff, and unmanageable. He walks as described. Sensory troubles have gradually abated. There

have never been bladder, defecation, or ocular symptoms. No history of syphilis attainable.

Condition when examined: Gait spastic, legs stiff, toes pushing along the ground, each step accompanied by a slight hopping movement or elevation at the heels; his tendency is to topple forward; carries a cane; steps about six inches long; the heels often interlock. Rising from a sitting posture is accomplished with much effort. On making the attempt the body is drawn forward spasmodically, the legs begin to shake, and on the point of reaching an upright position the patient is likely to fall forward.

All the leg muscles are in a spastic condition and the tendinous reflexes exaggerated. Any attempt at passive motion is met by involuntary muscular resistance, which must be slowly overcome, and such an attempt provokes at the same time violent shaking of the member. If, in the sitting posture, the leg is caused to rest upon the toes, violent trembling ensues. Dorsal flexion of the foot causes the same result. Or again, if, while lying on his face, passive flexion of the knee is attempted, violent muscular clonic contractions ensue to such an extent that the patient's whole body beats the table rhythmically. The adductors are equally rigid, and a reflex may be elicited from them. A firm push with the finger in the gluteus maximus excites clonic trembling of this muscle; while, of course, the patellar reflexes are highly exaggerated. A slight numbness and tingling in the hands has lately appeared.

To these affirmative symptoms of lateral sclerosis must be added the negative. Sensation of all kinds is intact; there exists neither anæsthesia nor paræsthesia. There is no pain excepting a slight sorenes or sensitiveness of the soles of the feet. (Pain, numbness, and tingling occurred early, but ceased in a few months, with the exception of slight recent tingling in the hands.) No sphincter troubles of anus or bladder; no ocular troubles; no incoördination, or swaying on moving, or difficulty of walking in the dark, or with closed eyes; no atrophy. Skin reflexes normal; electro-muscular irritability normal.

In view then of the paresis, the muscular tension, twitchings, and the exaggerated reflexes on the one hand, and the absence of disturbances of sensibility on the other, nothing but a *post-mortem* could render more certain a diagnosis of primary lateral sclerosis, making the single reservation perhaps of a disseminated sclerosis attacking the lateral columns.

The patient was also carefully examined by Drs. Knapp and Fisher, clinical assistants, who concurred in the diagnosis.

Friday, June 16th. Assisted by Drs. Graeme M. Hammond, Allen, and Fisher. The patient was etherized. An incision made through the gluteus maximus, and the sciatic nerve of the *right* side lifted out of the sciatic notch on the forefinger, and vigorously stretched.

It required a very profound anæsthesia to overcome the involuntary shaking of the legs. The gluteus maximus was excessively thick, apparently normally hypertrophied by constant spasmodic action. The nerve presented nothing abnormal in its appearance. The finger was intentionally used to stretch with in order to avoid local laceration of nerve tissue. As far as can be judged by pulling on a spring balance for comparative measurement, a force of about forty pounds was exerted in pulling on the nerve. This was continued about five minutes, until a sense of something "giving" was experienced.

The wound was closed by wire sutures, dressed with carbolic oil, and the patient walked a number of blocks on his way home. No immediate effect in his walking could be observed. There was no numbness, and the patellar reflex was still as exaggerated as before.

June 22d. Patient reported as follows:

On June 11th, the day following the operation, there was no numbness and no sciatic pain, but the right leg twitched at times.

June 12th. Both legs "shook" on slight provocation, and there was twitching of the muscles of the right leg. This condition lasted for seven days, during which time he had not moved about much, owing to the soreness caused by the operation.

The wound healed quickly, and on the fourth day he had himself, with some family assistance, removed the wire sutures.

On this day, the 22d, he had walked over a mile to reach the clinic. The wound had healed by first intention. The patient's appearance had now greatly changed. His body was carried erect instead of bowed forward, and he walked with a long, free step without a cane. He says that he feels very much stronger in his legs, and that the stiffness and immobility have quite disappeared. He can get up at once from the chair and sit down again without, as before, putting his hands upon his knees and then falling into a tremble or shaking.

The soreness in the soles of the feet had disappeared, so that in place of the thick boots he had previously worn he now wore thin shoes.

The tingling which previously existed in the tips of fingers had also disappeared.

No passive movements of the legs, however suddenly executed, could now bring forth muscular spasm or the slightest trembling; the adductors had lost their rigidity; the exaggeration of tendinous reflexes was reduced almost to normal; the ankle clonus could not be evoked, nor the trembling while resting on the toe.

On June 23d, the patient was seen by Dr. William A. Hammond, who compared his present condition with his previous history, as given by himself, and considered the result as eminently satisfactory, as above reported.

July 1st. Up to the present time no relapse has occurred, and patient is walking about revisiting scenes and friends long unseen, on account of his infirmity. His last walk extended to five miles.

July 26th. Patient reports that his right leg "could not be better," but that the benefit at first experienced in his left leg from the operation was wearing away somewhat. On Saturday last after a long walk, and standing two hours on damp ground at a base-ball match, he went home, and soon experienced aching and soreness in the knee and calf, and numbness. Soon the leg began to twitch, and kept him awake all night by "jumping." These severe symptoms soon passed off, and the patient passed a comfortable summer. At his request I promised to operate on the left leg in the fall.

His family physician, Dr. J. D. Wade, of Brooklyn, writing under date of August 3, 1881, writes: "He (Bennett) has been suffering for about a year from some form of spinal difficulty, the exact nature of which I could not with my limited experience of these cases determine. I diagnosed it as a case of spinal softening, and treated it accordingly. The result was not very satisfactory, as he was gradually getting worse. Since the operation which you performed on him he has certainly been much better. It seems to me a novel method to cure spinal paralysis by stretching the sciatic nerve, but the result seems to verify your judgment in the matter. He is certainly very much improved by your treatment. Respectfully yours," etc., etc.

Oct. 11, 1881. The right leg, previously the worst, is now his best leg. Patient etherized, and *left* sciatic nerve at the junction of the middle with the lower third of the leg vigorously stretched. Using the finger hooked beneath the nerve, the leg was raised at least a dozen times from the table, and pulled from the centre and from the periphery. With the leg flexed at the knee the nerve lay in a loose sinuous loop upon the finger. With the leg extended this loop was greatly shortened and pressed upon the underlying finger.

Oct. 22d. Patient reports that on Wednesday, the day after the operation, he felt better. On Thursday night he had "jumping" in leg. On Friday this ceased. On Saturday, a slight trembling in the leg. Sunday, and ever since (six days), he has felt perfectly well. He now walks better even than after the first operation. There is a slight droop of the toes and liability to turn the ankle inward—due to temporary motor paralysis produced by the operation.

Nov. 1st. Tendon reflex, both legs, somewhat exaggerated. No trembling or clonus on passive motion; no cramps; no pains in soles of feet, or other pains. Walks naturally, but still with slight droop to left foot.

Dec. 17th. Patient satisfied that his improvement is great. Looking for work; walks miles—yesterday five miles. Before operations, he says he "crawled along" rather then walked. Tendon reflex alike in both legs and scarcely exaggerated. Trembling, none on getting up from sitting position or otherwise. Cramps, none. Soreness in soles of feet disappeared. Gait, walks as well as formerly, but "don't like to run." No muscular stiffness.

Jan. 23, 1882. Report as above. His only present trouble a slight weakness in the left knee and ankle.

It is not, of course, claimed that this case of lateral sclerosis is absolutely cured. But the result of the nerve-stretching has produced direct and appreciable benefits, such as no other treatment would seem to have been able to effect. The patient himself is now presented to the Society for verification of his present condition. It will be observed that the knee phenomenon is normal. Formerly repeated blows on the patellar tendon would maintain a continued extension of the leg. It is evident, also, that his spastic, crippled gait has changed to free, and long strides.

CASE 2.—*Paralysis agitans.* Sept. 26, 1881.

History.—S. F., planter, Louisiana, æt. 43; no neuropathic family history. Patient a healthy child, and now a strong, hearty-looking man. Present trouble began in the spring of 1875. At that time, while in perfect health apparently, noticed a "drawing" sensation in the left shoulder; can only describe this as a "feel-

ing" in the left arm and shoulder. In the summer the left leg began to drag, and the heel of the left boot wore away. No loss of consciousness, headache, loss of sensation, difficulty of speech, uninary or defecation troubles. This left leg never got any better, and within a few months the left arm began to shake, but not severely; he could control it. Two years later, 1877, about the same symptoms appeared on the right side, and in the same order: first in the arm, then in the leg; then the arm began to shake. Since 1877 the shaking or trembling has increased in severity, and is now involuntary. About 1879 the whole body, except the head, began to be comparatively rigid, and difficulty in walking increased. This spring, 1881, all his symptoms have become more pronounced, and he cannot now dress himself, cut his meat, feed himself, etc., etc. The head has become fixed and bent forward, and the trembling more severe and general. Walking is difficult and clumsy. He can assign no cause for his trouble. Has had no fright or other emotional trouble. As remotely interesting, it may be mentioned that two years previous to 1875 he accidentally shot a pistol ball into the flexor side of the *right* index finger, and shattered the bone extensively. The wound healed kindly.

Present condition.—Rhythmical, continuous trembling of both arms, severest in hands. Brief intermissions occur while lying down; the slightest attempt at purposed movements excites a violent shaking of the arms, which increases up to a maximum. Emotional disturbances have the same effect. The head never trembles; eyelids tremble when closed; tongue trembles slightly when projected; lips not tremulous; utterance slow and with effort; deglutition easy; in a close room has a feeling of oppression at the epigastrium, or, as he expresses it, feels "choked up." Trembling ceases during sleep. No nystagmus, amblyopia, diplopia, or vertigo. Propulsion and retropulsion marked, especially when tired. Is very "nervous," excitable, irritable, and easily moved to tears; much discouraged about himself. Gets greatly fatigued. Requires to have his position changed frequently. Walks but little, and that with assistance. The left leg is more unmanageable than the right. The rigid and "soldered together" look of the patient's body, as described by Charcot, exists to a marked degree. The head is rigidly fixed and projected forward; the trunk flexed on the thighs; the legs flexed at the knees; the arms flexed at the elbows. As he rises with great effort and with assistance from a chair he shoots forward a number of steps, and then stands or walks in the clumsy manner peculiar to these patients.

Passive flexion and extension are both difficult, and must be executed slowly on account of involuntary muscular resistance. No cramps, but the third toe of the right foot remained very persistently flexed. Patient's hands are the characteristic "writing-hands" of Charcot. Muscular power well retained but slowly

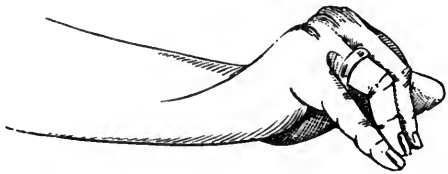

FIG. 1.—Paralysis agitans, "writing-hand," from photograph.

brought into action. Speech slow and not understood, except by those familiar with it. Dynamometer, right hand, 45 ; left hand, 55. Tendon reflex normal, but response slow. No alterations in general sensibility ; temperature normal ; sphincters normal ; sexual functions normal. [Has a child fifteen months old.] Electro-muscular contractility normal.

Treatment.—Patient had already experienced every treatment familiar to me in medicine. At one time he had returned to his home from New York with five hundred $\frac{1}{4}$ grain pills of nitrate of silver. At another he had taken chloride of gold for months ; again he had been treated by hyoscyamia, by the mouth and subcutaneously ; he had taken various bromides, zinc, strychnia, phosphorus, etc., and he had tried galvanism, and he continued to grow steadily worse. I felt justified, therefore, in treating him by static electricity.

I will not here give in detail his treatment by static electrization, since it would be a deviation from the purpose of this paper, but I will sum up its effects in a few words.

After various trials to the spine of sparks 8 inches long and correspondingly powerful, of direct shocks from Leyden jars to his spine and limbs, none of which benefited him in the least, I at length found that the general administration of small sparks (two inches) to every rigid muscle produced immediate results and cumulative benefit. After sparks had been directed during about fifteen minutes to the rigid groups of muscles at the knees, thighs, and elbows, the patient would gradually straighten up, with the head free and more easily rotated, the trunk erect, and

the legs straight; his speech would become clearer and the trembling less; the flexion even of the third toe, commonly present, would disappear. The results thus produced remained often as long as twelve hours, and since no other treatment for paralysis agitans had effected this much, either for physician or patient, the case was satisfactory to both for about one month.

But now occurred a relapse with great mental irritability and muscular rigidity and tremor. Under these disheartening circumstances—how disheartening every physician and every patient who has exhausted every resource may well judge of for himself—I proposed to the patient a trial of the operation of stretching the sciatic nerve, explaining to him fully the *pros* and *cons* of the plan. And I here report the case, because any operation of nerve-stretching in the present state of the history of this operation is worthy of report, because of the peculiar condition in which I found the nerve, and because of the decided benefit derived from the operation by the patient. In such a case it is not a question of cure; this latter seems to be almost unknown in the present stage of medicine.

Oct. 18, 1881. Operation. Assisted by Dr. Bowditch Morton and Dr. Sabal, of Jacksonville, Florida, the patient was etherized and an incision two inches long made at the junction of the lower with the middle third of the thigh. At this point the nerve is easily found; upon dividing the subcutaneous cellular tissue and the aponeurosis, the interspace between the biceps and the semi-membranosus is clearly defined On pushing aside the biceps the great trunk of the nerve is clearly seen. I would suggest to the non-surgical operator to work mainly with the director after dividing the subcutaneous cellular tissue, and to be especially careful not to cut through the fascia of the muscles, for in so doing he may be led much astray. The operation at this point is a very simple one,—much simpler than at the sacro-ischiatic notch, as performed in Case 1.

The nerve, when lifted out of its bed on the hooked finger, presented an appearance and created a sensation to the touch different from that of any sciatic nerve of a living person I have ever held in my hand. In external appearance it was large and round and of a dirty yellowish-brown color. Ordinarily the nerve is not as large as this one was, and it is rather flattened and of a pearly-white color (locomotor ataxia, lateral sclerosis, athetosis, and epilepsy), or else tumefied, reddened, and surrounded by tortuous veins (sciatica). To the touch the nerve was hard, firm, stiff, and

unyielding, and gave when stretched a gritty or creaking sensation. We may therefore conclude definitely, from the macroscopic appearances, that the sciatic nerve was in a condition of sclerosis. In fact, the stretching of the nerve was proceeded with carefully, owing to its peculiarly brittle feeling. These characteristics were verified by the gentlemen assisting me. I need not say that the temptation was great to secure a small fragment for microscopic examination, but the welfare of my patient forbade the attempt to do so. The nerve, however, bore a considerable weight in stretching,—as far as I could judge, of about forty pounds; the leg was lifted from the table several times, suspended by the nerve-loop; it was also pulled from the periphery and from the centre; each time that the spinal end was pulled upon the patient was partially aroused from what a second previously, from the breathing, and lack of skin and conjunctival sensation, seemed to be a profound anæsthesia. When pulling on the nerve there is experienced a peculiar feeling of giving or yielding, due probably to the yielding of normal connective-tissue adhesions.

The extent of the stretching may be indicated by this observation. With the leg extended the nerve could be raised a full inch above the level of the skin; with the leg flexed the nerve could be raised full two inches. It was remarkable to observe, in this as in other cases, how much free play in longitudinal movement there is normally in the sciatic nerve. This is easily demonstrated by resting the nerve on the finger and then causing the leg to be alternately flexed and extended; with each extension the subjacent finger is drawn down against the leg; with each flexion the nerve may be lifted up clear of the skin. Tremor ceased during etherization. Ether was borne remarkably well.

The nerve, now serpentine, was laid back in its bed and four silver-wire sutures and carbolic-oil dressing applied.

On recovering from the effects of the ether patient had very imperfect use of his leg. The toes drooped, the foot swung inward, and he could not advance or draw back the leg; sensation was nearly abolished.

Oct. 19th (day following operation). Patient in bed; general exacerbation of all the symptoms of his disease noted on the 15th still continues. Patient now, as then, restless, mentally irritable, and requiring to have his position frequently changed. Both hands tremble steadily, but may be stilled by being firmly held by his wife. Left leg (one operated on) has very little voluntary power. No marked diminution of cutaneous sensation.

Oct. 20th. Tremor continues; power returning rapidly to leg. The curious fact was now noted that leg operated on now responds normally and *quickly* to volition, while the right leg exhibits the same slowness of response noted for both legs previously. Patient walks about a little and thinks his left leg has now become his best leg.

Oct. 23d. Wound suppurated; washed out with carbolized water.

Oct. 30th. Left leg, though more easily moved in the sense that it obeys the will quicker, exhibits, nevertheless, certain localized and, so to speak, accidental paralyses, for the toe droops a little and the heel cannot be easily raised from the floor while the patient is in a sitting position.

Nov. 2d. Patient walks into and out of my office unaided.

Nov. 5th. Wound healed. Walking greatly improved; walks unaided and without cane. Slight drag to left leg; also slight numbness and subjective sense of swelling of the lower leg.

Various unimportant records are here omitted.

Nov. 20th. Steady improvement; delayed, however, by febrile attacks consequent upon a closed fistula ani.

The general rigidity of the legs, arms, trunk, and neck has almost entirely disappeared, so that patient now walks more freely and more erect. Passive flexion of arms, before resistant, now easy. Tremor less, *i. e.*, less severe, and longer periods of rest. Still some motor paralysis in left lower leg, gastrocnemii principally.

Mental irritability less.

Faradization to the paralyzed muscles caused daily improvement in them.

Patient now returned home.

On January 2, 1882, his wife writes:

"Mr. F. walks a good deal better; he walks every morning to the store, not a very great distance, but further than he was able to walk since the operation."

And again, Feb. 1: "His" (the patient's) "walking is a good deal better than before the operation."

In conclusion, I wish to repeat that this case is not reported with any idea of claiming a cure of paralysis agitans. It is merely a contribution to its treatment—an effort made to alleviate symptoms.

Viewed in this light, it offers various satisfactory points.

It is of course impossible to make an absolutely clear demarcation between the effects produced by static electricity and by nerve-stretching; but it is a fair inference that his general improvement was due to the localized and to the reflex effects of the direct application of the electricity to each muscle and to the peripheral nerve distribution; and that the special, isolated, and local improvement in the left leg, which, from being the worse became the better of the two, must be attributed to stretching of the sciatic nerve of that leg. In this connection it has already been noted that the stretching evidently brought the leg in better communication with the volitional centre, as seen in the superior command at once gained over its purposed movements.

The usual remissions in chronic nerve complaints must also be taken into account.

Whether the operation would be worth repeating in cases of this disease is a question that each must decide for himself.

For my own part, I would not, on the limited amount of evidence that I have presented, offer an opinion to any one else.

CASE 3.—*Athetosis;* beginning in childhood; right side.

Since the discovery and naming of this disease by Dr. Hammond in 1869, observers have not failed to note cases of this peculiar disease, lying midway, in its characteristics of rhythmical, peristaltic, and yet forcible movements, between the quick and jerky movements of chorea and the fixed rigidity and contracture common to hemiplegia. The case which I now present came to Dr. Hammond's clinic in the summer of 1881, and after various futile attempts at treatment was referred to my own clinic, where I had opportunities of treating with static electricity. Under this treat-

ment marked improvement as is so often the result, occurred during the first few weeks of treatment, but a point beyond which no amendment was discernible was then reached.

Attracted by the misfortunes of the young man who, in spite of his infirmity, is intelligent, industrious, and ambitious to make his living, I presented to him the alternative between a motionless hand and arm or one constantly squirming about in fantastic attitudes.

Having already exhausted innumerable remedies and forms of treatment, he readily accepted the prospect, if only for a limited period, of a still hand, and agreed to have his nerves stretched.

But before detailing the operation and its results, I will refer to the fact that, in relation to this disease of athetosis, this particular patient has a certain historical interest. His case was the first one recorded in Great Britain, and the first after Dr. Hammond's original cases. It is reported in full in the *Journal of Mental Science*, July, 1873,[1] by Dr. W. T. Gairdner, Professor of the Practice of Medicine in the University of Glasgow; was under treatment in the Royal Infirmary, and was exhibited at the sectional meeting of the Medico-Psychological Association in Glasgow, June, 10, 1873.[1] Referring to this case[2] Dr. Gairdner says: "The subject of it—a boy aged fourteen years, who had been affected with the disease since he was three years old—left Glasgow suddenly along with the family, and is known, I believe, to have gone to America; but I have been unable to trace them, otherwise I should have directed, if possible, Dr. Hammond's special attention to the case."

On Oct, 14, 1881, I took the following notes of the case:

At the age of three it was noticed that the right leg gave way,

[1] Transactions of the Medico-Psychological Association, Glasgow. *Journal of Mental Science*, July, 1873, p. 311.

[2] *Lancet*, June 9, 1877. A case of Hammond Athetosis. By W. T. Gairdner, M.D., etc., etc.

causing him to fall. Had no convulsions or loss of consciousness. Until eleven years of age was very lame, then walked better.

Three months after the right leg was first affected, the right hand began to show peculiar movements. It would unintentionally close on objects and hold them fast. Then the hand and fingers began "to twist and work," particularly when he attempted purposed movements. This hand, as far as he recollects, has never been better or worse up to this day. Has been subject also for years to a severe darting pain in the region of the lower ribs of the right side. Reports also, just previous to any affection of the leg and arm whatever, a severe inflammatory attack of the right eye, which lasted two months.

Present condition.—The most obvious feature of his case is the peculiar movements found only in athetosis. The right

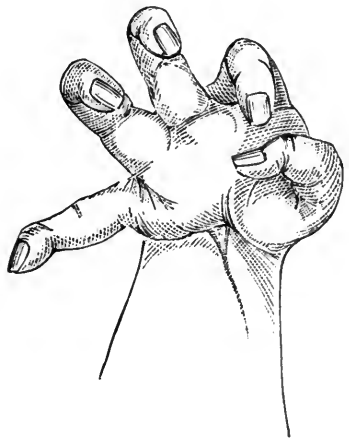

FIG. 2.—Athetosis.

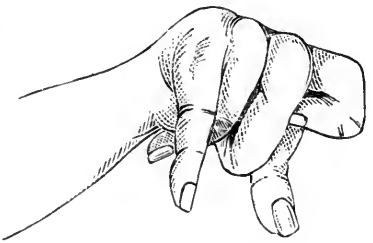

FIG. 3.—Athetosis.

hand continuously throughout his waking hours performs a slow and measured series of motions of the most varied character, and utterly unpredicable, each change of position occupying about five seconds in its accomplishment. It is a curious fact, and one that I have not seen noted of the athetosis movements, that they were in nearly every instance compound, *i. e.*, a flexion in one part of the hand combined with an extension in another part, or *vice versa*. For instance, I noted a series as they occurred, and noted them on the moment. These were always combined and not single muscular movements. For instance, six movements, occupying about thirty seconds, were as follows :

1. Little finger and wrist, extreme extension ; rest of fingers, extreme flexion.

2. Index finger, extreme extension ; wrist and remaining fingers, flexion.

3. Pronation of arm, extension of wrist, flexion of fingers, and rigid flexion and adduction of thumb.

4. Ring finger, extension ; rest of fingers, flexion.

5. Extreme wrist extension and finger flexion.

6. Extreme wrist flexion and finger extension ; and so on in every conceivable kaleidoscopic pattern that the varied action of the numerous muscles of the hand can give rise to, but in no instance were there movements of single muscles as in chorea.

It was particularly difficult to catch these movements in the photographic camera, even with very sensitive plates. I reproduce wood-cuts of several that I succeeded in taking, since they depict more faithfully than words can the compound contortions of the patient's hand.

FIG. 4.—Athetosis.

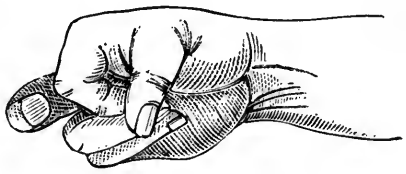

FIG. 5.—Athetosis.

Beyond these movements there is little else to note here.

The right leg is smaller and softer than its fellow. Toes of right foot subject to tonic spasm. The right arm also somewhat smaller than the left, and the flesh softer and somewhat flabby, due to the fact possibly that the patient carries his arm in his overcoat pocket to conceal its movements, and hence exercises it but little. Hand lacks little in strength. Dynamometer, right hand, 38 (imperfectly grasped) ; left hand, 40. Temperature, right hand, 98.5° ; left hand, 98.2 ; sensation, normal.

It requires considerable force to alter any given position. Emotion and volition increase the frequency, continuousness, and force of the movements. When taken by surprise he has a difficulty in speaking. He knows the word, but cannot utter it. Reflex exaggerated.

Treatment.—Eight-inch sparks to spine and affected parts.

Oct. 17th. Motions are quieter, and patient is certain that the hand does not close up as tightly as formerly. Yesterday, after treatment, the hand remained passive for an hour and a half—a thing that has not occurred for years.

Nov. 2d. In spite of encouragement at first derived from the use of static electricity, the patient's improvement is at a stand-

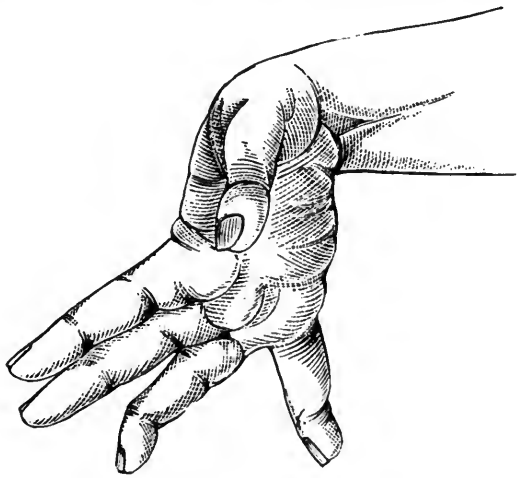

FIG. 6.—Athetosis.

still. The sparks resolve, so to speak, for a time, the tetanoid condition of the muscles. On the contrary, the static induced current and the ordinary Faradaic currents increase this condition to a marked degree.

Nov. 16th. Operation. Assisted by Dr. Bowditch Morton and by Dr. Knapp. The patient was etherized in the operating-room of the Metropolitan Throat Hospital. The athetosis movements ceased entirely during anæsthesia.

Cut down on to the median nerve at the junction of the lower and middle thirds of the arm, and stretched the nerve vigorously with the index finger crooked like a hook. Using the nerve as a loop, the extended arm was lifted again and again from the table

and pulled strongly downward, in order to pull upon the spinal cord. Like the sciatic, a larger loop is afforded during flexion of the member than during extension. The nerve was very strongly restrained from longitudinal movements by its fascia. Replaced nerve, sutured wound with silver wire, using carbolized–oil dressing.

The ulnar nerve was then stretched in the same manner. Both nerves are easily found.

After patient had entirely recovered from his anæsthesia there were no movements whatever in the hand or forearm. Patient walked home.

Nov. 18th. Stitches removed from ulnar wound ; both wounds uniting by first intention ; forearm quite numb ; held in continuous flexion at a right angle to the upper arm by a tonic contraction of the biceps. No movements in the fingers ; they are in a position of semi-flexion ; has a slight clonic movement of thumb. Tested by æsthesiometer the real amount of anæsthesia is not great.

Nov. 19th. Stitches now removed from both wounds and both united by first intention. No movements.

Nov. 20th. Severe neuralgic pain from palm of hand to tips of fingers. Biceps still in tonic spasm.

Nov. 21st. Pain continues. No movements.

Nov. 23d. Still has pain, but it is diminishing. No involuntary movements, but passive manipulation of the hand creates what appears to be simple mechanical displacement of the fingers quite as if they were attached to tendons fixed at a given point.

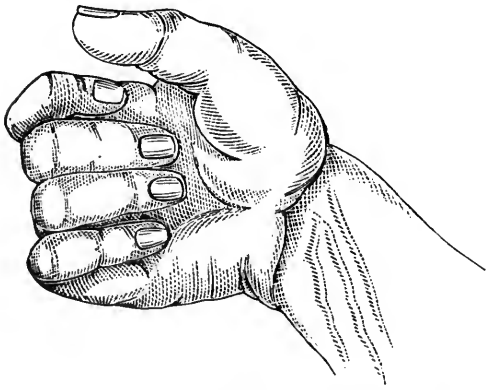

FIG. 7.—Athetosis. Hand at rest, due to nerve-stretching.

Nov. 25th. Pain ceased ; hand quiet. Says that it is the first time in his memory that the hand has ever remained at rest. Referred to Dr. Hammond for corroborative examination.

Nov. 30th. Report like last entry. The accompanying cut illustrates the present position of the hand.

Jan. 25, 1882. Neuralgic pains long since disappeared.

The continuous and compound movements are now totally abolished. But there is at times still a very slight twitch of the thumb. The position of the fingers is in an easy and natural flexion. Some numbness of the hand persists. Patient says that it is a great deal less trouble to him than formerly, and that he prefers it a thousand times in its present condition.

CASE 4.—*Chronic transverse myelitis.* Reported from Dr. Hammond's clinic. C. C., æt. 64. In 1864 first noticed a tingling sensation in his two feet; this gradually extended up the legs. During the last two years has had twitching in the legs, great loss of sensation, sense of constriction around the waist, much wasting of the muscles, trouble in retaining his urine, constipation, and great difficulty of locomotion. Present condition as above, and additionally exaggerated reflexes, especially patellar tendon reflex, sensation of walking on soft ground, ataxic gait, coldness and bluish-red color of the legs, and atrophy of the muscles. Never had pain in his legs. Electric irritability of nerve and muscles neither quantitatively nor qualitatively altered.

Aug. 4, 1881. The right sciatic nerve had already been stretched by Dr. Osborn with excellent results.

Sept., 1881. The patient was brought before the class at the University Medical School, and at Dr. Hammond's request I stretched the left sciatic nerve. The operation was performed without an anæsthetic, since the patient did not feel the cutting of the knife or the pulling of his nerve.

The following very curious and favorable results followed the two operations. These results we must merely summarize from our notes. Cutaneous sensation returned immediately upon the stretching. The legs, five minutes previously insensible to the cut of a knife, were now sensitive to the slightest prick of a pin. During the operation the patient located the pain of the incision and handling of the nerve to the region of the anus. After stretching he located painful sensations correctly.

An immediate sequence of the return of sensation was the return of the knowledge of the relation of the soles of his feet to the ground, hence the power of locomotion seemed, as it were, miraculously restored to him.

One month later patient was still much improved.

Jan. 27, 1882. I examine the patient and find that very little permanent benefit remains. The anæsthesia is not as complete as before, but the other symptoms are nearly as prominent as previously.

The case suggests two reflections. In the first place the operation did no harm; unmistakable, though temporary, benefit was derived.

In the second place, it is not unlikely that a portion of the benefit indubitably derived in locomotor ataxy, above and beyond the relief of the fulgurating pains, is due to a return of cutaneous sensation, perhaps also muscular sense, and hence, consequently, increased power of locomotion.

CASE 5.—*Idiopathic sciatica.* Nerve-stretching; immediate and permanent cure.

Oct. 1, 1881. Anthony Dimmick, æt. 33, applied to clinic for nervous diseases at the Metropolitan Throat Hospital for relief of his pain. History in brief:

Eight months ago first noticed one morning a sharp pain in the left hip. Was obliged to go to bed on account of his suffering. Then noticed swelling along the calf of the leg and the foot; the two outer toes were numb. Numbness and swelling continued during two weeks. Left his bed, but pain was constant, and worst at night. The leg was held stiff and the body bent much forward. Walking increased the pain, which finally became so crippling and so excruciating that he went to Roosevelt Hospital for treatment and was admitted.

Through the courtesy of Dr. G. D. Parmly, junior assistant at this hospital, I am able to give a *résumé* of the records of the case while in the hospital.

Anthony Dimmick, æt. 33, September, 1881, admitted.

Previous history.—Father died of rheumatism (?). Phthisis denied. Has had chills and fever. Never had rheumatism. No recollection of scarlatina. Is a moderate drinker, and has been for some time. Specific denied. Does not appear to have had any secondary symptoms.

About six months ago, after exposure, had a sharp pain behind left trochanter, and generally experienced a *stitch* in that region when getting up. At times, this would travel down the leg to the foot, and the two outer toes felt numb. Left foot and calf swelled a good deal for three weeks, soon after beginning of sickness. Could not sleep for pain. Not sick in any other way. Pains in buttock and leg lasted nearly three months. Then pains left (three months ago) and patient worked hard at laboring work for

about three months, until three weeks ago, when the pain behind trochanter returned, but not so severe as before. There has been no swelling of leg, and pain does not run down the leg as before. Is not kept awake at night by pain as was during previous illness.

Present condition.—Well nourished. Feels pretty strong. Face ruddy, lips red. Pupils normal, equal, competent. Conjunctivæ slighty injected. Tongue indented over dorsum. Bowels rather confined. Appetite good and pulse strong. Good deal of pain in region of left sciatic. Walks bent over. P. 72, R. 20, T. 98.8°, P. M. Urine alk., 1,023, alb. 20 per cent. (Probably no renal elements found by microscope, or they would have been noticed in history.)

History of treatment.—Actual cautery along course of sciatic nerve and confinement to bed.

Sept. 10th. Has been up for past two days. Stands straighter, but still somewhat bent over. Walks with much less trouble. (Pain on pressure still present between trochanter and tuber ischii.)

Sept. 12th. Pain does not trouble him much (when quiet). Still a good deal bent over (and pains him when he walks, especially if he makes an unexpected motion which brings stress upon parts surrounding left trochanter or tub. ischii).

Patient eloped to-day from the hospital, and his discharge bears *improved* after it.

Dr. Parmly adds: "Why the patient eloped we do not know, but I suspect the cautery had again been proposed. It certainly helped him very much."

After leaving the hospital, pain and consequent bending over of the body returned, and patient, as stated, came under my care. The history has been already sufficiently detailed. I may only add to it that the tract of the nerve, especially in the thigh, was extremely sensitive to pressure.

Oct. 4th. Static electricity applied, and pain at once relieved for that day and night. Patient walks well. Static electricity was now applied thrice weekly for two weeks, with the same experience of absolutely relieving the pain for about twenty-four hours, and then a relapse. The patient on the whole walked better and had less pain, but since his progress was comparatively slow, I determined, with his consent, to stretch the nerve, and did so.

Operation—Oct. 22, 1881.

Before operating, sciatic nerve examined by palpation. Slight pressure elicited cries of pain from the patient. Etherization by

Dr. George B. Hope. Incision at junction of middle and lower thirds of the left and affected leg. The nerve, at once laid bare, was red, tumefied, and surrounded directly on its surface by small irregularly winding veins. It was stretched, using the finger as a hook, for five minutes, and with force sufficient to lift the leg from the table. It was also pulled from the centre vigorously. Here, as in other cases, were noted the inextensibility of the nerve itself, the yielding sensation due probably to the yielding of the connective-tissue envelopes, and the fact that the nerve trunk was pulled strongly down into the wound by extension of the leg. No signs of tortuous veins remained after stretching. Wire sutures, carbolic dressing.

Recalling the extreme sensitiveness of the nerve to pressure before etherizing, Dr. Hope and myself agreed not to refer to his sensations of pain while he recovered from his ether, but to wait for his own first expressions. To our gratification he soon walked about freely and informed us that he had no pain whatever. Patient walked home.

Oct. 23d. No pain.

Oct. 29th. No return of pain. Suppuration in wound.

Nov. 17th. Now 26 days after the operation, no return of pain or soreness. Track of sciatic nerve may be pressed upon freely. Patient walks as well as ever in his life and has gone to work.

Nov. 19th. Lifting heavy weights brought on some soreness in nerve.

Nov. 22d. Stopped worked ; soreness disappeared.

Jan. 10, 1882. Various favorable records are omitted. Says he feels splendidly. There is to-day, however, a single small area of tenderness and pain, about as large as the end of the finger, over the outer head of the gastrocnemius. This causes no trouble in walking.

Cauterized this area with Pacquelin's thermo-cautery.

Jan. 23d. Three months after operation still remains free from pain and is cured.

It will be noticed that the cure was almost absolutely complete from the moment of stretching the nerve. The only detraction from this statement is the brief soreness arising from lifting heavy weights, lasting only a few days, and the very small area of soreness, equally

brief and quickly curable, occurring in a small twig of the nerve in the calf of the leg.

CASE 6.—*Reflex epilepsy, right side.* Terence Duffy, æt. 40. Feb. 5, 1880, patient came to the clinic for diseases of the nerves, at the University Medical School, service of Dr. W. A. Hammond.

History.—During the last ten years has been subject to numerous daily attacks of spasm. These attacks, numbering from fifteen to twenty daily, occur mostly while he is in bed, between three and six o'clock in the morning; but they also occur frequently and unexpectedly in the daytime, while in the street, or while about any occupation whatsoever. Occurring in the standing position, the trunk is drawn over to the right side against the right leg, or, as he says, he "is doubled up like shutting a jack-knife." There is no loss of consciousness. An aura always exists. The main peculiarity of the attack is that it may be induced, usually at will by patient, physician, or accidentally by a by-stander, by touching various points of what appears to be a true epileptic zone of Brown-Séquard. The touch of the barber to the right side of the neck, or of one of his children on his shoulder, often brings on an attack. Urination sometimes brings on an attack (irritation neck of bladder?).

No neuropathic history; no knowledge of injury to any part of the body; used to drink to excess, and thinks this caused his disease; has specific history; children healthy; never falls, loses his senses, or bites his tongue. Irregular eating and drinking increase number of attacks. Mind good, though thinks his memory is slightly impaired; no headaches and no vertigo.

Aura.—The aura always starts at some point higher or lower in a line drawn almost straight up from the right inguinal region to the anterior region of the axilla, and thence spreading out broadly along the side of the neck. When first observed this aura began by a feeling of "twitching and jumping" over the right spermatic cord, ascending thence to the head. Of late it has been very exactly defined to the line of the anterior thoracic nerve. Sometimes it starts over the right lower ribs, again from the right axilla.

The Attack.—This is the same whether occurring spontaneously with the aura described, or provoked by pressure or tickling along its track. It is essentially a tonic spasm of the trunk muscles of the right side, continuing for about half a minute. There

may be noted : first, pallor, then spasm, and, in a few seconds, extreme congestion of the face. He attributes contortion of the facial muscles to pain. The right pupil dilates, the left does not. Pulse varies from 88 to 96. When an attack occurs he clasps his side with the right hand, in order to support himself ; then when the spasm is over, straightens up, with a feeling of great relief. He notices that he cannot see well for some time after, especially if he attempts to read.

I omit any further quotations from Duffy's record up to a recent date, and will simply summarize these records by saying that he was treated assiduously with bromide of sodium during eighteen months. By this treatment the attacks were diminished in severity and in number. At times his reports were encouraging, at times otherwise. Finally, in Dec. and Jan. of 1881, he was treated with glonoin. This, like the bromides, at first gave favorable results, but soon seemed to lose its power. The patient was finally referred to my clinic, where I treated him unavailingly with static electricity. He was now having from five to ten attacks daily, and the disease was assuming a graver aspect, since for the first time he had an attack with loss of consciousness, biting of the tongue, etc., etc.

In despair I proposed nerve-stretching. Any prospect of relief however remote was hailed gladly by the patient, who, I must say, has remarkable perseverance in search of cure, and I accordingly operated. I report the case for what it is worth, without pretending to draw conclusions at this early date. Something surely may be learned from failures to cure, should this turn out to be one.

Jan. 24, 1882. Operation. Present : Drs. Clinton Wagner, H. H. Howland, Whiting, and Bowditch Morton. Patient etherized, and small incision made in the lower part of the axilla. After dividing the skin and subcutaneous cellular tissue, the aponeurosis was divided on a director, and the axillary vein and artery

exposed. The median, ulnar, and internal cutaneous nerves were separately extracted and hooked over the end of a silver catheter; then the finger was passed beneath them and they were vigorously stretched and pulled from the centre, with a view of stretching the entire brachial plexus and cervical cord. The wound was then closed with wire sutures and dressed with carbolic oil.

Jan. 25th. Slept well. This morning had two attacks only,—an improvement upon the five to ten he usually has had; attacks very slight. Motion. Dynamometer, right hand, 0; left hand, 65. Sensation: all the fingers and thumb are numb both on palmar and dorsal aspects; numbness extends up the hand and arm; no pain.

Jan. 26th, 27th, 28th. No attacks.

Jan. 29th. Three attacks. Stitches removed; wound healed by first intention.

Jan. 30th. Three attacks.

Jan. 31st. Two attacks, very slight.

Feb. 2d. Three.

Feb. 3d. Four.

The class of cases that I have reported is not one in which we expect cures. In the case of sciatica I think it is safe to say that no other known measure could have effected relief as quick, and at the same time as permanent. In the other cases great benefit was derived, and I do not forget to add that no harm was done.

From a surgical standpoint the operation on the sciatic in the middle third of the leg is a simple one; the brachial plexus and various nerves of the arm require more care; while the facial nerve, whose relations I am now examining with the view of stretching it for facial spasm in a few days, would seem to present numerous difficulties. Suppuration frequently occurs when the sciatic is stretched, due probably to trophic disturbance. Having found the nerve the question arises how shall it be stretched, *i. e.*, what shall it be stretched with, and with how much force? Operators vary greatly in these respects. Some are content to lift the nerve rather gently and lay it back in its bed (Billroth,

Nussbaum, Hammond); others pull on it with considerable force (Fenger and Lee, Callender); others, in addition to pulling on the nerve by aid of the hooked finger, seize it with thumb and index finger, and pull in both directions, in the longitudinal direction of the nerve; while others, again, like Verneuil and Baum, bruise or crush it either with forceps or against the sharp edges of a director. Various implements variously protected with rubber have been used.

It is to be regretted that there is not yet more unanimity of opinion regarding the amount of force to use, and that the actual amount that has been used in the cases thus far recorded has not been measured. This I admit as a shortcoming in my own cases. I propose in the next instance to measure the force applied in lifting the nerve from its bed, by using the finger, where this is possible, as a hook beneath the nerve, and causing an assistant to place the large hook of a spring balance between the index and middle fingers, in such a manner as to raise both hand and nerve together. A French surgeon has even gone so far as to devise an instrument resembling a balance, one arm of which, covered with gutta-percha, raises the nerve, while the other records the force employed. My only objection to this would be the employing of any thing besides the operator's finger against the nerve, for I do not believe it is advisable to crush the axis-cylinders.

The nerves are very inextensible, therefore it is necessary to stretch long, say three to five minutes; they are very strong, and therefore considerable force must be employed. An analysis of successful cases shows that the nerves had been thoroughly and vigorously pulled upon. But, obviously, in drawing conclusions as to the amount of force used we must also know the instrument with which the nerve was stretched. Strong stretching with the finger

would probably produce less rupture of the axis-cylinders than moderate stretching over the edge of a director.

According to the experiments of Trombetta on the cadaver, the brachial plexus withstood a tension of from 48 to 81 lbs. before breaking or tearing off at the posterior roots; the crural withstood about 83 lbs.; while the sciatic on an average sustained, before breaking, a traction of 184 lbs. Experiments on the cadaver also show that the main strain after the resistance of the natural adhesions to surrounding parts is overcome, is expended upon the posterior roots. In this may lie an explanation of the observation made, that sensation is interfered with to a greater extent than motion.

Is the spinal cord stretched? Harless and Huber, Valentin and Conrad are cited by Chauvel[1] as saying it is not. But functional disturbances created on the other side of the body, in certain reported experiments, would seem to indicate that the spinal cord is in reality pulled downward. According to Gilette the medulla oblongata in a cadaver was felt to move when the sciatic was pulled upon. This observation, if correct, certainly renders the conclusion definite, that we may hope to influence the cord by the operation, and it is on this supposition that I have operated in a number of cases. In case the cord is stretched, we have still another reason why it is difficult to prescribe the remedial limits of the operation, since its effects are not confined to the territory innervated by the stretched nerve, but extend widely to other nerve territories. It is beyond the province of this contribution to the subject of nerve-stretching to enter into a discussion of the anatomical, physiological, or pathological lesions produced by the operations, or to speculate upon the *modus operandi* of the benefits derived, the cures effected, or the failures reported.

[1] *Archives Générales de Médécine*, June, 1881.

Our knowledge upon these points is still too conflicting to enable one, either from experience or reading, to draw any definite conclusions. In the one case we stretch a nerve to interrupt the propagation of the centrifugal or motor nerve current, as in spasm; in another, to interrupt the centripetal or sensory current, as in reflex epilepsy and tetanus; again, we hope to accomplish one or both objects, and, additionally, alter the nutrition of the nerve cord, as in spastic spinal paralysis, locomotor ataxy, or sciatica.

From my own experience I can simply draw these conclusions;

1st. That moderate stretching of the nerve produces merely a temporary motor paralysis, easily recovered from, and a very considerable paralysis of sensation, likewise easily recovered from.

2d. That severe stretching produces a marked motor paralysis of long continuance (months), and a tolerably complete paralysis of sensation, much more quickly recovered from than is the motor paralysis. Cases of spasm should therefore be stretched vigorously.

3d. That profound cutaneous anæsthesia may be removed for several months and perhaps permanently; Case 4.

4th. I have been unable to observe, as has been claimed, that sensibility is relatively lost to a greater extent and more persistently than motion, either by moderate or severe stretching. In my cases motor paralysis has been more persistent than sensory.

According to Chauvel, Laborde, Brown-Séquard, and Quinquand have been led to believe, by certain physiological researches, that the sensory or centripetal current is arrested in the stretched nerve, while the centrifugal or motor current is not greatly interfered with.

This, while true of the normal nerve, does not seem to be the common experience in disease.

The sensation of pricking and tingling, and the occurrence of neuralgia should also be noted as occurring in the above cases. Spasmodic movements did not occur.

Macroscopic appearance of nerves.—In cases 1, 3, 6,—spastic spinal paralysis, athetosis, and reflex epilepsy,—nothing abnormal was noted.

In case 4,—chronic transverse myelitis,—the sciatic nerve was thin and flat like a ribbon, white, and evidently much atrophied. In case 5,—sciatica,—the tumefaction and reddening of the nerve have been commented upon, and also the tortuous veins.

In case 2,—paralysis agitans,—appears to me to be the most interesting observation regarding gross appearances.

Charcot concludes a review of the pathological anatomy of this disease by saying that "the special lesion of paralysis agitans remains to be discovered." The morbid histological changes found in the records of *post-mortems* thus far made, are too various or too unimportant to allow us to rely upon any one of them, or any grouping of them, for explanation of the symptomatology of the disease. The only observation, singularly enough, that I can find of a condition of induration of a peripheral nerve, is the very first *post-mortem* observation ever made upon the disease, and this by Parkinson himself, who, in his essay on shaking palsy, published in 1817, was the first to give any regular description of it. In this first case the pons was augmented in volume and indurated. The medulla and upper cervical cord were also indurated, and, additionally (cited from Charcot), "the nerves of the tongue and those of the arms were *like tendons.*"

This latter description of the gross appearances and the feeling of a peripheral nerve exactly corresponds to what I observed in the sciatic.

It is yet premature to say in what particular disease the

operation will be of greatest value, or what further valuable therapeutic indications or systems of treatment may be gained from the increasing data of an operation, undoubtedly yet crude, but nevertheless more full of promise than any recent measure for the treatment of diseases of the nervous system. It is true the last bulletins from Germany are unfavorable to the operation in locomotor ataxy. A congress of German naturalists has discussed the operation, and decided adversely to it. The Medical Society of Berlin seems also to have pronounced against it in locomotor ataxy, affirming that "the symptoms soon came on more severely than before."

It is not my purpose here either to favor or defend, but merely to contribute; but I confess that from all I have thus far seen I am strongly in favor of the operation.

It may be that operative or surgical nerve-stretching may be abandoned, but the clinical experience already accumulated will probably lead to a fixed system of local treatment of nerves in many chronic affections, hitherto untreated in this manner and considered incurable by any remedies.

The direct treatment of nerves by means other than the internal use of remedies has always been a fascinating field of inquiry. Pressure, pounding, hammering, mechanical vibrations, massage, electrical currents—interrupted and constant,—and the penetrating spark of statical electricity, are all strivings to get at the nerve itself and produce an effect. The surgical operation solved the problem of directness of attack; we are satisfied now that the nerves may be safely exposed, handled, stretched, and no harm result to the patient; and equally satisfied that in some diseases cures are effected by this means, in others benefit derived. The present is the stage of modification and systematizing. Already a most important substitute for the surgical operation is proposed, in the form of subcutaneous nerve-stretching. The possibility of stretching the nerve by certain

forced positions of the limbs occurred to me at once on observing the rigidity of the nerve in its line of length, and the decided traction that could be exerted upon it by certain changes in the position of the members. This method of subcutaneous stretching can be most easily applied to the sciatic nerve by flexion of the thigh on the trunk with knee flexed, and then completing a full extension of the leg. Severe pain in the sciatic nerve can be induced by this measure, but with careful manipulation and education of the patient this is soon avoïded. The brachial plexus may be stretched in the same manner. To this treatment, which I have now been pursuing for some time at my clinic and in private practice, I add massage and kneading of the nerve trunks themselves, and the penetration of spinal cord by powerful sparks from an electric machine. All this, it will be seen, is in the direct line with the idea of mechanical treatment of the nerve substance itself, and in direct line with the subject of nerve-stretching, since I believe that finally we shall substitute, in the chronic systemic diseases of the spinal cord, these or some similar methods of mechanical treatment, for the present surgical operation. More than a year ago I claimed for the penetrating and disruptive spark of the electric machine an effect upon the spinal cord and nerves that seemed to me to be simply due to molecular change, or alteration of nutrition as a result of mechanical violence. This, it seems to me, is the best explanation of the effects of nerve-stretching, in whatever way it be effected.

But whether surgical nerve-stretching survives or not, it has called attention to what may be gained by local and direct interference, as contrasted with treatment by drugs; and I trust that clinical results will continue to accumulate, until a fixed opinion of the real place of the operation in medicine shall have been rigidly and scientifically determined.

NEW YORK NEUROLOGICAL SOCIETY.

REPORT OF THE PROCEEDINGS OF THE SOCIETY AT ITS STATED MEETINGS, NOVEMBER AND DECEMBER, 1881, AND JANUARY, 1882.

Stated Meeting, November 1, 1881.

Dr. T. A. McBride, President, in the Chair.

The paper of the evening was read by Dr. L. C. Gray, the title being, "The question of reflex disturbances from genital irritation."

The speaker proposed to examine the question: What evidence is there that genito-urinary irritation may cause reflex paralysis?

The cases reported by Dr. Sayre in support of his view were then read and analyzed seriatim. The speaker argued that in some cases the previous or subsequent histories were imperfect. In one patient the disease appeared to be really spinal hemorrhage; in another, an anterior poliomyelitis. A few cases, it was admitted, seemed to prove the reporter's view, but the details were incomplete, and they could not be cited in evidence. In all, the speaker said, Dr. Sayre had reported eighteen cases in proof of his position; yet not one of them, when critically examined, was sufficient.

In two cases the evidence was quite strong, so far as it went, but was incomplete.

In three cases there seemed to be impaired motion from the irritated genitals.

In one case there had been probably an intra-uterine spinal meningeal hemorrhage; in another, myelitis of the anterior horns.

In eleven cases the histories were too indefinite.

The speaker had received assurances from Drs. Weir Mitchell, Da Costa, Weber, Spitzka, Hammond, Jewell, and others, that

they had never met with any case of paralysis due reflexly to genital irritation. The speaker's personal experience agreed with that given by the above-named gentlemen.

In view of the foregoing data, the conviction seemed irresistible that reflex paralysis could not occur from genital irritation, or, at least, occurred very seldom.

There is, however, good reason to believe that operative procedures often cause relief, especially in the later stages. There are cases in which the operation for phimosis is beneficial to the patient, although we know that the preputial irritation is not the cause of the disease.

It must be remembered that when a genital irritation is removed by operation, we have several factors at work. An irritant is removed from an exquisitely sensitive organ, and the genitals obtain rest. The profound impression made upon the nervous system by chloroform or ether narcosis must be considered. There are many examples of the powerful results this may produce. The effect of the cutting operation in itself upon the nervous system may also be great.

The more excitable and impressionable the nervous system, the more active will these three factors be, particularly the latter two.

The cases cited by Dr. F. N. Otis show that removal of genital irritation will remove a host of nervous symptoms ; but there are no data on which any man can judicially formulate an opinion that these symptoms might not be due to organic lesions.

The speaker was not prepared to deny that reflex paralysis might not occur from some causes. It is known that they can be produced in a limited way experimentally, by squeezing the kidneys of a rabbit, for example, or by cutaneous impressions, such as putting a rubber ring about the neck of a frog. Our knowledge of the inhibitory actions of the nervous system would also lead us to think reflex paralysis possible. But there is no proof which demonstrates that such a condition can result from genital irritation.

The practical deductions are very important. We should never assume that nervous symptoms are due to genital irritation,—we should search for organic disease. But genital irritation should always be removed. There is a great prevalence among Jews of a contracted meatus, due, no doubt, to circumcision. We should be careful not to deprive the glans of its covering unless it is necessary. Dr. Jacobi says that by simply breaking the adhesions of the prepuce he has succeeded in dilating the orifice.

While it is probable that slight nervous disorders can be produced by genital irritation, yet the proofs of even this are not complete.

In the discussion Dr. L. A. Sayre said that the fact that some of his cases were paralyzed, and that after operation they recovered and remained cured, was one that could be demonstrated. Dr. Gray had intimated that in one case an apparent paralysis existed only because of the exquisite tenderness of the parts, which friction of the clothes increased. But if so, why could not the child move, as he could not, when perfectly naked ? After circumcision, without any constitutional treatment, the patient recovered complete power.

It was hard to see how, in cases of paraplegia, where immediate and permanent recovery followed operation, there could have been any organic change in the cord. In such cases, where, as the reader of the paper had done, a diagnosis of organic change is made, he should be much inclined to doubt the diagnosis. He might not have been sufficiently careful in giving the minute details of his cases, but that they had paralysis and were relieved by operation he was positive.

The number of the speaker's cases confirmatory of his view had now increased to over one hundred.

The fact that the operation had now often been performed unwisely did not weaken the view that it was a necessary and useful one in its place.

Dr. F. N. Otis said that he had come there hoping to learn something new, but he had been disappointed so far, except as regards what Dr. Sayre had said about the permanence of his results. The speaker had not seen cases of paralysis of the kind described by Dr. Sayre, but he believed in their existence on account of the many analogous cases met with in his own practice. He believed that there was something more than coincidence in the histories of all kinds of nervous disturbances becoming at once relieved after removal of a genital irritation. Many cases of seminal weakness, and of various other nervous disturbances, which disappeared after removal of the prepuce, could be recalled. A gentleman of this city, fifty-eight years of age, lost all sexual power. Dr. Otis found an irritable prepuce, with much sebaceous matter upon the glans. Circumcision was performed and sexual power restored. With regard to the Jews, who, it has been said, had, in the majority of cases, contracted meatuses, he thought this true. But, on the other hand, a great many people have con-

tracted meatuses anyway, just as every one has some slight physical defect of some kind or other.

It did not make much practical difference in treatment, because the persons were better with the meatus enlarged, whatever the theory.

The speaker announced his very positive conviction that reflex paralysis from genital irritation was possible.

Dr. STURGIS thought that there could be no doubt regarding the existence of reflex irritations. With regard to the question of reflex paralysis, he would suggest that, so far as the evidence of Dr. Sayre's cases went, the verdict of not proven might be given. Still there was no reason to suppose why genital irritations in men should not produce paralyses similar to the hysterical paralyses that occur from like causes in women.

The speaker thought that the claim of Dr. Gray was too sweeping.

Dr. E. C. SEGUIN said that his experience was that reflex troubles might occur from preputial and other genital irritations. He agreed with Dr. Otis in reference to most of that gentleman's statements. He had, however, never seen a case of reflex paralysis from irritation of the male sexual organs. He did not deny that there were such cases, but he was waiting to see one.

With reference to the Jews, he had found that they did have contracted meatuses. He had had a great many Jewish patients, and almost every male examined had this defect. He thought, also, that the Jews presented, with a remarkable degree of frequency, reflex irritation of the sexual apparatus.

Dr. G. M. BEARD said that he had been engaged in studying the subject from a neurological standpoint for a considerable time. He had presented some of his conclusions in a general way at the meeting of the American Medical Association two years before.

He believed, in the first place, that the great majority of persons who have either a contracted meatus, or redundant prepuce, or phimosis, are just as well as anybody else. From this it might be presumed that genital irritation was not the sole cause, at least of reflex troubles.

As regards his own experience, he had found that the result of operations for the removal of genital irritation had been generally very unsatisfactory. The cases, however, in which he had had the operation done were generally those of neurasthenia, etc. In some cases there had been slight improvement ; in one case this was very marked.

Dr. Agnew, of Philadelphia, had told the speaker that he operated once for preputial irritation, and it helped the patient. In fifteen or sixteen other cases it did no good at all. Dr. Beard thought that the Jews were quite subject to nervous troubles, despite the absence of a prepuce. He was of the opinion that circumcision might actually do harm. He recalled one case in which impotence followed the operation.

Dr. E. C. SPITZKA had never seen a case of reflex paralysis from genital irritation. But he had some strong reasons for thinking that it might occur. The speaker referred to a case of posterior paralysis in a horse, in which the only lesion, except a few cysts in the ovaries, was an extensive, though but slightly progressed, nephritis. It is generally recognized that posterior paralysis in horses points to renal disease.

Dr. WILLIAM A. HAMMOND said that while it was true he had never seen a case of paralysis due to genito-urinary irritation, yet he had seen paraplegia following injury; for example, in a dragoon whose testicles were smashed. He had seen several cases of paraplegia following strong urethral injections, and had seen it apparently result from cystitis.

The speaker was prepared to admit, therefore, that preputial irritation can give rise to a paraplegia.

He did not see how Dr. Gray could refuse to admit the various paralytic troubles and hysterical symptoms that occur in females from genital irritation. He must be familiar also with the fact that catheterization of the male sometimes produced syncope, which was the evidence of a partial heart-failure or paralysis. Dr. Gray might, perhaps, make out his case if his position were that preputial irritation had not been shown to be the cause of reflex paralysis. As regards genital irritation in other parts, however, the claim of the reader could hardly be sustained.

Dr. BURCHARD related a case in which there was unmistakable paraplegia dependent on preputial irritation due to phimosis. It was entirely cured by an operation, and the patient had subsequently been under his observation, so that he knew that the cure was complete.

Dr. BIRDSALL thought that one point had been lost sight of in the discussion. Dr. Gray had referred to the different factors at work in the cure of this class of cases. One of them was the removal of the irritation, but another was the effect upon the nervous system of the operation itself. The experiments in nerve-stretching for such diseases as locomotor ataxia, neuralgias, etc.,

showed that injuries to the nerves had a powerful effect upon the system in general.

The speaker had recently had his attention called to the cases of Hebrew children where circumcision had been performed, and where excitation of the genital organs caused just as much trouble as if circumcision had not been performed. In another case circumcision had been performed without benefit.

Dr. SEGUIN said that he had never seen cases in which the operation had done harm. He had, on the other hand, seen a number of cases in which temporary improvement took place.

The speaker added that he had seen paralysis result from irritation of the sexual sphere, from irritation of the deep urethra, and from disease of the womb. He was not sure that he had seen paraplegia from ovarian disease. He had seen two cases in which treatment of uterine disease brought about cure. One was a case of laceration of the cervix with partial paraplegia. The other was a lady from Bermuda, who had subinvolution with marked paraplegia. She recovered very rapidly under proper treatment for subinvolution.

Dr. GRAY, in closing the discusssion, said that he had been misapprehended in several points. He had distinctly given Dr. Sayre the credit of having made the subject under discussion known to the profession. Dr. Gray then reviewed briefly the position he took and the argument he had made. He said, in conclusion, that up to the time of the present meeting there had not been, in his opinion, demonstrative proof that reflex paralyses or irritations could be produced by genital irritation alone. He was not yet convinced by what had been said that his position was an incorrect one. Yet some of the facts recently given needed careful analysis and study.

Stated Meeting, December 6, 1881.

Dr. T. A. MCBRIDE, President, in the Chair.

The paper of the evening was read by Dr. V. P. Gibney, it being entitled "Intermittent spinal paralysis of malarial origin."

Dr. GIBNEY proceeded at once to relate the histories of certain cases, showing, as he thought, this form of disease.

Case 1 was that of a boy seven years of age, of a healthy family, which lived, however, in a very malarious neighborhood. In September, 1878, he had a high fever, with delirium at night, and suffered from pains in the limbs and hyperæsthesia of the sur-

face. This continued for a week. He improved under quinine, then got worse again ; was finally left with paralysis of the four extremities not quite complete. There was some faradic reaction. Diagnosis : myelitis of anterior horns. He was admitted to the hospital later. He then showed marked genu valgum ; walked with difficulty, and legs far apart. Diminution in power of some of the muscles ; relaxation of posterior ligaments of knee ; knee phenomena normal ; tendo Achillis tense.

Treatment, electrical and mechanical ; no medicines given. Gradual improvement took place, and the boy left the hospital cured.

He returned later with nearly the same history as that given before, but the attack this time was less severe. He had been living in a malarious locality. Ordered quinine and faradism. Under this he was completely restored again.

He returned to the malarious locality. After a time he began to have chills ; was improved by quinine, but finally was brought to the hospital, in June, 1880, for a third time, severely paralyzed. He suffered much from pains in the limbs, and he had a fever. The fever gradually disappeared ; the electrical reactions were very feeble ; the patient gradually improved, and became able to walk about ; electrical reactions also became stronger. By August he was nearly well. In October he was worse again ; his limbs became paretic ; he was unable to walk ; improvement soon after set in.

Dr. Gibney here referred to the fact that intermittent spinal paralysis was very rare indeed. The few reported cases by Macario, Hartwig, and Leyden, were quoted or referred to.

Still the literature of malarial poisoning is full of neuroses. The speaker thought it not difficult, therefore, to suppose that malarial poison might cause an anterior poliomyelitis. In such cases the anatomical diagnosis is the same as in ordinary spinal paralysis ; but, pathologically, there is a different condition, and the prognosis differs materially.

Case 2 was that of a boy aged 6. He was admitted to the hospital with paralysis of the legs and hyperæsthesia. Electrical reaction good, but not vigorous. No real atrophy. Two years before he had lived in a malarious locality, and was taken suddenly ill with fever and pains in the limbs. Was sick for six weeks, his limbs becoming paralyzed. He recovered in a few weeks.

In April, 1880, he had a second attack, which began with *malaise*. He gradually lost power in his limbs. Being brought to

the hospital, he slowly improved. September 24th he was discharged cured. The next spring he was taken again with paralysis in all four extremities. Two weeks later he had convulsions. He died finally of exhaustion. He did not have tuberculosis. No autopsy was made.

Dr. Gibney, in commenting on the preceding cases, said that he thought that pathologically there must be some difference between them and those of ordinary spinal paralysis. In studying them he had been struck with the symmetrical development of the symptoms which occurred in all cases. In no instance had he found the typical degenerative reaction. Dr. Seguin had said that if cases of infantile spinal paralysis did not recover in two or three months, there was very little hope for them. Dr. Gibney could not recall a single case in which complete recovery had taken place. He was inclined to believe that simple active, followed by passive, hyperæmia, occurred in the cases of intermittent spinal paralysis. Such a condition of congestion might vary under the action of the malarial poisoning, just as was the case with the spleen.

The theory of a multiple neuritis might be entertained.

Dr. M. PUTNAM-JACOBI said that she had seen Dr. Gibney's first case. She was still puzzled by it. When she first saw the case she was struck with the fact that the child complained of pain all the time, and it was pain which made him object to walking more than his muscular inability to walk. He did not complain of pain upon firm rubbing, but upon slight touches. Her first thought was of hysterical paralysis or partial paralysis. Only, the electrical reactions could not be obtained, or were not good in some muscles.

Comparing this case with two of those cited by Erb, there seemed to the speaker to be a marked difference between them.

In Dr. Gibney's case, 1st, the paralysis did not come on suddenly; 2d, it lasted for some time, and did not intermit as in intermittent fever; 3d, it did not terminate in sweating; 4th, there were marked sensory disturbances; and 5th, the paralysis was not complete; in all those respects differing from the cases quoted by Erb. In Macario's case the paralysis was not referred by that author to malaria, but was thought to be an idiopathic form, distinct from the hysterical. There is one form of paralysis to which Dr. Gibney's case might be referred, and that is the rheumatic. This is a most common form of functional paralysis. The point against such a diagnosis was the electrical reactions, which were not those of a functional paralysis.

Dr. SEGUIN said that he happened to feel a special interest in this topic, because, four or five years ago, he had occasion to look up the literature of malarial intermittent paraplegia. He would refer, in the first place, to the principal case reported by Dr. Gibney. It would appear that it might as well have been a case of diffuse or disseminated neuritis in which reactions, paralysis, hyperæsthesia, and pain were quite characteristic. It had occurred to him, when Dr. Jacobi was speaking of the absence of electrical reaction in the anterior tibial muscles, that perhaps they had never recovered from the first attack. They were all accustomed to see this in cases of facial paralysis, there being complete recovery, but the muscles do not react to the electrical current. He cited several authorities in support of the view, that cases like those reported by Dr. Gibney were extremely rare. Erb did not give a case. The subject was barely mentioned by Hartz in *Ziemssen's Cyclopædia*, and by Leyden. Paralysis from malarial poisoning was not mentioned by Trousseau, Aikin, Beckley, and many others, though a great number of them had had a very large clinical experience in malarial origins. He did not bring forward this negative evidence to refute the statements of the paper, but only as showing that a disease of this nature was unlikely to occur. Dr. Nash had cited a case of intermittent fever and subacute spinal paralysis. The fever was checked with quinine, but the legs did not improve. The patient was treated by leeches, ergot, and belladonna. Macario's case was stolen from Leyden. In certain forms of organic disease, we had strictly intermittent hemiplegia. We had seen this in syphilitic arthritis as well as in pachymeningitis. He was prepared to admit that the fever caused by the malarial poisoning might produce a lesion in the spinal cord. This view received support from the *post-mortem* findings in cases of sudden death from congestive fevers which proved fatal in a few hours. Bailly and Maillot had shown that after death from severe fevers, the spinal cord was the seat of congestion, softening, and transudation of pigmentary material. If this occurred in the case of fevers, he saw no reason why Dr. Gibney's case might not be explained in the same way. His opinion of the case reported was, granting that the fever was caused by the malaria, that the paralysis was post-febrile, malaria being the indirect cause. Whether the cord was in the condition of œdema, as suggested by Dr. Gibney, or whether there were changes in the ganglionic cells, which he thought probable, he would not attempt to say. The speaker then related a case of *malarial hemi-numbness*.

Dr. ROCKWELL said that he was very glad of the opportunity of bringing to the notice of the Society a case which though not kindred to Dr. Gibney's cases, seemed rare and unique. A gentleman, while at business downtown, was suddenly attacked with complete hemiplegia, articulation impaired, mind clear. He recovered from this after fifteen or twenty minutes, went to his home in Harlem, and remained there. Two days afterward he had another attack at about the same time as the first—four o'clock in the afternoon,—though not as severe. He could walk but with difficulty, articulation was imperfect, mind clear. Every third day, about four o'clock in the afternoon, he was prostrated in the same way. This continued for three or four weeks, when the time of attack was changed to eleven o'clock in the morning. These attacks first began in July, and they continued until Sept. 6th. The patient was subjected to treatment, and following this, whether the result of it or not, improvement took place, and he remained well until December. Dr. Rockwell was then called in. and found him in a hemiplegic condition, unable to talk. He died twenty-four hours afterward. At the *post-mortem*, which was performed in the presence of several medical gentlemen residing in that part of the city, very interesting pathological changes were found. In the first place, there was a thin film of organized lymph over the dura mater. There was a serous effusion at the base of the brain. The carotid plexus was affected. There was a lesion of the mitral valve of the heart. A close examination showed no thrombosis or embolism. The kidneys were not examined, but there was no uræmia, as evidenced by the fact that he was conscious to the last. In the treatment of the case quinine was used, but in exceeding small doses, two grains three times a day. He had certainly seen two cases of malarial paraplegia.

Dr. GRAY remarked that he did not consider it scientific to speak of Dr. Gibney's cases as caused by malaria. All we knew about malaria was, that certain affections had exhibited a periodicity and were cured by quinine. If the cases reported were not periodical and the symptoms were not those of intermittent fever, he hardly thought it proper to speak of them as due to malaria. He had never seen a case of paralysis due to malarial poisoning, but he had seen many cases which at first he thought were due to this cause. The speaker thought that of late there had been a tendency to consider malaria a neurosis. There was undoubtedly a close connection between the symptoms and those of neurotic origin.

Dr. BIRDSALL remarked that he had nothing in the way of facts to communicate, but would like to ask Dr. Gibney whether any qualitative changes were found in the electrical examination, for we were pretty sure to get, even in a mild case of myelitis of the anterior horns, especially where there was a marked degree of paralysis, qualitative changes occurring early, and these might be of importance. He referred to the changes in the normal formula of the anodal closure, the contraction being greater than normal.

Dr. GIBNEY said that at one time he had observed this, and thought he had recorded the observation, but he found no note of it. He used a galvanic current supplied by twenty-eight cells.

Stated Meeting, January 3, 1882.

Dr. T. A. MCBRIDE, President, in the Chair.

The paper of the evening, entitled "The efficacy of potassium iodide in non-syphilitic organic diseases of the nervous system," was read by Dr. E. C. SEGUIN.

The speaker said that he intended his paper should be clinical and suggestive rather than an exhaustive and didactic one.

There is apparently a belief in the specific power of potassium iodide upon disease. Some teachers were in the habit of saying: Give iodide, and we will see whether the disease is syphilis or not. A good many physicians think that because a patient is helped by potassium iodide he is therefore syphilitic, and has not perhaps given a truthful history of his case. The speaker did not believe in this specification of drugs, though it was a very comfortable theory to hold. He thought that drugs act upon the organism, not upon the disease.

Dr. Seguin wished to make the arguments for his position as much clinical as possible. He would present nine cases illustrating the efficacy of potassium iodide, these cases being divided for convenience into three groups.

The first group comprised those of organic disease of the brain, in which symptoms were relieved by the iodide. The patients finally died, however, and *post-mortems* were made.

The second group comprised cases of which two were cured and one relieved.

The third group comprised cases of basilar meningitis, with op-

tic neuritis, in children. These cases recovered rapidly under the iodide.

Not so much importance was attached to this last group.

First Group. Case 1. *Tumor of crus cerebri.*—Patient was a boy aged nine; had always been healthy. In April, 1874, had measles; in May there appeared awkwardnesss in the right side of body. This gradually increased till finally paresis of the right arm appeared. By August he was worse; the right arm became paralyzed. Then sharp pains in various parts of head began to trouble him; and with this were nausea, vomiting, and twitchings of the paralyzed side; also double vision, and later, strabismus. Pulse habitually slow; no convulsions or loss of consciousness. When examined by Dr. Seguin the patient was conscious; right side hemiplegic; palsy of left sixth cranial nerve; slight rigidity of fingers of right hand; some ataxia of right upper extremity; staggering gait; optic neuritis.

This improvement continued until April, 1875. He then had severe symptoms again: headache, vomiting, and pains in calves of legs. These were relieved by the iodide.

The patient was seen at rare intervals by Dr. J. G. Shaw until the spring of 1880, when he died.

Autopsy showed pressure of the left crus cerebri and left side of the pons by a sarcomatous tumor.

Case 2. *Cerebellar tumor, with hydrocephalus.*—The patient, a boy, had suffered several months from severe headaches, staggering gait, and vomiting; exophthalmus. He had no paralysis, nor impairment of intelligence, nor epileptiform seizures.

He improved under iodide of potassium. Shortly after there was a great enlargement of the head, with separation of the lambdoid and sagittal sutures.

With the appearance of this enlargement and bulging, improvement took place; the exophthalmus disappeared. An examination of the child was made at this time. The face was pale; vision apparently good, but choked disc was present. All the cranial sutures wide open. No exophthalmus. In the right occipital region, in the vicinity of the lambdoid suture, was a soft tumor, which pulsated simultaneously with the heart. Feeble gait, but no paralysis. Ordered iodide of potassium. This was given in very large doses (90 to 150 grains per day), with relief of headache and many of the symptoms. The patient died the next spring. Autopsy revealed cerebellar tumor of fibro-sarcomatous character. This pressed on the venæ Galenæ, causing hydro-

cephalus. This case was under the care of Dr. Malcolm McLean, of Harlem.

Case 3. *Tumor of cerebellum.*—The patient, a boy of fourteen, had been healthy. In June, 1876, he fell heavily on a stone walk. Four months later, began to have attacks of vomiting, without nausea. At length, after vomiting he went into general convulsions. These symptoms continued. He gradually became paralyzed in all his limbs, though more on the left side. There was atrophy of optic nerves and loss of vision. Spontaneous improvement now occurred. He regained use of his limbs, and except for his eyes, was almost well. Mind bright. No further symptoms for four years. In May, 1880, he began to have attacks of pain in the occipital region, and vomiting. One day he was found unconscious. He was occasionally dizzy. Still able to be up and dressed.

Examination at this time showed left conjugate deviation of the eyes; tongue straight; left leg and hand stronger than right; no patellar reflex; no distinct ataxia, and the gait was not that of the type called cerebellar ataxia. Ordered bromide and iodide of potassium. One month later, he had improved wonderfully. He then grew somewhat worse again. The iodide was increased and bromide decreased, with the best results.

On October 12th he was seized with vomiting and convulsions. Death soon followed. Autopsy revealed a tumor involving a large part of the anterior portion of the right hemisphere of the cerebellum, which was the same side as the paresis. It forcibly compressed the underlying portions of the mesencephalon. Almost the whole of the right hemisphere of the cerebellum was practically disorganized. An acute meningitis of the convexity had been the immediate cause of death. The tumor was a sarcoma. The microscope also revealed masses of amyloid degeneration, some having a branch-shaped appearance, and being probably amyloid blood-vessels. The boy's family was an unusually healthy one. The teeth were normal.

Second Group. Case 1. *Left hemiparæsthesia cured by potassium iodide.*—The patient, a surgeon in the United States Army, had always enjoyed good health. In 1874, he had an attack of hemi-numbness, which lasted for a long time. It was felt in ulnar side of left hand, outer side of left leg, and occasionally in left cheek. No true anæsthesia, no ataxia or chorea. The heart was large and beat heavily, but had no organic lesion. Patient had several angina-like attacks. There was well-marked dementia.

Patient's habits have always been good; positively denies syphilis.

Ordered iodide of potassium. The paræsthesia disappeared in a striking manner. Subsequently patient developed dementia paralytica.

Case 2. *Paralysis of third cranial nerve; Paresis and ataxia of limbs.*—The patient, a man aged twenty-nine, had always been healthy, except that of late he had suffered from excessive use of beer and tobacco, and had had a catarrh of the bladder. July 2, 1878, while camping in the woods, he awoke with a paralysis of the left third cranial nerve. July 30th, he felt a sensation of numbness and weakness in the legs. Was ordered ergot, dry cups, rest in bed. About August 1st the right third cranial nerve became paretic. All the symptoms indicated involvement of crura cerebri. Ordered iodide of potassium in large doses. Within a month patient is much improved; both the third nerves are better.

Takes 3 j. pot. iodid., t. i. d. September 2d, right eye normal; left, nearly well. Iodide continued. December 11th, no change. In spring and summer of 1879 the condition of left third nerve varied, and the amount of iodide given was varied accordingly.

Nov., 1879. New symptoms developed. Slight numbness and anæsthesia in left trigeminus; legs are weak; there is slight numbness also in thighs; left facial muscles appear weak; tongue projects straight.

Ordered increase of iodide.

Oct., 1880. The patient had been almost cured except for his left third nerve. He had resumed the use of beer and tobacco, however, and, as a result, a number of symptoms came on: an ataxic walk, absence of patellar reflex; marked anæsthesia and ataxia of left hand; left third nerve still paretic. No headache at any time. Treatment was continued, but there was no improvement. In the first part of the disease, however, the iodide relieved the symptoms in a most notable manner.

Case 3. *Right hemi-epilepsy with aphasia cured by potassium iodide.*—The patient, a young man, when first seen was suffering from repeated epileptiform attacks. He was a well-developed person, who had always been well; never had had syphilis. In August last he had an attack of what he called sunstroke, but it was probably his first epileptiform seizure. He got a little better, then the attacks recurred. They were stronger on the right side. Patient was put on potassium bromide. He continued to have attacks. Had innumerable slight attacks every day, affecting right

side of face and arm, not always with loss of consciousness. Sometimes there were facial spasms alone. Grs. 125 to 150 of potas. brom. given daily.

Oct. 2d. Patient is better; no spasms for forty-eight hours. Is completely aphasic. Ordered potassium iodide along with the bromide. This mixture was continued, the bromide being gradually decreased and iodide increased until finally only the former was given. Improvement was steady, and finally complete recovery was established.

THIRD GROUP. Case 1. *Basilar meningitis.*—Patient was a girl aged six years. One brother had phthisis; another child of same parents died of brain fever. For three weeks the patient had been suffering from headache and vomiting. When seen, there was marked internal strabismus, also optic neuritis. The history of the patient with other symptoms led to the conclusion that there was an incipient basilar meningitis, probably non-tubercular. Ordered potassium iodide, and blisters at the back of the neck. Improvement at once began and resulted in recovery.

Case 2. *Basilar meningitis.*—The patient was a girl aged 14 years, previously healthy. The first symptoms appeared four weeks before examination, and consisted of dulness, irritability, slight headache, once vomiting, and internal strabismus of one eye. Examination showed double neuro-retinitis. Diagnosis, non tubercular basilar meningitis. Under iodide of potassium there was rapid improvement, and, so far as known, recovery.

Case 3. *Basilar Meningitis.*—Patient was a girl aged 5 years. Had chicken-pox in January. January 19th, left internal strabismus appeared. Other symptoms followed. Examination of eyes showed double neuro-retinitis. The same diagnosis was made and treatment ordered as in previous case, with equally good results.

In commenting on the preceding cases Dr. Seguin said that they were only a few of a large number in which he had seen the same results follow the use of the iodide. He was aware of the possibility of deception as regards there having been syphilis. Still he had taken every precaution to assure himself upon this point in the cases cited as well as in others. The speaker also referred to the large doses of the drug which could be given with apparent impunity—from 30 to 150 grains three times a day.

Dr. WM. A. HAMMOND, in opening the discussion, said that for several years he had adopted the plan described by Dr. Seguin, and his experience amply sustained that gentleman's. He recalled some recent cases illustrating this. One was that of a patient who

had been treated for syphilis. He was doubly hemi-paretic; all his extremities were very weak. He could not walk. He had double vision, intense pains in the head, and difficulties of speech. He was put on iodide of potassium with the best results, being entirely well except for the double vision. He had always strenuously denied having syphilis, and there were no evidences of it.

In another case, seen three years ago, the patient when first seen was suffering from intense pains in his head, and was deaf and completely blind. There was no history of syphilis. Iodide of potassium was recommended, but no benefit followed until the patient had reached a dose of 240 drops of the saturated solution. The pains then disappeared; hearing and eyesight returned. The patient became entirely well.

In some cases the speaker had given as much as 350 drops of the saturated solution at a dose without any inconvenience to the patient. He attributed this to the fact that he made his patients take a great deal of water at the same time; sometimes even a pint. In this way iodinism was prevented.

Dr. R. W. AMIDON recalled a case which illustrated the efficacy of iodide of potassium.

As regards the manner in which the iodide acted in such cases as had been cited, the speaker thought that it affected, not the neoplasm, but the circulation around it. We know that the potassium salts are cardiac sedatives, and tend to diminish arterial tension. If we weaken the heart, which is acting a little more strongly than usual, it will give the veins a chance to empty themselves and relieve the distended capillaries. This seemed to be the most reasonable way of explaining the action of the potassium salts. The speaker doubted whether the iodine had much to do with this action. On this point more definite knowledge was needed.

Dr. WEBER said that his experience with the iodide of potassium had been large. He had seen no curative effects from it except in syphilis, certain forms of articular rheumatism, and bronchial diseases. So far as non-specific diseases of the brain or spinal cord are concerned, he thought last year that he had met with a case which the iodide cured. But he found afterward that the patient had probably had syphilis. The patient, a man fifty-two years of age, had all the symptoms of general paralysis, and was to be transferred to the Bloomingdale Asylum. Dr. Weber was called in, however, and though convinced of the correctness of the diagnosis, thought he would first try the iodide

upon him. It was given in drachm doses, and, to the speaker's astonishment, there was great amelioration of the symptoms. He found afterward that the wife had syphilis.

Regarding the *modus operandi* of the remedy, the speaker wished to express his belief that its diuretic powers had a great deal to do with its efficacy.

In certain cases of dropsy nothing will produce relief so rapidly as the iodide, which in these cases markedly increases the amount of urine passed.

With regard to the dose, there were some persons who had an idiosyncrasy, and in these a dose of two or three grains could not be borne. When it is borne, it is quickly eliminated by the kidneys, and it probably thus relieved the œdema around tumors.

The speaker thought it was not easy to tell always whether there had been syphilis or not. Even the most honest persons may deceive themselves or their physician.

Dr. MORTON wished to corroborate most emphatically Dr. Seguin and Dr. Hammond in regard to the use of the iodide of potassium in such conditions as had been described. Only lately in three instances he had been led by the somewhat anomalous complexity of the nervous symptoms, to diagnosticate late effects of syphilis, and on that supposition had given large and increasing doses of iodide of potassium. As time went on and further opportunities for studying the case were afforded, it became tolerably certain that a syphilitic history (presumed in the first place in spite of the patient's declaration to the contrary) might be eliminated.

Remarkable and permanent improvement, however, developed under the use of the iodide. And it had probably been the experience of others, as it was with him, that the improvement, as a rule, seemed to appear suddenly and at a point when very large doses of the drug had been reached, say 180 to 200 grs. three times daily. In many years he had never found that any trouble had arisen from giving these large doses.

Dr. SEGUIN, in closing the discussion, said that he was entirely aware of the possibility of being deceived regarding the previous history of a patient. He had, however, every reason to believe that there was no mistake in the histories of the cases he had cited, nor in others in which he had successfully used the iodide. He agreed with Dr. Weber that the diuretic action of the drug had something to do with its therapeutical efficacy.

Reviews and Bibliographical Notices.

Insanity and its treatment, etc. By SAMUEL WORCESTER, M. D. New York: Boericke & Tafel, 1882, 8vo, pp. 462.

We had no idea till we had looked over Dr. Worcester's book that there was so much in the homœopathic treatment of insanity calculated to excite the risible faculties as it now appears there is. Perhaps there is at times more or less of the ludicrous in all systems of practice, but for good, hearty, mirth-producing qualities commend us to homœopathic psychological medicine. We say Dr. Worcester's book out of compliment to the title-page. In reality, however, it is everybody else's book rather than Dr. Worcester's, for it is made up of long quotations—often extending over several pages—from various authors, such as Sankey, Sheppard, Dickson, Maudsley, Browne, and many others. Thus, let us take up one form of insanity—general paralysis of the insane—as an example of Dr. Worcester's mode of dealing with the subject, and in so doing we assure our readers that it is a fair instance.

The account of the mental and motor symptoms is given by a quotation of one and two thirds pages from Dr. Crichton Browne, a third of a page from Dr. Mickle, a third from Dr. Sankey, again Dr. Mickle to the extent of a page, a half from Drs. Blandford and Browne, another half page from Dr. Mickle, another third from Dr. Sankey, a third from Dr. Drouet, a third from Falret, a half (good measure) from Skae, a third from Delasiauve, another third from Falret, three and a third from Lemaestre, and many short quotations from various other authors—amounting in all to about half a page—making a total of ten pages of quotations under one head in a section consisting of twenty-four pages. Of the fourteen pages left, a good deal is avowedly taken from other writers, though it is not marked with quotation marks.

Now, of course this is all very funny, and of itself calculated to make one laugh. For, as Herbert Spencer has pointed out, laughter is excited by a sudden diversion of the emotions from one channel to another and very different one. Hence, when our feelings have been flowing in the direction of pleasure and surprise that a homœopathic physician should have produced a work on insanity, we find them instantaneously set off in the startling direction of discovering that the work is his only to a limited extent, and a burst of laughter is the result.

But this is by no means the only circumstance in Dr. Worcester's—if we continue to designate it by his name, the reader will still understand that we do so out of compliment to the title-page—work calculated to excite laughter in any one having even a slight acquaintance with insanity and its treatment. As is well known, the out-and-out homœopathic practitioner scorns the teachings of pathology and morbid anatomy. He never treats the disease ; he directs his therapeutical pop-guns at the symptoms. A cough, for instance, is with him simply a cough, no matter what its cause may be ; paralysis, from his standpoint, is a disease, whatever the essential lesion which produces it. Symptoms such as cough and paralysis may, as we know, result from very different affections of the lungs, the throat and fauces, and the brain, the spinal cord, and the nerves. But it is all the same to the consistent follower of Hahnemann. It is cough or paralysis he is after. He attacks the result, not the cause, so that whether the loss of power in a leg be due to a tumor of the brain, to a lesion of the anterior horn of gray matter, or to atrophy of the sciatic nerve, is a question about which he does not bother himself ; he sees a paralysis, and he hurls his infinitesimal thunderbolts of exactly the same kind, as if he were attacking exactly the same enemy in each instance.

Thus, continuing with the subject of general paralysis of the insane, we find that in the eight pages devoted to the treatment of this disease only thirteen lines are original with Dr. Worcester, and they relate to the use of hyoscyamine in the enormously large doses of three quarters of a grain. Besides this, he contributes a page on the hygienic management of the affection. All the rest consists of quotations from various homœopathic and other physicians, quoted approvingly.

Among the prominent extracts is the following from Dr. Talcott :

" We have used cannab. ind., as our patients have manifested

the strange vagaries of the hashish-eater; we have tried coca when the sense of strength has outstripped the actual physical powers; we have administered, in varying potencies, act. rac., arsen., bellad., cupr. met., ignat., nux vom., phosphor., digit., calc. phosph., phosphide of zinc, conium anacar., stramon., sulphur, ver. alb., and ver. vir., when any of these were called for by proper indications, but while our remedies have apparently produced beneficial results, yet the El Dorado of our hopes, the perfection of a cure, remains unreached. The treatment of paresis by homœopathic medication has been too imperfect and brief to be either discouraging, or conclusive, or satisfactory."

Dr. Worcester, quotes from Lilienthal, who in turn quotes from Kafka, as follows:

"*Rhus toxicodendron* has vertigo from previous senility in consequence of over-exertion, especially during walking, standing, and sitting, with the sensation as if they would fall forward or to the right side. They walk about as if they were drunk, and feel better when lying down," etc.

"For pride of rank or riches we have good remedies in *platina* and *veratum*, the former especially, when the patient is proud, full of self-esteem, and looks down upon everybody as his inferior; the latter gives us the purse-proud patient who lavishes his imaginary wealth on every thing and everybody."

Then we are told, upon Dr. Hering's authority, that *lachesis* is good, for "talkative mania speaks in choice phrases; jumping from one object to another [this is a little obscure; probably "subject" is meant for "object"; as it is, jumping from one chair to another would require the remedy]; or exalted language; corrects herself by substituting another word." And this under the head of hysteria:

"*Variable disposition:* Ignat., pulsat., stramon., moschus, platina, sepia.

"*Constant brooding:* Nux vom., ignat., sepia.

"*Constant and excessive dread:* Acon., pulsat., platina.

"*Fidgety expectation:* Valerian.

"*Persistent silence or constant moaning and lamentation:* Nux vom."

But, however we may laugh at all this, there is one remedy the virtues of which Dr. Worcester depicts, on the authority of Dr. Hart, but which we will all, whether in or out of the homœopathic ranks, admit are not overstated. It is the remedy *par excellence* of this golden age, and probably is capable of curing more

cases of hypochondriasis—of which the author is speaking—than all others combined. It is *gold*, and this is what is said of it:

"*Aurum.*—This remedy is best suited to male subjects, especially such as have a loathing of life, or a suicidal tendency; they are extremely melancholy, fearful, taciturn, and sullen. Its sphere also embraces religious melancholy; depraved appetite with pain in the stomach, flatulency, and cold extremities."

Very few, however, would be content with homœopathic doses of this regal medicine, and we doubt whether the most bigoted follower of Hahnemann, even if a "male subject," or having a "suicidal tendency," or being "fearful, taciturn, and sullen," or even if the victim of "religious melancholy," would have much curative influence exercised by it unless it was administered in appreciable doses often repeated.

There is a good deal more of this sort of stuff, and yet Dr Worcester, like many others of his brethren, is very inconsistent in his therapeutics. We have already seen that he gives hyoscyamine in doses of three quarters of a grain. We have never ventured beyond a twentieth even in cases of acute mania. There are many other instances in the book before us of a like excessive dosing, and if there is any discipline in the homœopathic hierarchy we may expect Dr. Worcester to be "pulled up with a round turn." In the meantime, we can, when we feel unduly depressed with the cares of life, turn to his jolly volume with the certainty of having many a good hearty laugh over its pages.

Nervous diseases: their description and treatment. A Manual for Students and Practitioners of Medicine. By ALLAN McLANE HAMILTON, M.D. 2d edition, revised and enlarged, with 72 illustrations, pp. 587. Philadelphia: Henry C. Lea's Son & Co., 1881.

In noticing the appearance of a second edition of this work within as short a period as four years,—a short period, considering the fact that it is exceedingly doubtful whether even a moderately large first issue could have been exhausted by sale on its actual merits, it behooves the impartial reviewer to study the possible other causes which may have led to the repetition of an infliction on the book-market which received general condemnation, in this as well as other journals, on the occasion of its first issue.

In the preface to the second edition, Dr. A. McL. Hamilton takes occasion to thank his "impartial reviewers," and to add, that where possible he has endeavored to adopt their suggestions. No doubt the limits within which he was able to follow the sug-

gestions made by others, were chiefly of a typographical character. For, if the author had followed all the sound advice he has received by his reviewers, the lesser, that is, the original, portion of the work would have been entirely rewritten. Unfortunately, many inaccuracies, erroneous generalizations, and, we regret to add, at least one gross misrepresentation, have been repeated in the edition before us. The chief improvements noticeable are all in the direction of attempts at rendering this work less of a technical plagiarism than it originally appeared to be. For being enabled to do this, the author is indebted to the proceedings instituted against himself and the firm of Lea's Son & Co., by Dr. Hammond and the firm of Appleton & Co., for literary piracy. (Wm. A. Hammond and others against Allan McLane Hamilton and another, U. S. Circuit Court, in Equity before John A. Shields, Esq., Commissioner.) Dr. A. McL. Hamilton has manifested his appreciation of Dr. Hammond's services, rendered so gratuitously and so much *à propos*, by cutting Dr. Hammond's name and reference or credit to Dr. Hammond out of the type, where possible. Thirty-seven references to Dr. Hammond have thus been stricken out. These were mainly those of a commendatory nature. And where Dr. Hammond's name has been left standing, it has been either to repeat attacks made on him in the first edition, or apparently because it would have involved too much destruction of type to expunge it. We believe it but due to ourselves as reviewers, to honest book-makers generally, and necessary for the purpose of accentuating the obligations to integrity and fairness which ought to be assumed by every impartial and just author, to specify some instances in which Dr. Hammond's name has been stricken out. We believe that the animus of the author displays and condemns itself in each of the following citations :

Old edition, p. 34 : " Dr. Hammond has recommended that the spinal ether spray be used to deaden pain." New edition, p. 37: " It has been recommended that the spinal ether spray be used to deaden pain." Old edition, p. 150 : " A tremulous character of the pulse has been noticed by several observers ; but I agree with Hammond that there is nothing distinctive about this." New edition, " A tremulous pulse has been noticed by several observers." Old edition, p. 172: " Hammond has collected 243 cases of right hemiplegia with aphasia, and but 17 of left." In the new edition, p. 191, this clause is omitted, the rest of the paragraph being unchanged. Old edition, p. 184 : " Hammond recommends chloride of barium, and claims to have improved the condition of

the patient"; also expunged in the new edition. Old edition, p. 202: "and Hammond states that epileptiform attacks are the first symptoms of such trouble." New edition, p. 222: "and it has been stated that epileptiform attacks are the first symptoms of such trouble." Old edition, p. 227: "In later years, other observers, among them Hammond, consider the affection," etc. New edition, p. 259: "In later years, other observers consider the affection," etc. Old edition, p. 248: "Gombault brought forward the first case, with an autopsy confirming the theory enunciated by Duchenne. In this country Dr. Hammond has written quite fully, and later the admirable works of," etc. New edition, p. 288: "Gombault brought forward the first case, with an autopsy confirming the theory enunciated by Duchenne, and in this country the admirable little works of," etc. Old edition, p. 266: "Synonyms: Trophic neurosis of the face (Romberg); Laminar aphasia (Lande); Progressive facial atrophy (Hammond)." New edition, p. 308, Hammond's synonym and name omitted. Lower down on the same respective pages, the old edition has: "The only American case, besides those reported by Hammond and Bannister, was presented at a meeting of the New York Society of Neurology * * * by Dr. Wm. H. Draper"; in the new edition: "The first American case was presented by Dr. Draper, * * * * and other cases have been brought forward since by Seguin, Robinson, Bannister, and others." Old edition, p. 268: "Hammond considers the unilateral character of the affection a strong argument against the theory of its peripheral origin. If the lesion were of a peripheral character," etc. New edition, p. 310: "If the lesion were of a peripheral character," etc. Old edition, p. 269: "Suffice it to say that Clymer, Ingall and Webber, Pepper, S. Weir Mitchell, Hammond, Drake, Gerhard, and Poore * * * have all reported cases." New edition, p. 311: "At about the same time Meredith Clymer was the first in this country to describe the condition. After him Ingall and Webber, Pepper, Weir Mitchell, and others, and among them Poore, of New York, *has* fully discussed the subject." Old edition, p. 289: "Synonyms: Amyotrophic lateral spinal sclerosis (Charcot). Inflammation of the lateral columns of the spinal cord, and of the anterior tract of gray matter (Hammond)." New edition, p. 342: "Synonyms: Amyotrophic lateral spinal sclerosis (Charcot)." Old edition, p. 292: "and Charcot's and Hammond's cases are thus accounted for"; new edition, p. 345: "and Charcot's cases are thus accounted for." The description of the gait in lateral sclerosis of

the cord, which is in the old edition based on Hammond's work, and in the course of which the latter is twice quoted, is expunged in the new edition. Hammond's recommendations of treatment of the same disease are similarly treated. Old edition, p. 305: "Hammond lays stress upon the statement that the prognosis is governed by the interval," etc. New edition, p. 381: "One author lays stress," etc. Old edition, p. 316: "Reynolds and Hammond show very much the same result," etc. This sentence is omitted in the second edition, and Dr. Reynolds suffers the penalty of "mitgefangen, mitgehangen" for being found in Dr. Hammond's company; but lower down, on the same page, he has been humanely spared; here the old edition has: "as well as Hammond, Reynolds, and others, take the opposite ground," and the new: "as well as Reynolds and others, take the opposite ground" (p. 394). It would almost seem as if throughout Dr. A. McL. Hamilton's book, "it," "others," and "one author" were mysterious symbols for "Hammond"; or, better, symbolic of the behavior of the ostrich, according to certain apocryphal zoological accounts, when that animal buries its head in the sand, that *the hunter* may not see it.

Before proceeding to notice several additions made to the chapters in the first edition, it may not be improper to commend the author for the corrections he has made in spelling not only the names of foreign and domestic writers, but also words in common use, as well as citations of titles of foreign articles and journals that were erroneously rendered in his first edition. The problematical "Ammidown" of the first edition now appears as "Amidon," "Kausmaul" as "Kussmaul," "Valliex" as "Valleix," and "Northnagel" as "Nothnagel," thanks to a reviewer in the *Richmond & Louisville Medical Journal.* Unfortunately that reviewer's work was not thoroughly done, and precisely where he had omitted to point out the comical errors into which Dr. Hamilton fell with regard to proper names, the latter has left them as they were. It thus happens that we have in the new edition an Afanaschiff (p. 207) for Afanasieff, a Dieters (p. 21) for Deiters, a Greisinger (222) for Griesinger, a Herschl (45) for Heschl, a Tochirjew (100) for Tschiriew, a Leibreich for Liebreich, and a Krauspe, whoever he may be; Pflüger appears transformed into Pfleuger (363), and takes the place of Pfleger, who is Pfluger on page 307. It is also fair to presume that Professor Westphal is contented with a single terminal "l," though on pages 275, 277, and 398 that letter is duplicated. It may appear trivial to de-

vote so much space to such collateral points; but in the first place, as it is not the quotations and abstracts, comprising the greater part of the book, that we are called upon to criticize, but Dr. Hamilton's own share; and in the second, the persistent and repeated misinterpretation of the names of prominent authors may be taken as an approximate gauge of the author's familiarity with the literature of the subject, we believe it our duty to call attention to so much of the work as betrays inherent evidence of having been compiled in one of our medical libraries. In the first edition the abbreviated title, "Beitr. zur mikr. Anat. des Ganglion. Nervensystems," was rendered: "*Beitz;* zur. mikr. Anat. *du* Gänglion Nervensystems." A reviewer, previously referred to, indulging in some sarcasm at Dr. Hamilton's procreation of a new author, that homunculus has been mercilessly slaughtered in the second edition, and the reviewer's suggestion that "Beitr." (not "Beitz.") stood for "Beitraege" been adopted to the extent of giving that word in full. We now suggest that "du" be changed to "des," and the period removed from after "zur"; it will then come out *nearly* right. Just as in accordance with the same reviewer's suggestion, the old title "Du Æthergegen den Schmerz" [Thou anti-ether—the pain] has been renovated to read correctly "Der Æther gegen den Schmerz." We hope in the course of successive reviews of successive editions of this work to gradually expurgate the numerous similar errors the work contains, and will guarantee to do the work thoroughly, unless Dr. Hamilton should add further citations, in which case nothing will help him but a little honest hard work at the German, French, and, we may be permitted to add, the English languages. For there is no such thing as "analin" (p. 22); nor does the third person plural present tense, ordinarily read "has" (p. 311, new edition). It might occur to one having full command of the English language to be guilty of such slips in the course of a hurriedly written article. But where these fill a second edition, for which careful revision is claimed, and whose original edition has been severely censured for its bad grammar and poor spelling, only one inference, which it is unnecessary to dilate on here, can be formed. "There *is* likely to be, in addition to lost sensation and motion in the muscle supplied by the nerve, various trophic defects, which may consist in exfoliation of the skin, and in changes in the condition of the nails, which become curved, crenated and deformed; and sometimes eruptions" (p. 555); or, "Paralysis of the nerves of the leg interests us much more, and as a con-

sequence (*of our interest?*—Rev.) we are *furnished* with weakness in the movements of the leg and foot" (p. 559); or, finally, "The *use* of 'massage' should be *employed* in conjunction with the other treatment," etc., illustrate not only the style but the coherency of the author's portion of the book.

Of the numerous errors of fact to which the author's attention has been called in consequence of the legal proceedings instituted against him, and the numerous critical reviews that have appeared, many are corrected; and one of them in such a way as to demonstrate at once the author's candor, fairness, and sense of honor, in a manner that will require no comment, we trust!

In the old edition stands the following sentence: "The fact that the large proportion of these attacks occur at night, is an interesting one. *They*[1] were mostly hospital patients, and some were irresponsible; so, of course, their statements are to be taken with allowance. One woman said: 'I awoke in a fright, and in attempting to rise found I was unable to do so.' It is probable, therefore, that the condition was dependent upon disturbed cerebral circulation connected with nightmare; but in opposition to Hammond's statement that the occurrence of the hemorrhage during 'healthy, undisturbed sleep' is unlikely, I will state that nearly every one of these thirty patients found that they were paralyzed only when they awoke in the morning and attempted to get out of bed." This statement being criticized in a review published in the *St. Louis Clinical Record*, and whose authorship was avowed by Dr. Hammond in the course of the civil proceedings alluded to, and which evidently had an influence, determining and modifying, in the appearance of the second edition, Dr. Hamilton changes the paragraph to read thus:

"The fact that the large proportion of these attacks occur at night, is an interesting one. They were mostly hospital patients, and some were irresponsible; so, of course, their statements are to be taken with allowance. One woman said: 'I awoke in fright, and in attempting to rise found I was unable to do so.' It is probable, therefore, that the condition was dependent upon disturbed cerebral circulation connected with nightmare; nearly every one of these thirty patients found that they were paralyzed only when they awoke in the morning and attempted to get out of bed."

This clause reads quite differently from the first; Dr. Hammond's idea is adopted and his name dropped; but the worst

[1] Italics, ours, throughout.

feature lies in Hamilton's repetition of a remarkable list of causes exciting cerebral hemorrhage in fifty-two alleged cases of his own.

"Lifting a heavy weight or other muscular effort,	12
Excitement (alarm of fire),	1
Drawing water,	1
Falls,	4
Fright,	3
Thrown down by husband,	1
Head injuries,	8
Straining at stool,	2
No history of cause,	20
	52

"*Time of attack.*—At night, in 30 cases; during the day, in 22 cases."

Now, granting that among the 30 cases occurring at night, of which nearly every one found him- or herself paralyzed only "when they awoke in the morning" are the 20 with "no history of cause," there remain 10 who lifted heavy weights, drew water, were thrown down by their husbands, and strained at stool *while asleep!* It is simply miraculous, that in view of the fertility of invention displayed in this table, the author has not been able to add from his records of practice (since his first edition has been reviewed) a sufficient number of cases to restore the dubious equilibrium of these figures.

But we are digressing. We promised to suggest some further corrections of the author's literary references. It may be mildly suggested that a literary reference should be either translated, or, if not translated, given in the original; at any rate, that it should be given in one language, not in *three* simultaneously, as "Reichert *and* DuBois-Reymond's *Archives*, 1870, Heft 3." Here "and" is English, "Archives" French, and "Heft" German. What is the "Wurz, p. Med. Geselschaft" (p. 150)? what the "Gehirnsrinde" (p. 192)? A "Klinische Wahremung" is not in our dictionary, nor a "Monatschaft" either, nor its fellow on the same page (347), "Storungen-neurosis"; Erb never wrote of a "spastische Spinallahmung *bie* kleinen Kindern." On page 194 the Doctor speaks of a case of Eulenburg's as follows: "He speaks but two words, viz.: 'Ach,' which he always uses for 'mien,'" etc.; we may add that if the patient had used "mien" he would have been either a German scholar of the calibre of the author, or an aphasic patient still.

In his eager desire to suppress reference to Hammond, Dr. Hamilton involves himself in remarkable contradictions. In the first edition he gives a long account of the microscopic appearances found by Dr. Hammond in McCormick's brain; in the second edition he says, "there was no other morbid appearance," after detailing the gross conditions. In which of the two editions is the truth told?

In its general arrangement the present edition does not vary much from its predecessor. The grosser errors in the opening chapter have been corrected; but the various terms used in neurology are not defined as they should be in a book intended for students. The directions given for examining the brain are the crudest, and written by one who has evidently either had no experience, or who, if he has dissected the brain, has done so after the approved fashion of many of our special pathologists; namely, sliced the organ into symmetrical cubes. It is, for example, rather a murky direction to trace the middle cerebral artery "by sections." If the figure on page 366 indicates the character of the sections obtained by the author in the course of his peregrinations into histology, we can only commiserate him on his failure; there is an enormous crack cutting off an entire gray horn running through the left half of the specimen, due either to a tear in cutting, or a crack produced by violently gouging the cord out of the spinal canal when fresh. At any rate it is difficult to see how the author, in view of the absence of the left anterior horn from his specimen, could say: "The ganglion cells of both anterior horns were seemingly unaffected and their nuclei distinct." Probably like his patients who drew water, strained at stool, and lifted heavy weights during deep sleep, the author saw these nuclei with the "eye spiritual." In the course of the Guiteau trial, Mr. Davidge, in endeavoring to combat the evidences of defective brain development in Guiteau, particularly the marked deviation of the tongue advanced by an expert for the defence, stated that six of the government experts tried to put their tongues out straight, and that only four of them succeeded. The author of this volume was one of the experts for the government, and if he suffered from as serious a lesion as one that would account for deviation of the tongue, it is not impossible that aberrations of the sensorium may be advanced as an excuse for his description of matters which to ordinary mortal eyes are invisible.

It is unfortunate that, if Dr. Hamilton was possessed of such a

criterion as he must have had, to say (p. 43): "If the disease (of the dura mater) be of a syphilitic nature, there is generally a gummatous deposit scattered through the tissues, and the under surface of the dura mater is often covered by a syphilitic exudation which can rarely be mistaken," he did not see fit to communicate it to a doubting profession.

The chapter entitled "Meningitis of the Aged," would just as well serve as a description of "lacunar softening." Many of the symptoms attributed to tubercular meningitis are based on observations of other hydrocephaloid affections (p. 59), and yet the carefully described case of Gibney is called one of "so-called tubercular meningitis." The statement, that small lesions in the corpus striatum (p. 97) may produce very decided impairment of mobility, must be taken with a grain of allowance; while the connecting clause, that decided impairment does not follow such lesion in the white matter of the hemispheres, is contradicted by daily observation. The fact that the "middle cerebral artery is in direct communication with the left side of the heart," cannot fail to become quoted as a novelty by anatomists. It is also remarkable that, if melancholic patients, who had refused food for two days, did go to table and eat heartily after a single dose of nitrous oxide gas, there are just as many melancholiacs at the same asylum as before.

One of the richest fields for the critic is constituted by the various paragraphs on diagnosis. We need but instance that locomotor ataxia is characterized by absence of all paralysis (p. 254). On the same page the author states the knee phenomenon to be absent, in another place to be exaggerated, in many cases of this disease.

He seems to have noted a peculiar geographical influence involved in certain therapeutic measures; thus, the "German cases" were benefited by certain measures (p. 277, speaking of acute ascending paralysis).

In almost every chapter inherent contradictions demonstrate the undigested compilatory character of the work. On p. 310, for example, the absence of motor and sensory trouble is cited as a ground for considering progressive facial atrophy a trophic affection, but precisely on the reverse page (309) the case figured is stated to have had "slight paresis." Occasionally the author has not been fortunate in his abstracting expeditions. Thus, the description of the Argyle-Robertson pupil (p. 323) is inaccurate. Again, on page 360, he has failed not only in getting the gist of

the author's meaning, but even in saying any thing in coherent and intelligible English. He has the following: "Flechsig in an elaborate article has written extensively upon the connection of certain fibres in the lateral columns with cells in the anterior gray horns, and Clarke's columns and certain fibres of the crossed pyramidal columns evidently arise from large cells in the anterior parts of the anterior horns, and these are supposed by him to be concerned in the provision of peripheral motor power, and to be involved when there are contractures." If Dr. Hammond's last edition had appeared in time, we do not doubt that the author of the present volume would have quoted Flechsig more correctly. Where he has made a casual attempt at original diction he has been less fortunate than in his abstracts; thus: "Syphilis, as I have said, is sometimes at the root of locomotor ataxia, and perhaps is the most fortunate cause to discover, as it greatly alters the prognosis of the disease. It must be understood that the lesion is purely syphilitic; and the symptoms result simply from the presence of a gummy infiltration or tumor in the posterior columns, and not from any induced sclerosis. Erb is disposed to lay great stress upon the frequency of the association of syphilis and the disease under consideration." This single clause contains at least four incorrect propositions: the inference as to the relation of locomotor ataxia to "gummy infiltration or tumor in the posterior columns" has no basis in fact, and if it did, such a case would be about as hopeless a thing as a neurologist would wish to find. Possibly this and similar vagaries in the book induced the author to pen the following propitiating clause (p. 384): "Certain phases of what we indefinitely call 'absent mindedness,' leading us to commit absurd acts, which we laugh at after they are performed, may be in reality genuine epilepsies, and in others may attain the importance of disease symptoms." In passing, it may be remarked that if this proposition is correct, the author has not been able to guard against a relapse of the very condition he was writing about, for what are the "genuine epilepsies," if not "disease-symptoms?" It is remarkable how different the author's expressions are on the stand as an expert witness, from his more deliberate statements, resting on the authorities he quotes in this volume. Certainly the clauses: "Reynolds states that in the upper classes this hereditary predisposition exists to a much greater extent, but calls attention to the difficulty of obtaining information. * * * I have been repeatedly astonished to find how strong this element is in the higher walks of life. In one family I find a long suc-

cession of insane ancestors, idiot children, and dissolute progeny, which *fully accounted* for the transmission of the disease," sound remarkable as coming from him who said at the Guiteau trial that there was no hereditary insanity.

It is amusing to note that the figures illustrating hystero-epilepsy are open to the same criticism which was passed on similar figures in Dr. Hammond's book, and which was pronounced against the latter in a now defunct journal formerly edited by Dr. A. McL. Hamilton.

On page 491 it is solemnly stated that twenty per cent. of the school children in New York are affected with choreic affections of greater or lesser gravity. The instrument figured on page 535 and designated "the author's percuteur" is clearly an imitation of Bondet's instrument, and we believe the French name given to "his" instrument betrays its suppressed origin.

On page 551 the chorda tympani ranks as a motor nerve of the tongue, inasmuch as tongue paralysis is produced by lesion of the *facial* nerve within the Fallopian aqueduct. On page 553 the poles of the electric battery are grievously confounded. We wonder whether the case of a child suffering from paralysis consequent upon passing a string over a finger (p. 557) can be called a pressure paralysis, motor nerve trunks not being located by any anatomist or physiologist in the fingers. On page 567 the impression is given that the muscles of the lower extremity are never involved in lead palsy.

In view of the use to which the ophthalmoscope was put to *disprove* the existence of insanity in Guiteau, it may not be out of place to here cite the author's quotation from Loring, who was placed on the stand to testify that there was no proof of insanity in the prisoner's retina :

"I cannot but think that the former alternative is the more rational, and from that very independence of the two circulations there is reason to fear, so far as functional *and especially mental diseases* are concerned, that there never will be, any more than there now is, any art to read the mind's construction in the eye."

On the whole we cannot recommend this book to the student. A book to meet the demands of one who is a novice and compelled to wade through the difficulties, opposed to every one, studying a complicated subject, should be written by one thoroughly conversant with that subject, familiar with its literature, clear in enunciation, and, it may be reasonably asked, capable of assimilating the ideas of others and presenting them in a moder-

ately correct English. Not one of these conditions is complied with in the work before us, and if we have been thus lengthy in our review, it has been to set forth distinctly our grounds for its condemnation, in order that no pretext may exist—a welcome one to a certain class of medical writers—for attributing it to a "personal" motive. We have hence shown that the author is not sufficiently well-informed to speak with the air of authority, by citing some very primitive errors of which he has been guilty; that his citation of literary references is a mere pretence, inasmuch as he has not been even able to copy them correctly, and where he has endeavored to represent the views, particularly of the German writers, that he has signally failed to render them intelligibly or correctly; that he is not clear; and, last of all, that he does not give evidence that he possesses the art of writing English with sufficient fluency and grammatical correctness to pass muster even on a hurried perusal.

Editorial Department.

OUR friends and subscribers have already learned with profound regret that Dr. J. S. Jewell, founder, proprietor, and editor-in-chief of the JOURNAL OF NERVOUS AND MENTAL DISEASE has felt obliged, on account of the increasing demands of other duties, to retire from the field of active medical journalism.

That this resolve was not carried into effect without equal regret on Dr. Jewell's part, all who have been familiar with the growth and progress of the JOURNAL will well understand.

That he was ever ready to break a lance for the truth's sake, that he was the steadfast champion of honest inquiry, that he was conscientious, indefatigable, and possessed of high literary ability, —all this we knew and saw reflected from the pages of his JOURNAL. But none of us perhaps will ever know how much unselfish labor he lavished on its pages, how much unreckoned time and money he gave to its development, until finally this favored child, so to speak, exacted from him more attention than the cares of a large practice would allow him conscientiously to give to it. Having guided its youth, Dr. Jewell now intrusts its adult age to other hands, confident that its training bespeaks vigor and continuity of years.

Our readers will not, however, entirely lose from the JOURNAL their former editor-in-chief, as in his capacity of associate-editor, Dr. Jewell permits himself still to be depended upon for valued aid and advice. [W. J. M.]

Our title-page has already called the attention of our readers to the fact that the Journal of Nervous and Mental Disease goes forth on another year's mission with a new hand at the helm. But the change, we trust, will not cause our good vessel the Journal to swerve a single point of the compass from its onward course. It continues to maintain as its purpose the teaching of neurological art and science, and the diffusing a knowledge of diseases of the brain and the nervous system. No branch of medicine is more interesting, more intricate, more mysterious, more inviting to skilled research, more essential to medical success, and more in need of encouragement than is neurology. But in thus setting apart neurology as a special study, we are conscious that it is, from certain points of view, scarcely just to refer to diseases of the mind and nervous system as a particular branch of general medicine; neurology is more correctly the warp whose woof is the entire field of medicine; it is the underlying and firm threadwork on which are depicted the designs of a multitude of diseases. A knowledge of diseases of the nervous system is, then, almost a basic necessity of the scientific practice of medicine. From this point of view the neurologist is less a specialist than any other specialist; his studies weave their way into the profoundest secrets of all diseases. And it is for this reason that a journal that is the exponent of the neurologist's studies, reaches to the foundation of every physician's practice and must be of vital assistance to him. It is from this broad outlook that we start off our Journal upon the ninth year of its progress. To the neurologist the Journal offers a tablet wherein he may permanently record his special labors; to the busy general practitioner it offers the harvest not alone of our contemporaneous and original American neurological literature, but also through our abstract department an outlook over the most important contemporaneous neurological work of the entire world.

Essentially American in its history, its spirit, and its general make-up, we intend at the same time that our Journal shall be cosmopolitan in the knowledge it offers. With this preliminary

greeting to our friends, readers, and subscribers, we pass on to the work of the year, anxious to win their approval and verify our promises. [W. J. M.]

CONSISTENT with popular feeling as the verdict in the Guiteau case undoubtedly is, it is nevertheless undeniable that there is a strong current of professional opinion in favor of the prisoner's insanity. That this current of opinion has yet attained but comparatively slight expression, is due to the peculiar conditions of the crime and the trial. Science was at first struck dumb by the enormity of the crime, and afterward muzzled by popular clamor. There are those who believe that the result will be to hang an insane man. The legal technicality of declaring him sane will not blind the eyes of posterity to the criminal's real condition; the argument that there are crimes so heinous in comparison with the insignificant atom that causes them that outraged society overwhelmingly crushes the atom out of existence, will not excuse his execution. To hang a sane assassin is but mild punishment for him; but to hang an insane man who commits a homicide, reflects no credit on the science or on the humanity of the legal or the medical profession. That the science or humanity of either profession has received adequate expression in the Guiteau trial, is open to more than doubt. And it is not a little unfortunate that whatever burden of opprobrium is to be endured in this respect will, to a large extent, be necessarily borne by the medical profession in general. The next generation will blame, not the experts in the case (they were the outgrowth of our system of expert testimony), but they will blame rather the medical opinions of the times that could hang a Guiteau.

The verdict of the future will doubtless be that the hanging of Guiteau was the outcome of a great national wave of feeling that carried law and medicine tossed as lightly on its crest as a toy ship is tossed on a tidal wave.

We present to our readers in this issue the views of two distinguished experts, whose opinions, confirmatory of our words,

are but the first notes of a great volume of unexpressed criticism that may be expected now and in the future, on the Guiteau trial. [W. J. M.]

THERE is little doubt that the humiliating spectacle witnessed in the Guiteau trial, of summoning expert testimony on opposite sides of a case, will render the position of the paid and partisan expert more ridiculous than it has ever before appeared in this country. It does not now seem possible, sorrowful as is the admission, to more effectually cheapen the value of medical opinion in a legal case. With the exception of a modicum of valuable expert opinion, the public has been treated to a solemn mixture of metaphysics, theology, phrenology, physiognomy, "expert conferences," and "concerted action," all under the name of medical science.

It would almost seem as if the time must soon come, if indeed it has not now arrived, when the better members of the profession will feel ashamed to appear in court as the merest tool of the lawyers who conduct the case, "hired by the dozen" (as a lawyer asserted) and placed by reason of the expert fee system on a level with any ignoramus who holds a medical degree. Can it be wondered at that the public is confused by the natural conflict of opinion, and, finally, shrugging its shoulders, remarks that "doctors disagree"? It is to be hoped, for the credit of what there is true and good in medical science, that under similar circumstances "doctors" will disagree.

As now given, an expert's opinion is, as a rule, a mere farce. An instance of this is the long journey to Washington of a number of experts who absolutely uttered no word in the trial beyond yes or no to a hypothetical question, and then returned home. If we join to this a fact equally well known and true, that the lawyer who puts this hypothetical question knows by a previous understanding with the expert what the answer will be, we pile farce on farce, and reach positive discredit to law, medicine, and justice combined. By this system we have mainly a series of hired answers arrayed on either side of a case. The impartial expert

becomes a partisan in spite of himself. The suggestion of interest cannot be removed where payment, however just and well-earned, comes alone from one side or the other.

But we look for good out of evil in this instance; we trust that the ridiculousness and the injustice of the expert's position in such a trial may be so patent that means may be taken to prevent this ever-recurring and ever-disgraceful array of expert against expert in a question of insanity or malpractice. It is time for the medical profession to take the matter in hand and see that the law regarding the relation of medical experts to the courts is changed. This change, doubtless, will be made by the several States, one by one, and thus gradually spread and become the law of the land. Its essential feature must be the reference of the question of insanity or malpractice (where the same absurdities come to light) to a commission or jury of experts, either medical alone or legal and medical combined, who shall pass a preliminary opinion upon the prisoner's insanity, which shall serve as a basis of argument and judgment in the trial.

These juries or commissions should be appointed by the Legislature, and should be liable to be called upon by the courts in given cases, where the services of the present partisan expert is now called for. We have already similar boards or commissions to whom special subjects are referred. A step in the right direction has been taken by the State of Massachusetts, which, in place of the old political coroner, has established a system of medical examiners, men of integrity and position, and skilled in their profession. The evidence of these men, paid by the State and evidently unbiassed in their opinions, presented to the jury, has done much in that State to elevate the standard of expert testimony.

Should this plan of expert juries or commissions paid by the State be adopted, the opprobrium that falls upon the entire medical profession by reason of the conflicting opinions of experts, whether partisan or otherwise, would be averted, and the ends of justice measurably furthered. Will the Neurological or Medico-Legal Society not take the lead in this matter? [W. J. M.]

THERE are present indications that the New York Medico-Legal Society is about to enter into a phase of increased activity and usefulness. That there is unlimited opportunity for any advance in medico-legal science that this or any other kindred society is capable of, is more than patent, in view of the remarkable spectacle of "expert" testimony afforded by the Guiteau trial.

We have just perused the inaugural address of the new President of the Society, Mr. Clark Bell, and if half of his promises are fulfilled, we shall have what we ought to have in New York, viz., the most flourishing society of its kind in America.

The first object of the society should be, from a legal point of view, to suggest means of securing the administration of justice in criminal trials when insanity is set up as a defence; and from a medical point of view, to elevate the standard of medical evidence in relation to insanity. Here is an ample field of prospective activity for the society. We see that one of the main ideas of Mr. Bell is to further the increase of the library, and to this end he makes several practical suggestions, among which are that the donation of one bound volume each year be made obligatory upon members, or in lieu of this an equivalent sum of money; that a library committee be appointed, and that subscriptions be solicited.

The present membership of the society is about 200, and it is proposed to increase the number to 500.

Mr. Bell's inaugural contains many other valuable suggestions, and we have every reason to believe that his purposes, so sanguinely expressed, are a true reflex of the opinions held by the large number of exceptionally earnest workers that form the present membership of the society. The Medico-Legal Society will do a service to the country, if it contributes even minutely to the solution of the medico-legal paradoxes witnessed at the Guiteau trial. Our best wishes attend its efforts. [W. J. M.]

NATIONAL ASSOCIATION FOR THE PROTECTION OF THE INSANE AND THE PREVENTION OF INSANITY.

THE above-named Association held its last meeting in New

York, January 20, of the present year. The President, Dr. Wilbur, in an introductory address, very well summarized the aims and achievements of the society.

Dr. Nathan Allen, of Lowell, Mass., read a paper on "Insanity, in its relations to the medical profession and lunatic hospitals."

Dr. C. L. Dana read a paper on "Asylum superintendents and the needs of the insane in this country," giving some statistics relating to insanity."

Dr. E. C. Seguin read a paper on "The function of a consulting staff in lunatic hospitals."

Dr. J. C. Shaw gave the results of his experience in the abolition of restraint in the Flatbush Insane Asylum.

These papers were discussed by Drs. Beard, M. Putnam Jacobi, Morton, Garrish, and others.

The titles of these papers indicate, in part at least, the objects of this Association, which was founded in Cleveland, Ohio, July 1, 1881. Since that time three meetings have been held—two in New York and one in Boston. The special aims of the Association, as stated in the constitution, are to encourage the scientific study of insanity by the profession in and out of asylums, to enlighten public sentiment in regard to the needs of the insane, to diminish the increasing taxation for the support of the insane population, and to advocate such legislation as shall ensure thorough supervision of asylums, public and private.

Indirectly as well as directly these objects are being accomplished, though very important tasks remain. The Society already has a good and increasing membership, its meetings are well attended, and a number of eminent physicians and laymen, including several officers of asylums, are enrolled on its list and earnestly engaged in its behalf. [G. M. B.]

Our distinguished collaborator in Paris, M. Charcot, has just been appointed to the Chair of the Clinic of Diseases of the Nervous System in the Faculty of Medicine of Paris. This Chair, it

seems, was created for M. Charcot by special decree of the Minister of Public Instruction, at the solicitation of the Faculty. The creation of this Chair and M. Charcot's appointment to it, is a graceful rectification of the previously existing anomaly that the most distinguished neurologist of his country should have been Professor of Pathological Anatomy in this same Faculty.

M. Charcot's many American friends, familiar with his contributions to neurology and general medicine either through his writings or by reason of the cordial reception that he has always extended to them at his clinic at Le Salpétrière, congratulate him on his enlarged sphere of usefulness. [W. J. M.]

It is not without precedent, established both at home and abroad, that we include among our original contributions one from a non-medical writer.

In a journal that treats of mental disease, psychological and historical parallels have their place and interest. The case of Guiteau is still too fresh in our minds not to render of extreme interest a parallel found in the lives of any of the mental anomalies of the past, and we take pleasure in presenting that of Vanini, a famous Italian. [W. J. M.]

Periscope.

a.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

Luchsinger recently has taken up an investigation of the phenomena of the venous hearts in the wing of the bat. A series of experiments in the last year has shown that certain chemical, mechanical, and electrical irritations generate a rhythm in the resting heart. Experiments upon the ureter have demonstrated that mechanical distension is a powerful cause of rhythm, the distension being a purely peripheral irritant of it. The wing of the bat presents an excellent but little used object for researches. To spread it out he used Emmert's holder for the frog web. The vein in the field of the microscope was slightly magnified by a low power. In the first series of experiments the brachial plexus was prepared and divided. The veins of the wing continued to pulsate strongly, eight to ten times per minute. That no fine nervous filaments might be in connection with the venous hearts, the ulnar, median, and radial nerves were exposed and divided, but the venous pulse still continued. Then the blood-vessels running to and from the wing were held aside, and all the remaining connection between the wing and body severed by a strong scissors ; but the rhythm of the veins still continued. Now only fine sympathetic nerve fibres can remain on the walls of the blood-vessel in connection with the central nervous system. To destroy these he brushed the wall of the blood-vessel with ammonia, but the pulsation still continued. From these facts Luchsinger infers that the pulsation of the veins is due to peripheral causes. In the second series of experiments he amputated the wing, but the pulsation, after the first minute succeeding the amputation, continued. In the third series of experiments he ligated the wing and amputated it above the liga-

ture, but the pulsation continued ten to fifteen minutes. In the fourth series of experiments the animal was asphyxiated, a canula bound in the aorta, and ten minutes after death well-beaten blood of an ox run through the blood-vessels, from a height of forty to fifty centimetres. The blood was used at the temperature of the room, and the circulation was easily set up, the veins becoming swollen. Pulsation then took place and continued twenty-four hours after death in a marked manner. This experiment of artificial transfusion showed more. If the pressure was at zero, after a few minutes the pulsation was arrested, the transfused liquid flowing from the vein in small quantity. If, however, the pressure was elevated forty to fifty centimetres (water), then the veins were swollen and the rhythmic play began. If the pressure sank to zero, then the pulse-beat sank to zero, but not suddenly He infers that, as in the case of the heart and ureter so in the blood-vessel, the mechanical distension of the contractile wall is a powerful irritation to call out rhythm. The seat of the peripheral irritation, whether in the ganglia or in the muscle fibre, is not to be definitely decided from these experiments. Whilst the rhythm is independent of the central nervous system, it is not to be inferred that the central nervous system is without any regulating influence upon the rhythm. When the ulnar nerve was irritated there was a marked increase of pulsation, never any slowing. Warming the wing increased the pulsation, whilst higher temperature caused diastolic arrest ; but upon cooling, the pulsation again appeared. Tetanizing electrical currents caused considerable acceleration of the rhythm. Nitrate of amyl caused in the beginning a great acceleration and increase of pulsation, but shortly before the death an arrest of the movement.—*Pflüger's Archiv*, Band xxvi, Heft 9 and 10.

Szpilman and Luchsinger have been experimenting upon atropin and smooth muscular fibre. That atropin dilates the pupil and paralyzes intestinal movements is due, according to Von Bezold, to an action mainly on the local ganglia. Smooth muscular fibres were not soon affected by the drug. In contradiction to this view there are other experiences. In the beginning of this century Kieser found that atropin did not dilate the pupil of birds, and L. and Gysi have found the same to be true for the turtle. The iris of birds and reptiles is striated, whilst atropin acts on the smooth muscular fibres of the mammalia and amphibia.

They try to explain this by an action of atropin on smooth muscular fibre, and not on the ganglia as heretofore held.

The œsophagi of different vertebrates seemed a suitable object for experiment. The œsophagus of a frog and the crop of a bird have smooth muscular fibres ; the œsophagus of the dog and rabbit is striated; whilst the œsophagus of the cat has striped fibres in the upper three fourths of its length, and in the lower fourth exclusively smooth muscular fibres. In the œsophagus is also found a large number of ganglion cells. In the first experiment in a rabbit the vagi were prepared, divided, a canula bound in the jugular, tracheotomy performed, and the cervical segment of the œsophagus laid bare. Atropin, .08 grm., was injected in divided doses. Vagi were tested up to the death of the animal, and called out strong contraction of the œsophagus. In the second experiment a pigeon had the vagi prepared, a canula bound in the jugular, and the lower part of the crop laid bare. It reacted well upon irritation of the vagi. A cubic centimetre of a 1-per-cent. sol. of atropin was given every five minutes, the vagus was tested, and in the interval the crop was surrounded by warm moist cloths. After a dose of .03 cubic centimetre of the atropin solution, the effect of irritation of the vagus was extremely small, and after .05 c. c. the strongest irritation of the vagus was without effect. Artificial respiration was instituted and the thoracic portion of the œsophagus laid bare, but irritation of the vagus was without effect, whilst direct irritation called out weak contraction. The heart beat well and the nerves going to the muscles were irritable. In a third experiment a large cat was narcotized by an injection of .03 grain of muriate of morphia through the jugular. Tracheotomy was performed, the two vagi prepared and divided. Artificial respiration was kept up, and the œsophagus drawn out by means of a resection of the lower ribs on the left side ; the attached vagus was isolated and the lower fourth of the œsophagus in the neighborhood of exclusively smooth muscles divided. Irritation of the vagi called out contraction of the upper as well as the lower part.

Then .05 gr. of atropin in solution was injected through the jugular, and in about five minutes irritation of the vagus was repeated. The upper part of the œsophagus contracted strongly ; the lower part had lost nearly all irritability. Then 2 c. c. of atropin solution were injected. Again the vagus was irritated, but the strongest irritation of the vagus had no effect. Direct irritation called out a weak contraction, and the upper segment

acted strongly upon every irritation. When the animal died, the inferior mesenteric ganglion was sought out, and the nerves going to the bladder prepared; the irritation called out weak contraction of the bladder. In the fourth experiment .03 c. c. of solution of atropin was injected subcutaneously in a frog. After complete paralysis the vagi were prepared and divided. Irritation of the vagi with electric current caused a contraction. In another frog .05 gr. of atropin was injected, and the irritation of the vagus called out an extremely weak contraction. The irritation of the nerves going to the muscles caused marked contraction.

From these experiments they infer that the smooth muscular fibres of the crop and œsophagus of the bird were paralyzed by atropin, whilst the striped fibres of the œsophagus in the rabbit were not affected by the largest doses. In the cat the smooth muscular fibres of the lower fourth of the œsophagus were paralyzed by atropin, whilst the upper striped segment retained its irritability under large doses. Less marked is the action in the case of a frog, as large doses are needed; as is the case to paralyze the sphincter iridis of this animal. That the paralysis of the œsophagus is not due to the action on the ganglia is proven by the fact that the œsophagus in all vertebrates should be affected. That atropin does not affect striated muscles is in accordance with its action on the striped muscles of the iris of birds and reptiles. Hence, it is inferred that atropin is a specific poison to smooth-muscle cells or the nerve-endings in them.—*Pflüger's Archiv*, 1881.

Brown-Séquard exhibited to the Biological Society a monkey in whom, four months previously, he had extirpated the motor centre of the left posterior extremity. There ensued a paralysis of the left posterior member, then atrophy and contracture in a state of flexion. The limb had diminished in length three centimetres. He stretched the left sciatic by means of a kilogramme weight for five minutes. The paralysis increased immediately afterward, but the contracture diminished, and in an hour afterward the member increased in length a centimetre, and in five days the two limbs were equal in length, the contraction had totally disappeared, and the paralysis was very much improved. At the time the left limb was not over a centimetre shorter. He stated that the contracture was due to a particular state of the

motor nerve-endings in the muscle, that the cause of the contraction resided neither in the brain nor in the spinal cord, for the cerebral changes persist, but the contracture is able to disappear.—*Le Progrès Médical*, November 26, 1881.

Morat has studied the physiological action of different substances upon the movements of the stomach and intestines. He experimented with pilocarpin and atropin. The experiments were made upon dogs feebly curarized. The pilocarpin was injected into a vein, or into the subcutaneous cellular tissue, in the dose of .01 to .02 gr., which caused at the end of some minutes the appearance of extremely energetic rhythmic movements of the stomach and small intestines. These movements are similar to the normal movements of the two organs, but differ from them especially in their energy and extent. If at this moment one injects into a vein 01 gr. of neutral sulphate of atropin the movements are in less than a minute completely arrested. These experiments demonstrate that pilocarpin and atropin have an action on the stomach and intestines,—an action similar to that upon the glands.—*Le Progrès Médical*, Nov. 12, 1881.

Buccola (*Bibliographia-Archivio Italiano per le Malattie Nervose*, Septembre–Novembre, 1881) has studied the time involved in a simple psychical act and the physiological "time of reaction" in the insane. The time in which an irritation is made of an organ of sense and the person experimented on is able to signal with his hand, is called the "time of reaction." He used the chromoscope of Kipp, which can be used to estimate the thousandth part of a second. The following parts of a second, express the "time of reaction" as given by Buccola :

	Eye.	Ear.	Touch.
1st observation	.168	.115	.141
2d "	.151	.119	.129
3d "	.172	.131	.152

If we examine these numbers it will be found that the time by the ear is less than by either the electrical irritation or a luminous object. He thinks that this retardation varies according to the organ of sense excited, depending most probably upon the different physiological intensity of the various sensory stimuli. The psychical constitution of the individual has an effect on the

"time of reaction"; in the uncultivated the time is longer than in the educated. The more lively the attention, the shorter the duration of the "time of reaction." Thus, in the imbecile and idiot, where there is great wandering of attention, the time of reaction is quite long. From his experiments upon the insane he arrives at the following conclusions in regard to their time of reaction. The retardation of the mean time of reaction is so much more, the more the patient presents the character of greater weakness of mind. By the stimulus of sound the lowest time of reaction was .159, which ascended finally to .566. Between the maximum and minimum time of reaction there is a great numerical difference, and the difference increases in a measure as every stage of simple weakness of mind is joined by intermediate steps to profound dementia. The minimum time of reaction is much greater than that of a healthy man. The time of reaction demonstrates objectively in the clearest manner how much resemblance exists between imbecility and idiocy on the one side and the different degrees of dementia on the other.

It makes more simple psychical life, for the perception of an external phenomenon passes away with identical characteristics into the extreme type of the pathology of the human mind.

Kronecker and Meltzer have arrived at the following results in regard to the act of deglutition. In normal swallowing the mass is injected through the œsophagus into the stomach before peristalsis can be of value.

1. Every act of swallowing excites not only the corresponding contraction of the œsophagus, but inhibits at the same time the previously called-out but not yet manifest contraction of a previous act of deglutition.

2. The second motor irritation is active when the first ensuing movement is over.

3. When the whole glosso-pharyngeal nerve is excited, then no act of deglutition ensues. This is seen in dogs, not in rabbits.

4. When the pharyngeal branch of the glosso-pharyngeal is separately excited, then the inhibition takes place in the throat and chest part of the œsophagus. This result is obtained by experiments on dogs.

5. When the glosso-pharyngeal nerve is divided, then the œsophagus falls into a tonic cramp which can last more than a day. It is not difficult in rabbits to show the inhibitory action of the

glosso-pharyngeus upon the taking place of the act of deglutition. When the superior laryngeal nerves are irritated electrically a swallowing movement is called out, and about one second after this, the elevation of the larynx ensues, and on the bared cervical part of the œsophagus a contraction takes place. If now, immediately after the elevation of the larynx, which indicates the first part of the act, the glosso-pharyngei are tetanized for a short period, the contraction of the œsophagus does not take place.

ISAAC OTT, M.D.

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b.—GENERAL PATHOLOGY OF THE NERVOUS SYSTEM.

ON PROCESSES OF DEGENERATION AND REGENERATION IN THE NORMAL PERIPHERAL NERVOUS SYSTEM. By Sigmund Mayer, *Prag. Vierteljahrsch.*, 1881.—The essential result of the author's investigations is, that in the peripheral nervous system of vertebrates there is a continual disappearance of medullated nerve fibres in variable number, while later a certain number recover their formerly normal condition. From this it appears that the medullated nerve fibres are not stable structures, but succumb one by one during the course of the various life processes which effect changes in their histological or chemical structure; so that the phenomena which the author is inclined to consider normal and subservient to the purposes of the organism indicate that they possess not so much of a perennial as a cyclical duration of life.

The author considers the full-grown rat (*mus. decumans*) as the best animal for examination, as this process of degeneration and regeneration seems to be quantitatively more decided in the rat than in other animals. The preparations were either examined fresh in a ½-per-cent. solution of sodium chloride, or treated with a solution of hyperosmic acid (1:1000) for some time before teazing. The processes of degeneration commence by a subdivision of the medullary substance, while at the same time it has a more decided glistening appearance, and stains blacker with hyperosmic acid. The nuclei of the sheath of Schwann are usually enlarged at this stage; the fat-like subdivisions of the medullary substance increase more and more, although in portions the process disappears, the fat-like derivations of the myelin being no longer present, the contents consisting of a fine granular mass

only. At the same time the fibres appear smaller, showing at this stage continual changes in their dimensions. Finally the contents of the nerve fibres are reduced to a minimum of fine granular matter and dark-shining nucleoli, which lie in a delicate fibrillary structure containing nuclei, so that it is easily possible to mistake them for non-medullary fibres or elements of the intervening tissues. The axis-cylinder disappears also, along with the degenerative modifications of the medullary sheath, and loses for the time being its existence as a definite structure. The degeneration processes in the majority of cases extend throughout the fibre, although occasionally in segments, with intervening normal portions. The stage of regeneration is recognized by the more or less completely developed constituents of a new normal nerve fibre, namely an axis-cylinder with an envelope of normal myelin. These newly formed constituents are enclosed by the remains of the old degenerated fibres, called by the author the degenerative envelope, the latter being enclosed by the sheath of Schwann which withstands the degeneration changes. The newly formed portions between the unchanged parts of the fibre possess a somewhat thinner medullary sheath, and is much narrower than the latter, from which it is separated by constrictions resembling those of Ranvier. Several newly developed fibres may form with one of the old sheaths of Schwann. As the regeneration envelope gradually disappears, the newly formed fibres finally acquire completely the appearance of the unchanged fibres, except that the sheaths of Schwann and Henle nearly always appear hypertrophied. These changes may be observed more or less distinctly in man, mammals, birds, fish, and amphibians; they are particularly well shown in the nictitating membrane of the frog. They are found in the cerebro-spinal and sympathetic nerve fibres, but more rarely in young animals than in old ones. Concerning the significance of these changes the author is somewhat reserved.—*Centralbl. f. Med. Wiss.*, No. 40, 1881.

Paralysis of the Hands and Feet from Disease of Nerves.—Dr. Granger Stewart, in a paper read before the Medico-Chirurgical Society of Edinburgh March 2, 1881, describes three cases of a peculiar form of paralysis in the hands and feet, which he considers of peripheral origin.

The disease is characterized by an acute commencement, with more or less fever. The sensory functions are first implicated.

Numbness and tingling are frequent in the affected parts, associated with more or less anæsthesia, while pain is sometimes present. These sensory disorders affect the hands and feet simultaneously. Paresis affects the most distal parts first, extending up the limb from one group of muscles to another. Voluntary motion is rapidly diminished, so that at the end of a week the patient may be unable to flex or extend the fingers or toes. Power of coördination is not interfered with to a marked degree. In rare cases the functions of the bladder and rectum may be affected. The skin reflexes may be absent, but usually react to a strong stimulus. The patellar tendon reflex is usually lost at an early stage, but "ankle clonus" may be present, with the former absent. Trophic changes appear in the form of rapid muscular atrophy, congestion and glossiness of the skin, mal-nutrition of the nails, and slight œdema. The disease tends toward recovery, but has a proneness to recurrence. In one fatal case the median, ulnar, and tibial nerves were particularly affected, the axis-cylinders appeared swollen, and a number of rounded bodies resembling colloid bodies were observed; in some cases they had undergone fatty degeneration and transformation into compound granular corpuscles. Aside from evidences of fatty degeneration, some nerve fibres were completely destroyed and replaced by fibrous tissue. Secondary degeneration of the columns of Goll and of the direct cerebellar tracts were observed. Dr. Stewart is inclined to the view that the disease commenced in the sensory nerve-endings—as the sensory preceded the motor disturbances,—progressing as an ascending neural affection. The disease differs from Landry's acute ascending paralysis, in the absence of sensory symptoms in the latter. He suggests that the premonitory but trembling attacks of paralysis, involving certain nerves in locomotor-ataxia, may be explained by assuming them to be due to peripheral disease. Ergot during the acute stage, and strychnia, friction, and electricity in the later stages, were found useful.—*London Med. Record*, Oct. 15, 1881.

Note on the Pathological Anatomy of Diphtheritic Paralysis. E. Gaucher, *J. de l'Anat. et de Phys.*, xviii, p. 17.—In a case of paralysis of the palatal muscles and paresis of the extremities, following diphtheria, in a child two years of age, which terminated in death after one month's duration, a careful examination of the nervous system gave an absolutely negative result.

A second case was that of a boy aged 11, affected with diphtheria, followed by paralysis of the throat muscles, later involving the extremities, and the muscles of the back, and resulting in death from asphyxia twenty days after the commencement of the paralysis. On microscopical examination, the brain was found hyperæmic only; in the anterior roots of the cord about one third of the fibres exhibited marked changes, consisting of complete absence of the medullary sheath, increase in number and size of the nuclei, while the axis-cylinders appeared perfectly normal. No changes were found in other parts of the nervous system. The manner in which the medullary sheath may have been lost is not described. No granular corpuscles were found; the neurilemma was normal.—*Centralbl. f. Med. Wiss.*, Oct. 22, 1881.

Alterations in the Spinal Cord in Infantile Spinal Paralysis and in Progressive Muscular Atrophy. Roger and Damaschino. *Rev. de Méd.*, etc., 1881-2.—Respecting the lesions found in infantile spinal paralysis in nearly the whole height of the lumbar enlargement, inflammatory softening existed in the anterior gray columns on the right side being more extensive than on the left, the focus of softening was nearly fluid, its periphery distinctly sclerosed. In the dorsal region no decided softening was found, but abnormal distension of the lymph-spaces, of the blood-vessels, with granule cells. The same condition was found in the cervical region, though developed to a much less degree. The foci of softening were formed by a reticulum of the finest fibrillæ, numerous nucleated granule cells, partly free and partly in the vascular walls. The ganglion cells on the right side were completely atrophied; on the left, the internal anterior group remained. The atrophic ganglion cells were generally reduced in size, shrunken, granular, with indistinct nucleus and nucleolus, and a number of their processes entirely destroyed. The nerve fibre of the gray substance failed also entirely. The whole antero-lateral columns were distinctly atrophied; there existed a certain degree of sclerosis and an appreciable multiplication of connective-tissue nuclei. The anterior roots were also atrophic. It is to be observed that the atrophy of the ganglion cells of the anterior horns were not confined to the spot of softening, but were also to be found, though to a less extent, in the remaining portions of the cord. The affected muscles presented the characteristics of simple atrophy; in part, marked interstitial

development of fat. The authors look upon infantile spinal paralysis as a central myelitis—a softening of inflammatory character, principally in the region of the gray anterior columns, with secondary atrophy of the nerves and roots.

A second communication relates to a typical case of progressive muscular atrophy, in which a simple atrophy of the ganglion cells of the anterior horns was found without inflammatory appearances. The atrophic degeneration of the ganglion cells is analogous to that of infantile spinal paralysis; it involves also the antero-lateral columns, the anterior roots, and the nerves.—*Centralbl. f. Med. Wiss.*, Nov. 5, 1881.

On the Electrical Excitability in Spinal Cord Disease of Dementia Paralytica, with a Contribution to the Pathological Anatomy and the Pathology of the same. F. Fischer, Jr. and Fr. Schultze. *Archiv. f. Psych.*, etc., xi, 3.

In three cases of dementia paralytica, with paresis of the lower extremities, associated with spastic symptoms and exalted tendon reflexes, careful electrical examinations were made by the authors. They found that as long as the anterior roots or anterior horns were not affected, only moderate changes—principally quantitative—occurred in the electrical excitability. The galvanic excitability was diminished, principally in both peroneal nerves, while the Faradic excitability was preserved. Certain nerves, the accessorii and ulnares, for example, possessed a somewhat exalted excitability on one side; or the galvanic excitability of the right side was exalted, while the left was diminished, as in the third case described below, in which also the Faradic excitability was diminished in the peroneus and in the accessorius at one time. Cathodal closing tetanus (Ca. C. Te.) was retarded, or the anodal opening contraction (An. O. C.) was absent.

In Case 1 Schultze found degeneration of the latero-pyramidal tracts in the dorsal region only, indicating, from the non-involvement of the cervical and lumbar portions not a secondary but an independent primary affection. In Case 2 the medulla and pyramids were intact; the upper portion of the cervical cord exhibited degeneration of the columns of Türck, the latero-pyramidal tracts, and linear degeneration of the posterior columns. Similar changes were found in the dorsal cord, except that the

anterior columns remained free. Abnormal formation of the gray matter (2–3 cm. expansion) was also found in the dorsal portion. So that in this case also a primary degeneration of certain conducting tracts of the cord was present. In Case 3 the white substance was intact, but the gray substance in the lower half of the dorsal region was of a peculiar formation—an approach of Clarke's columns to each other. Both anterior horns were much reduced in size.—Rev. in *Centralbl. f. Med. Wissensch.*, Dec. 10, 1881.

An Endemic of Paraplegia among Chinese Coolies.—Dr. H. N. Vineberg, of Waiohina, Sandwich Islands, reports in the *Canada Medical and Surgical Journal* for November, 1881, the appearance of a peculiar disease among the Chinese laborers on the several sugar plantations on the islands. Of about three hundred coolies employed on the plantations which Dr. Vineberg attends, fully seventy-five have been attacked. The disease often sets in suddenly, the Chinaman dropping down in the field, unable to stand. Sometimes the patient's walk is not unlike that of locomotor ataxia when the ataxic muscles are beginning to show signs of motor paralysis. The leg and the foot are raised high, brought forward slowly and apparently with an effort, and the whole length of the sole touches the floor at once in completing the step. He walks with his legs wide apart. The muscles feel firm to the touch, and on being tightly grasped by the hand the patient calls out with pain. Tactile sensibility is not impaired, the reflex power is nominal. Pain is first referred to the region of the knees and afterward vaguely to the thighs and legs, but most frequently to the calves only. No pain whatever is referred to the spine, and hard knocks with the knuckles over the spines of the vertebræ elicit no cry of pain. Power over the sphincters of the rectum and bladder is retained to almost the very last. The bowels are usually costive; the appetite is good and the tongue may be clean or slightly furred. The pulse is frequently from 90 to 100 per minute, and is rather small and compressible. The urine is clear, moderate in amount, and free from albumen. The case may terminate in one of three ways: death, recovery, or pass into a chronic state. In most of the cases ending in death, the paralysis rapidly extends upward, invading the whole muscular frame, the muscles quickly atrophy, and the patient dies asphyxiated, from paralysis of the respiratory ap-

paratus. About 30 per cent. came under this head; in the greatest number of cases it took place between the third and fourth week. Owing to the superstitions of the Chinese about the dead, the doctor has only been able to hold one *post-mortem*. In that case the lungs, liver, kidneys, spleen, stomach, and bowels, appeared normal. The mitral valves were thin and small, but showed no signs of inflammatory changes. Recovery takes place at a variable period, but most often in from three to four weeks, and is liable to be interrupted by several relapses, each of which lasts from three to four days. As regards the etiology of this disease the author thinks "Chinese habits," masturbation, etc., with overcrowding and want of proper ventilation, act as predisposing causes. He also states that the diet of coolies consists of rice, peanut oil, bad pork, and semi-putrid sausages. It is more than probable that the putrid meat is the chief cause, as it has been known to produce similar disturbances in Europeans. Moreover, on one plantation when beef rations were given fresh from the commissariat no case had occurred. But some time after, while one of the directors was on a visit to the plantation the Chinese laborers petitioned him to have their beef ration exchanged for its value in money, which was granted them. They began to indulge freely in their favorite dish, putrid sausages and peanut oil, and in less than three weeks from that date there were no less than thirty cases on the plantation. Again, as soon as the money system was put a stop to and vegetables added to the rations, no fresh cases occurred. Connected with the plantations are several small planters who plant corn on shares. They also employ chiefly Chinese coolies who, as a rule, have always some vegetables, which they grow themselves, while their rice and beef are served out to them by the planters themselves. None of the planters' coolies have been affected by the disease. The treatment employed consisted in a generous diet, with vegetables—particularly cabbage,—better ventilated and roomy quarters, and stimulants in cases with a feeble circulation. Stimulating liniments to be well rubbed into the paralyzed limbs, and where the paralysis showed no sign of extending, strychnia and electricity. It is no more than just to say that where this course of treatment was followed out, even if only in part, then the percentage of the cases of recovery was highest.—*Med. and Surg. Reporter*, Jan. 7, 1882.

CARDIAC SYMPTOMS OF CHOREA.—Dr. O. Sturges (*Brain*, July,

1881) summarizes the several factors of the heart symptoms thus: 1. In the course of the chorea of childhood the heart's action is apt to become irregular or uneven, and its first sound to be followed by apex-murmur, which is variable in pitch, influenced by posture, seldom audible in the axilla or at the angle of the scapula, and which disappears along with or shortly after the chorea, the heart and the circulation suffering no injury. 2. This liability on the part of the heart to what, from its signs, would seem to be a functional disturbance, is independent of the violence or method of the chorea, but dependent upon the age of the patient, the younger children being most, and the elder least, liable; while beyond childhood there is little, if any, liability of the kind. 3. These heart signs of chorea—acute rheumatism being excluded—give rise, as a general rule, to no symptoms whatever affecting the health or comfort of the child. They make no apparent difference to the prospects of recovery, or to the structural integrity of the heart. Nevertheless, choreic children having this murmur and happening to die either with, or shortly after recovery from, the chorea, very commonly exhibit a beading of recent lymph on the mitral valves. Such, he says, are the chief statements which statistics seem to warrant. To these he adds another, which, so far as he knows, has never been statistically recorded, but which no one will gainsay. It is, indeed, the most constant of all the heart symptoms of chorea, and met with at a later age than the rest. He refers to the acceleration of the heart and pulse.—*Amer. Jour. Med. Sci.*, Jan., 1882.

Albuminuria as a Symptom of Epileptic Attacks.—Kleudgen, *Arch. f. Psych.*, etc., xi, p. 478. The author concludes from an examination of 57 cases: (1) That by a certain degree of concentration traces of albumen may be detected in all urine. (2) That without increase in the specific gravity the amount of albumen may increase without our being forced to conclude that renal disease is present. (3) That post-epileptic urine has nothing characteristic about it. (4) Rarely, the post-epileptic urine is richer in albumen than before, and then only to a slight degree, and often dependent on the presence of seminal fluid. The specific gravity may be high or low after the attack; the reaction may be of an alkaline nature, or acid. Sugar was not found.—*Centralbl. f. Med. Wiss.*, Oct. 22, 1881.

On Epidemic Cerebro-Spinal Meningitis, particularly Concerning the Residual Combined, Disturbances of Hearing and Equilibrium.—Moos, Heidelberg, 1881.

From four cases in which both disturbances of hearing and of equilibrium were present following epidemic cerebro-spinal meningitis; also from the facts of pathological anatomy and physiological experimentation concerning the functions of the semicircular canals, he concludes: (1) That the centre for the sense of equilibrium is in the cerebellum. (2) That the neural end-apparatus in the crista of the ampullæ, perhaps also in the saccule, is in connection with the above centre. (3) That diseases or excitation of the end-apparatus or its contiguous structures can produce the same symptoms as diseases or excitation of the central apparatus itself. This applies especially to vertigo. (4) Unilateral labyrinthine affections, whether the same be of primary origin or communicated from the cranial cavity, manifest themselves by vertigo. (5) Should the opposite side become affected in the same patient, the new affection begins also with vertigo, followed shortly by a staggering gait. (6) Sudden unilateral paralysis of the ampullary nerves fails to produce these symptoms; (7) and the same rule applies usually to lesions of the nervous apparatus of the vestibule of chronic origin. (8) Bilateral hemorrhages, or suppurative inflammation of acute origin in the ampullary neural end-apparatus, with permanent paralysis, particularly as a result of cerebro-spinal meningitis, produce a staggering gait for a long time. Children, and those affected at the same time with disturbances of vision, remain affected longer and more intensely. When, in time, the muscles and visual senses are sufficiently practised to act vicariously, the staggering gait disappears.

Epidemic Convulsions.—An interesting contribution to the literature of this subject appeared in *Brain*, for October, 1881. It is a paper prepared by Dr. David W. Yandell, in which he describes an epidemic which reached its height about 1800, to reappear for several years afterward, and before it declined had involved Kentucky, Tennessee, and a part of the Carolinas. At one time so general was its spread that not less than three thousand persons fell in convulsions to the ground. Under the preaching of the Rev. James McGready, who was loud in voice and passionately eloquent, a revival of religion and the onset of the epidemic began simultaneously in Logan County, Ky., about

1787. In 1800 the religious excitement ran so high that ordinary daily employments were abandoned by men, women, and children, and continuous camp-meetings kept the ardor of religious feeling at a full blaze. Immense concourses gathered in the woods, of persons "convicted of sin," who sang to and exhorted each other through the day and by torchlight by night. Such unusual proceedings produced a marvellous effect upon the imaginations of the simple-minded and emotional, heightening to an unheard of pitch the effect of perfervid oratory. These physical manifestations cannot be regarded as the most solid proof of "conversion," and hence every resource was drawn upon which would increase the mental and physical susceptibility. It is no wonder that thousands fell in convulsions, and that some ran mad for a season, "raving, howling, praying, day and night." A preacher named Grenade, a veritable son of thunder, was followed by great crowds, who sought to get religion by the startling effects his impassioned oratory and violent demonstrations invariably produced. So much power had he over this believing and excitable people that, according to his own words, they fell as if slain by a mighty weapon, and lay in such heaps that they were in danger of suffocation. A few shrieks from the women would precipitate the congregation in convulsions. In some persons there was numbness of the extremities, in others catalepsy, lasting occasionally for hours and even days. Sometimes they were seized by paroxysms closely resembling epilepsy, but most often a choreic form was experienced, called the "jerks." The jerks appeared first in the forearms, but later the entire body became terribly involved. The head was thrown about with alarming celerity, causing the hair, if it was long, "to crack and snap like the lash of a whip." Sometimes, says an observer, the subject was affected in a single member of the body, but at other times the spasms were universal. When the head alone was affected, it would be jerked from side to side so quickly that the features could not be distinguished. "When the whole system was affected," he continues, "I have seen the person stand in one place and jerk backward and forward in quick succession, the head nearly touching the floor behind and before. All classes, saints and sinners, the strong as well as the weak, were thus affected. I have seen some wicked persons thus affected, and all the time cursing the jerks while they were thrown to the earth with violence." From a very vivid picture of this frenzy given by Rev. R. McMemar, an eye-witness, quoted by Prof. Yandell, we learn that nothing in nature could

better represent this strange and unaccountable operation than for one to goad another alternately with a piece of red-hot iron. But the most incongruous and astonishing feature of the epidemic was the holy laugh, which was nearly akin to the ordinary attacks of hysterical laughter, and was regarded, like the convulsions, as a marked instance of the supernatural, and as a token of Divine favor. What could be more grotesque than to have a congregation in the most devout mood laugh aloud during a sermon, unless it was to see some of them gravely dance, and others end the performance by barking on all fours like so many dogs? In 1803 the infatuation had reached such a pitch that these ridiculous antics were esteemed by the credulous as exhibitions of heavenly interest in the unfortunate subjects. A great many attendants on worship were exempt by native absence of susceptibility, while others managed to control the impulses of an unstable nervous system which they could not help feeling. At last, in the name of order, the preachers turned their eloquence against these excesses, and the craze died away.—*Louisville Med. News*, Dec. 10, 1882.—W. R. BIRDSALL, M.D.

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c.—MENTAL PATHOLOGY.

CRIMINALITY IN ITS RELATIONS TO SCIENCE.—Lacassagne (*Du criminel devant la science contemporaine*, 1881) discusses this subject, and shows by statistics that crime has certain relations to times of the year. Thus, infanticide occurs most frequently in January, February, March, and April; homicide in July and August; rape most frequently in June. He divides criminals into, first, criminals from sentiment or instinct, under which are comprised the true incorrigible, habitual criminal, who commits crime in consequence of his psycho-physical constitution, and on whom neither punishment nor education can have any effect. Second, criminals by act or on occasion. The passions (anger, jealousy, cupidity, etc.) or the feeling of impunity lead this class to commit crime. The large majority of criminals belong to this class, and in it alone is punishment likely to be of avail. Third, criminals of thought, or, more properly, insane criminals, who, as Lacassagne remarks, should be treated in a criminal asylum and not with the other insane. There are two asylums of this kind in the United States of whose existence the majority of physicians

do not seem to be aware—the asylum at Auburn. New York, and the asylum (not yet completed) at Fulton, Missouri.

Lebon (*La question des criminels*, 1881) makes a somewhat similar division of criminals. First, criminals by fault of heredity. Second, criminals in consequence of certain acquired habits. This division is not as scientific as that of Lacassagne, as insane criminals might be placed under either group by a little straining.

Kräpelin (*Abschaffung des Strafmaases*) arrives at similar conclusions, although he is dominated too much by the idea of free-will, which impairs at times the value of his reasoning.

Ferri divides criminals into the following five classes, perhaps the most scientific division yet proposed. First, criminals, insane or semi-insane, who are specially adapted for treatment in a criminal lunatic asylum. Second, criminals born so, or the incorrigible criminals, who are so physically and psychically perverted as to constitute an atavistic human type of savages born in civilization, who are criminals incapable of reformation from their birth. The third class, habitual criminals, are so from education, and, unlike the former class, do not have any somatic basis for their criminality, and are to some extent capable of reformation. The fourth class are criminals readily swayed by passions, which in them at times acquire an almost irresistible force, and during the sway of these passions they commit crimes for which they afterward do not display any remorse. There is, perhaps, a somatic basis for the criminality of this class, and an attempt at reformation must be followed by many relapses. The fifth class of Ferri are those who are criminals on occasion, a very frequent class, and the most capable of being influenced by punishment. It must be obvious to any one that the first, second, and fourth classes depend for the somatic basis on teratological cerebral defect, which, in the fourth class, has produced a state which may be regarded as in a slight degree analogous to epilepsy. Though these types be the result of somatic causes, it must be remembered that moral forces often produce wonderful effects in ordinary somatic affections, and the application of moral forces as therapeutic measures might here be of service. As a necessary prelude to this, this class of criminals should be deprived of all civil rights other than those of the insane, and be sequestrated in properly arranged institutions or penal colonies. It must be remembered that the classes spoken of here as insane are insane criminals, not the criminal insane ; that is, those who are by nature criminals, and not those who commit a criminal act as an incidental result of their insanity.

MENTAL CONDITION OF GUITEAU.—Dr. J. G. Kiernan (*Chicago Medical Review*, Dec. 5, 1881) says, concerning this, that the assassin's family history gives decided evidence of hereditary taint. Two uncles died insane, as also two cousins of the first degree, and a daughter of one of these is now an inmate of an asylum. The father of the assassin was peculiar, and displayed abnormal religious views, and, to all appearances, was only saved from an insane asylum by passing into regular business routine under the control of others, for, from all accounts it was impossible for him to carry on business by himself. The mother of the prisoner had, during her pregnancy with him, meningitis, from which she never entirely recovered. The two children born to this mother, subsequently to the prisoner, were both deformed. One had a cranial, the other a cardiac malformation. The prisoner had a marked deficiency in speech in his early life, which it took a long while to correct. The sister of the prisoner has attacks of petit mal, and the brother is said to have suffered from some convulsive disorder during childhood. The half-sister has suffered for years from exophthalmic goitre. A daughter of the sister just mentioned, aged eight, has some obscure convulsive disorder. The prisoner, during his early childhood, and up to about the time of puberty, displayed no peculiarities other than being very reserved, though not taciturn. After puberty he attempted to obtain an education, but, worked on by the peculiar views of his father, entered the Oneida Community, where he was distinguished by his intense egotism and comparative stupidity. He has at several times claimed inspiration for his acts, and is apt to regard any imperative conception as a revelation from Deity. Moral sense, in the true meaning of the term, he has none. His face is markedly asymmetrical, the asymmetry extending to his pupils. His claim of being insane is a quasi-legal plea, that, as he was inspired by the Deity to remove the President, his free agency was destroyed, and a man without a free will is, according to him, in the legal sense, insane. This feigning of insanity is not seldom found among the insane. Laehr (*Archiv für Psychiatrie*, Band i) narrates a case, in which there was marked hereditary taint, who committed a crime against morals, shammed a form of insanity which he had not, and his real insanity came out after the sham was exposed. Dr. Nichols at the conference of experts on this case narrated a case in which a patient committed murder, under, as he believed, the command of the Virgin, but having two young lawyers assigned as his counsel, they advised him to feign insanity, which he did in

the form of dementia. The experts detected both the sham and the real insanity, and had him sent to an asylum, where his insanity developed itself.

Dr. John P. Gray (Report for 1876, page 32) reports a case in which a chronic lunatic who committed a murder claimed to be out of his head.

Similar cases are cited by Delasiauve Ingels and Stark, and by Hughes and Pelman. In concluding this brief résumé I have thought of interest to cite similar cases in the literature, leaving the reader to draw his own conclusions.

Probably one of the strongest arguments that could be advanced to demonstrate the fact that Guiteau is an unquestionable lunatic, consists in the great similarity, nay, almost identity, of his case with certain cases narrated in the literature. Beer (*Allgemeine Medicinische Zeitung*, 3, 4, 5, 1869) describes a number of such instances where individuals of either a narrow mind or with a morbidly exaggerated opinion of self, became depressed in consequence of failure in a law suit, and developed delusions of persecution ; others became seized with a perfect furor for litigation, and according as the patient was a literary man, lawyer, scientist, soldier, or official, he became engaged in journalistic, legal, or polemical conflicts, engaged in duels, or sank to the level of a sycophant. Scholz (*Vierteljahrschrift für gerichtliche Medicin*, 2, viii, 1868) cites the case of a man still more resembling Guiteau, who was a vain, egotistical individual, disappointed in seeking office, and in consequence insulted higher officials and even the ruler of the country, thus involving him in the coils of the criminal law. Krafft-Ebing (iii, p. 63, *Beobachtung*, 63 and 64) describes a woman who, after being defeated in a law suit, entered into a delusional basis, studied law and became a perfect expert at the code. Defeated in successive trials at higher courts, she threatened to go to the emperor, and being recognized as insane, developed considerable sarcastic ability in ridiculing the idea of her being a lunatic. He also cites another case of a railroad engineer who, after a dispute about a contract, in which the right was not altogether on the other side, and having signed a compromise by which he agreed to drop all claims against the company, began a series of ridiculous suits, insulted the attorneys, libelled the courts, refused to pay his taxes, and being finally arrested, was arraigned in a court, where he delivered a thundering philippic, threatened to revolutionize the land, and being noticed to make suspicious movements in the direction of his pockets, was examined, and

found to have a loaded revolver. He was committed to an asylum, and there acted the part of martyr. Sander in his excellent paper on Verrücktheit refers to the fantastic tendencies, at first obscure to their bearer, which lead to his non-appreciation of society, to brooding, and to the final erection of delusions based on self-conceited notions. He claims it is difficult to elucidate these delusions. The case of David Wemyss Jobson (*St. Louis Clinical Record*, Dec., 1880) who was under my observation for many years, is in point. Prior to the inception of paralytic dementia, this patient involved himself in quarrels with the English courts, was fined and imprisoned. After he came to America he was a journalist and an office-seeker, "ran" for the office of comptroller, and obtained a few votes. He pestered the judges of the various courts so persistently that he became quite a well-known personage. Finally his insanity was recognized and he was sent to an asylum.

One of the most striking and notable features of Guiteau's mental state is his marked moral perversion. That this perversion is a pathological one, as dependent on a cerebral defect as his other abnormal mental manifestation, must be evident to every reflecting psychologist. It is of this form of mental alienation that Krafft-Ebing says (ii, page 266) that the evident symptoms are a moral insensibility, an absence of all moral judgments and ethical conceptions, their place being supplied by purely logically based judgments of a utilitarian character. He adds that the moral rules of the community may be learned in a parrot-like way, but they always remain unassimilated conceptions and fail to act as a guide to the moral lunatic's actions. It is to be remembered here that the case of Guiteau, like others I have observed, strongly proves the incorrectness of Prichard's idea that with this form sensorial perversions are absent. Kraft-Ebing, evidently without having reflected much, endorses this opinion, (ii, page 65.) His own cases contradict this. From the cases cited the reader can draw his own conclusions. It will, however, be obvious that Guiteau's type of insanity is not exceptional, but is well paralleled in literature.

Etiology of Progressive Paresis.—Dr. E. C. Spitzka claims (*Chicago Medical Review*, November 20, 1881) that the vaso-motor system plays an important part in the etiology of this psychosis. This view, which Dr. Spitzka has modified from Porucaré and

Bonnet, certainly explains much that is mysterious in the etiology of the disease. The sexual-excess theory, so long the favorite one with the Utica school, was always very dubious and has received its *coup de grâce.* As Dr. Spitzka says, the supposition of a strictly inflammatory process is incompatible with the occasional appearance of epileptiform spasms not followed by those immediate sequelæ which should follow such an inflammation, and this theory is incompatible with the very rapid and relatively complete remission of the symptoms. He cites the fact that certain of the physical causes do not always act through the channel of a meningitis or other inflammatory process. In Dr. Spitzka's own observations every patient dying during an epileptiform state, or with apoplectiform symptoms, presented the capillary emboli described by Lubimoff as characteristic of a blood stasis;—which stasis he considers the expression of a paralysis of the muscular coat of the blood-vesssels over-distended by the efferent blood-current, in itself an indication of hyperæmia,—a cortical hyperæmia which would explain the expansive ideation and the motor excitation, the arrest of the blood-current through stasis, and the subsequent congestive and comatose state.

"A sudden stasis causing sudden arrest of the cortical functions would satisfactorily account for the epileptic manifestations. A cortical hyperæmia, as a factor that may on the one hand vanish with the most violent storm sweeping over the mental plane, without leaving a permanent defect, and on the other hand, in its repeated recurrence determine those structural changes which account for the permanent symptoms of the disease, would also, in its necessarily progressive severity, account for the progressive greater gravity of each exacerbation, and the final preponderance of symptoms of subtraction, such as paralysis, lacunæ in the memory, aphasia, and coma, over those of functional excitation, such as the destructive tendencies, constructive schemes, ambitious delusions, and flight of ideas of the earlier periods.

"As the disease progesses, and the resisting tone of the vessels decreases more and more, stasis is found to occur not only in the exacerbations of the disease, but also in the intervals,—here more restricted in extent and less pronounced; so that with a proper manipulation of histological specimens he is prepared to say that no lesion will be found so constantly in the terminal periods of the disease as the capillary thrombi resulting from stasis-like conditions. Of course, with this explanation we are as much in the dark as ever as to the organic basis of the vaso-motor difficulty.

He claims that this consists in a probably impalpable morbid state of the encephalic vaso-motor centre. Such a morbid state it requires no stretch of theory to consider inducible by mental overstrain, by the repeated hyperæmias of alcoholism, rheumatism, and certain forms of syphilis, or by typhus fever, insolation, and the molecular disturbances determined by concussion, directly or indirectly involving the skull contents."

Dr. Spitzka's observations have been corroborated to a certain extent by Dr. Grieve (*British Medical Journal*, December 3, 1881), the medical superintendent of the Colonial Lunatic Asylum, Berbice, British Guiana. Dr. Grieve was familiar with progressive paresis in England, and it is certainly impossible that he should fail to detect it when present. Yet out of seven hundred lunatics under his care but one was a case of progessive paresis,—a percentage about one ninety-eighth of that of England. The patients are of various races; Creoles and East Indians make up about four fifths of the asylum population. The remaining fifth is principally composed of negroes and Chinese; Europeans form about one and a half per cent. of the asylum population, and yet the only case of the psychosis is a European. All the alleged causes of the psychosis are markedly present at Berbice except one, mental excitement. Dr. Grieve comes, therefore, to the very sound conclusion that this is a very potent factor in the production of the psychosis. In this conclusion he is not entirely original. Austin long ago expressed a similar opinion, and also did Crichton Browne (West Riding Lunatic Asylum Reports, volume vi). The appearance of this disease among the various races mentioned, when they are exposed to mental strain, certainly tends to confirm this opinion. The tables given in the JOURNAL OF NERVOUS AND MENTAL DISEASE, October, 1880, certainly show that many of the races mentioned exhibit this psychosis when exposed to the mental strain of large cities.—J. G. KIERNAN, M.D.

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d—NORMAL HISTOLOGY OF THE NERVOUS SYSTEM.

THE RELATION OF NERVES TO PIGMENTED CELLS.—The changes in color induced in the skin of certain animals, such as frogs, snakes, and the chameleon, by section of the nerves, or by the direct action of light, are due, as is well known, to contractile changes in the pigmented cells of the integument. These phenomena, striking in themselves, have recently assumed a new interest in view of the possible analogy existing between the movements of their processes and those of the pigmented cells of the retina, which dip down between the rods, as described by Ewald and Kühne. Hence the work of Ehrman[1] possesses an interest wider than that attaching to any simple morphological detail in the structure of the frog. E., by treatment of the skin of the back of the green frog with acetic acid and afterward with gold chloride is able to trace with distinctness the termination of cutaneous nerves in the processes of the pigmented cells. The nerves and cell processes either merge insensibly into one another, or show a sharp line of demarcation by the abrupt termination of the pigment deposit. Such a connection between nerves and the chromatophores has already been shown by Leydig to exist in snakes, but has not been demonstrated before in the frog.

Ayres[2] states that he has recently traced a direct connection between nerve fibres from the ciliary nerves and branches of pigmented cells of the choroid, in the human eye.

MINUTE STRUCTURE OF THE CORTEX OF THE CEREBRUM.—The difficulties in technique which are encountered in histological

[1] Ehrman: Ueber Nervenendigungen in den Pigmentzellen der Froschhaut, *Sitzungsb. d. k. Akad. d. Wissensch. Math.-naturw., Cl.*, 3 Abth., lxxxvi, 167.

[2] Ayres: Contributions to the pathology of sympathetic inflammation, *Arch. of Ophthalmology*, vol. x, No. 3, p. 278, note.

studies of the central nervous system readily account for the differences of opinion still existing in regard to the minute structure of even the most important parts of the brain and cord ; and the danger of relying upon any one mode of preparation is emphasized by Exner[1] in his recent investigations on the cortex of the human brain. His attention is chiefly directed to the upper end of both central convolutions. He soaks small pieces from the cortex of these regions in 1-per-cent. solution of osmic acid for 5 to 10 days, and treats very thin sections from these with a mixture of glycerin and aqua ammoniæ. The ammonia causes a swelling of the sustentacular tissue and the almost complete disappearance of the nerve cells and non-medullated nerve fibres ; while the medullated fibres, blackened by the osmic acid, become extraordinarily distinct, especially while the preparations are fresh. Adopting Meynert's division of the cortex into five layers, he finds that the external layer, usually described as consisting chiefly of neuroglia elements, is really largely composed of medullated nerve fibres of varying diameter, running in all directions. Those in the outermost stratum, intermingled with connective-tissue fibres, run nearly parallel with the surface, while in the inner portions medullated nerve fibres rise from the second layer, and bending over become nearly parallel with the surface. The very abundant medullated nerve fibres of the second layer have in general a smaller diameter than those in the other layers. He cannot convince himself of the division of medullated nerve fibres in the cortex, as described by Gerlach. The large spheroidal spaces which are frequently seen in the central layers of the cortex, especially in chromic acid preparations, are really only gigantic varicosities in medullated nerve fibres. It would appear from his descriptions and figures that a large part of the cortex, which has usually been regarded as "basement substance," is really composed of medullated nerve fibres, and hence is of much greater physiological importance than is commonly believed. He describes large ganglion cells, resembling Purkinje's cells, which are found in the outer layer of the cortex of the brains of newborn children, and which disappear as the individual matures, whether by absorption or by transformation into cells of the adult form, he is unable to decide. In the nuclear layer of the cerebellum, as well as in the gray matter of the cord, his method reveals unexpectedly large numbers of medullated nerve fibres.

[1] Exner : Zur Kentniss vom feinerem Baue der Grosshirnrinde, *Sitzungsb. d. k. Akad. d. Wissensch. Math.-naturw., Cl.*, 3 Abth., lxxxiii, 151.

THE GANGLIONIC APPARATUS IN THE HEARTS OF VERTEBRATES.—In view of the elaborate experiments now in progress in the biological laboratory of the Johns Hopkins University, under the direction of Prof. Martin, on the isolated mammalian heart, and the definite results to which they seem likely to lead, the extended morphological researches of Vignal[1] are of interest. Employing chiefly the osmic acid and gold methods which have given such excellent results in the hands of Ranvier and his students, Vignal studied the distribution and structure of nerve cells in the heart of the ray and carp, of several species of frogs, the toad, triton, salamander, water-snake, green lizard, pigeon, and rabbit, and in the ape and man. His elaborate paper must be referred to for details. He found, so far as the warm-blooded animals are concerned, that the ganglia connected with the true cardiac plexus lie chiefly in the vicinity of the pulmonary artery and along the auriculo-ventricular grooves. In those animals in which a morphological distinction is evident between the cells of the cerebro-spinal and sympathetic systems, as in the rabbit, he found cells of both kinds, and the cells of the sympathetic were always predominant in the ganglia of the auricles; and he thinks it just to infer that the same condition exists in those animals in which structural differences in the two kinds of cells are not at present recognizable. He also concludes from numerous physiological experiments on the isolated heart, that there exist two intrinsic nerve-centres, motor and inhibitory.

NERVES OF SMOOTH MUSCLE TISSUE.—Wolff[2] has studied anew the distribution of the nerves and ganglion cells in the bladder of the frog, and finds that the smooth muscle cells are connected exclusively with nerves and cells of the sympathetic. The cells, precisely similar to those found along the course of the great sympathetic, are either grouped in small ganglia or isolated, and Wolff believes that each cell is connected, by its processes—the non-medullated nerve fibres—on the one hand, with groups of smooth muscle cells; and on the other, with the dorsal trunks of the great sympathetic. This relation is most evident in the bipolar cells; but in the cells which have three or more processes he believes the same relation to exist, only in this case several groups of

[1] Vignal: Recherches sur l' appareil ganglionaire du cœur des vertébrés, *Arch. de Phys. Norm. et Path.*, Paris, 2 s., viii, 694 *et. seq.*

[2] Wolff: Die Innervation der glatten Muskulatur, *Arch. f. mik. Anat.*, Bd. xx, Heft iii, p. 361.

muscle cells may be innervated by the different processes from a single nerve cell. Even in unipolar cells he assumes a composite character in the single process, by which it is in communication, in the same way, with both muscles and the great centres. He has nothing new to impart in regard to the minute structure of either cells or nerve fibres, and although repudiating Arnold's suggestion, that the nerves terminate in the nuclei of the smooth muscle cells, he gives us no light upon the way in which the connection is established; he is certain, however, that each muscle cell is not furnished with a separate nerve. There is no communication between the sympathetic and cerebro-spinal nerves.

The non-medullated nerve fibres, whose ramifications are numerous, are always sympathetic nerves, and not cerebro-spinal nerves which have lost the medullary sheath. His method is essentially as follows: The bladder of a freshly killed frog is fully distended through the cloaca, with a solution of gold chlorid. 1:20,000. The abdomen is now opened, and under constant irrigation of the distended bladder with the same solution, the surrounding parts are cleared away, and the anterior portion of the body cut off. The bladder, still distended and attached to the pelvis, is now placed in a solution of gold chlorid 1:2,000, and after four hours, is removed, opened, and pinned to a cork, with the inner surface uppermost. The loosened epithelium is now to be brushed off, and it is put for a few hours in another gold solution 1:6,000; then washed, and placed in water acidulated with acetic acid; left some time in the dark, and finally exposed to daylight. By this procedure the muscles are stained a light bluish-red, the medullated nerves dark bluish-red, and the non-medullated nerves and ganglion cells carmine-red.

Nerves of the Cornea.—The same writer[1] studied the cornea stained with chlorid of gold and potassium. He finds, contrary to the usual belief, that the corneal nerves are everywhere medullated, except at their terminations, as at their entrance into the cornea; but the medullary sheath is composed of a modified myelin; that is, it does not contain substances allied to fat, and hence does not interfere with the transparency of the cornea. The nerves are also everywhere surrounded by a neurilemma. He thinks that the nerves terminate sometimes by free extremities in the substantia propria corneæ, sometimes between the

[1] *Loc. cit.*, p. 373.

anterior epithelial cells; they never reach the surface of the epithelium, however, nor do they terminate in the epithelial cells themselves, nor in the corneal cells. In still another series of observations on *the free endings of sensitive nerves*, Wolff[1] enunciates his belief that all sensitive nerves which do not end in special terminal apparatuses, such as tactile corpuscles, taste bulbs, retina, etc., have their free ends either in connective tissue or between the cells of epithelial tissue. He does not accept the commonly received belief that medullated nerves may lose their sheaths and proceed as naked axis-cylinders, but thinks that a medullated nerve always retains its sheath until it reaches its termination.

The error into which observers have universally fallen is due either to mistaking connective-tissue fibres for nerve elements, or to failure in recognizing the delicate sheaths, or to a failure in discerning sympathetic-nerve fibres, which are so often associated with medullated nerves in nerve trunks. While his results are suggestive and his figures very clear and persuasive, his conclusions do not always seem stamped with the highest objectivity, and he does not appear to make due allowance for the well-known fickleness of the gold method.—T. MITCHELL PRUDDEN, M.D.

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[1] *Loc. cit.*, p. 377.

e.—THERAPEUTICS OF THE NERVOUS SYSTEM.

A NEW OVARIAN COMPRESSOR.—In the *Prog. Méd.* Nov. 26th, Ch. Féré gives a historical résumé of the various substitutes for the manual compression of the ovaries in hystero-epileptics.

In the *Prog. Méd.*, 1878, p. 993, M. Poirier advocated a compressor similar to a tourniquet for the abdominal aorta. The great drawback to this was the fact that during its application the patient must preserve a dorsal decubitus. Ballet advocated a girdle with iron arms and compresses, but although it was portable, it was costly.

Féré's compressor is a good deal like a truss, only stiffer. The *point d'appui* is on the spine, where the spring is broad and padded, while to the anterior extremity, which is bent back and downward, is fixed a rubber pad which presses into the ilio-pelvic region. The girdle is completed by a strap. In case double compression is needed a suitable modification can readily be made. This compressor causes little inconvenience and does not interfere with the clothing. A trial in the service of Prof. Charcot at the Salpêtrière shows that with it his hystero-epileptic patients have escaped attacks for long periods of time.

CHARCOT'S TREATMENT OF MÉNIÈRE'S DISEASE.—In the *Rev. de. Méd.*, for Oct., 1881, p. 796, Ch. Féré and A. Demars in a brief clinical paper outline the disease and adduce illustrative cases to substantiate their claim as to the value of the treatment.

They give .60 to .80 of quinine a day in .10 doses for eight to fifteen days, not allowing an exacerbation of the symptoms to interrupt treatment at all. They then stop treatment for an equal period and then resume again.

At first there is always increased tinnitus and vertigo, and even falls occur. During the first stoppage of treatment there is generally a notable diminution of tinnitus, but the vertigo usually remains. During the second administration the aggravation of the symptoms is less marked than the first time, and may be wanting. During the second rest there is great diminution in the noise and often in vertigo.

Gradual improvement is seen with each period of repose. The vertigo is the last to disappear. Finally both tinnitus and vertigo cease, but still the patient has not perfect equilibrium and presents an unstable attitude.

It is important to warn the patient of the first effects of the treatment, and also impress him with the fact that only by a long persistence can he hope for lasting improvement.

STATIC ELECTRICITY.—Dr. W. R. D. Blackwood (*Phil. Med. T.*, Oct. 22, 1881) presents some cases treated by his Holtz machine. Of a case of melancholia, after having been simply "charged" for one half an hour three times a week for four months, the doctor says: "Although to my mind she is yet abnormally depressed at times, she is in every way better."

Of a case of hystero-epilepsy, treated tri-weekly and part of the time daily for two months, "marvellously improved" (according to mother), the doctor remarks: "I have every reason to expect a perfect cure in her case."

A case of periodical supra-orbital neuralgia, worse at menstrual epoch, was cured by simple charging and taking sparks from the brow. The duration of treatment is not mentioned. A case of intercostal neuralgia, treated by sparks from a small Leyden jar, became in "three weeks a different-looking man," "in two months relieved completely," but afterward, "at long intervals he has slight twinges."

A neuralgia of the testicle, cord, and perineum was cured in two months.

Dr. A. Arthuis (Paris) treats, in a memoir on static electricity and hysteria, in the first part, of the historical aspects of the question, and in the second, of the operative procedures and therapeutic applications. On p. 68 he says: "I believe it has been sufficiently demonstrated that the electric bath is entirely devoid of curative virtues. The doctor who persists in administering it in any affection, nervous or otherwise, commits an extremely grave fault." On p. 70 he says, "the electric bath in electro-therapy is only an '*entre en matière.*'"

NERVE-STRETCHING.—At the Soc. Biol., Oct. 29, 1881 (*Prog. Méd.*, Nov. 12, 1881), the results of stretching the pneumogastric in a dog were presented in the name of M. Wiett. There followed acceleration and irregularity of the cardiac contractions after traction on the trunk. On cutting the stretched nerve it was not possible, by applying the strongest electrical current, to stop the heart.

At the Soc. de Chirurgie (Nov. 2, 1881), Dr. M. Ledentu showed a patient in whom he had elongated the lingual nerve for a tic douloureux of five years' standing. He elevated the nerve 12 mm. on a hook. No return of the pains had taken place for thirteen days.

At the same society Nov. 9, 1881, M. Polaillon told how he, in a case of epileptiform neuralgia of the fifth nerve, trephined the inferior maxilla, and stretched the inferior dental, and obtained complete relief.

In the *Lancet*, Oct. 8, 1881, F. A. Southam narrates the results of nerve-stretching in a case of lateral sclerosis. The left sciatic was stretched, and there immediately followed a cessation of a pain in the abdomen and legs which had resisted morphine. In two weeks the ankle clonus and knee reflex reappeared, but at the expiration of six weeks there had been no recurrence of pain. In a case of locomotor ataxia there was no immediate improvement, but in ten (!) days the pains stopped, other symptoms unchanged. In a case of periodic facial spasm, stretching caused paralysis, which improved under electrical treatment. The spasm did not recur.

E. Ricklin, in the *Gas. Méd. de Paris*, Dec. 31, 1881, in an article on nerve-stretching in the treatment of the principal symptoms of locomotor ataxia, says that a congress of German savants at Salzbourg, in September last, decided that this new treatment gave "illusive results," and that the "progress of the disease was unchecked." Some Berlin physicians have confirmed this decision, and assert that the amelioration is very temporary. It would seem that they think the operation chiefly does good by the psychical impression on the usually sanguine tabetic.

R. W. Amidon, M.D.

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St. Petersburger Med. Wochenschrift.
Upsala Lakareforninges Forhandlinger.

THE FOLLOWING DOMESTIC EXCHANGES HAVE BEEN RECEIVED.

Alienist and Neurologist.
American Journal of Insanity.
American Journal of Medical Sciences.
American Journal of Obstetrics.
American Journal of Pharmacy.
American Medical Journal.
American Practitioner.
Annals of Anatomy and Surgery.
Archives of Comp. Med. and Surgery.
Archives of Dermatology.
Archives of Medicine.
Atlanta Medical and Surgical Journal.
Boston Medical and Surgical Journal.
Buffalo Medical Journal.
Bulletin National Board of Health.
Canadian Journal of Medical Sciences.
Canada Medical and Surgical Journal.
Canada Medical Record.
Chicago Medical Journal and Examiner.
Chicago Medical Review.
Chicago Medical Times.
Cincinnati Lancet and Clinic.
Clinical News.
College and Clinical Record.
Country Practitioner.
Detroit Clinic.
Detroit Lancet.
Dial.
Gaillard's Medical Journal.
Independent Practitioner.
Index Medicus.
Indiana Medical Reporter.
Maryland Medical Journal.
Medical and Surgical Reporter.
Medical Annals.
Medical Brief.
Medical Herald.
Medical News and Abstract.
Medical Record.
Michigan Medical News.
Monthly Review.

Nashville Journal of Medicine.
New England Medical Monthly.
New Orleans Medical and Surgical Journal.
New Remedies.
New York Medical Journal.
Northwestern Lancet.
Pacific Medical and Surgical Journal.
Philadelphia Medical Times.
Physician and Bulletin of the Medico-Legal Society.
Physician and Surgeon.
Proceedings of the Medical Society of the County of Kings.
Quarterly Epitome of Braithwaite's Retrospect.
Quarterly Journal of Inebriety.
Rocky Mountain Medical Review.
Sanitarian.
Science.
Southern Clinic.
Southern Practitioner.
Specialist and Intelligencer.
St. Joseph Medical and Surgical Reporter.
St. Louis Clinical Record.
St. Louis Courier of Medicine.
St. Louis Medical and Surgical Journal.
Therapeutic Gazette.
Toledo Medical and Surgical Journal.
Veterinary Gazette.
Virginia Medical Monthly.
Walsh's Retrospect.

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Original Articles.

THE ASYLUM SUPERINTENDENTS ON THE NEEDS OF THE INSANE, WITH STATISTICS OF INSANITY IN THE UNITED STATES.*

By C. L. DANA, A.M., M.D.,

PROFESSOR OF PHYSIOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF NEW YORK; PHYSICIAN TO THE CLASS OF NERVOUS DISEASES, NORTHEASTERN DISPENSARY.

ONE of the first things to do in attempting a reform is to know exactly what evils are to be attacked. I venture, therefore, to offer the Association a contribution to this phase of the problem of insane-asylum reform.

I have obtained recent reports from nearly every asylum in the country, also State documents containing legislative reports from a number of Western States, and approximate census returns for 1880. From these sources, helped by some personal correspondence and interviews, I have collected a good many facts which I have cast in the form of statistical tables. These I place at the disposal of the Association. I shall now only call attention briefly to some of the more important of the points suggested by them.

And first in regard to the *number of insane in the United States.*

* Read at the Annual Meeting of the National Association for the Protection of the Insane and the Prevention of Insanity, January 17, 1882.

All estimates of our insane population at present can be only approximate. My own total may be several thousands out of the way. The census statistics have several sources of error, which cannot be entirely eliminated.

I present a table,[1] however, showing that we had in 1880 in round numbers 89,000 (to 96,000)[2] insane, which gives a ratio of 1-570 (1-520) of the population. The census ratio in 1860 was 1-1,310; in 1870, 1-1,100; in 1875, 1-953. Our population increased in the decade 1870 to 1880 about 26 per cent., while our insane population has apparently increased over 100 per cent.

These figures are not very encouraging; but they are such as strongly justify the existence and call for the activity of such an Association as ours.

They should not be given either without some modifying statements. The ratio mentioned is very much less than that of many European countries; for example, England, where it is not far from 1 to 350.[3] Again, this apparent in-

	Insane Popul.	Total Popul.	Ratio.	Insane-Asyl. Pop.	Per cent. in Hosp.
1860	23,999	31,443,321	1-1,310		
1870	37,442	38,558,371	1-1,100		
	55 per c., increase	22 per c., increase			
1875 Estimated at the same rate of increase as from 1860 to 1870.	44,148	42,115,896	1- 953	28,441	55 per c.
1880	89,000 (to 96,000)	50,155,183	1- 570 (to 520)	40,000	40 per c.

[2] Through the kindness of the Hon. Justin S. Morrell, U. S. S., I have obtained the approximate estimates of the U. S. census for the total number of insane in the United States, by States. This estimate makes the number between 90,000 and 100,000. Eliminations have to be made, however: (1) because the Census Bureau sent books to the whole medical profession, from whom one series of names was obtained; (2) it got another list from the census enumerators; and (3) a third from the asylums. Many duplicates were thus necessarily made. I have reduced the approximate estimates also for the following reason: In 12 States I obtained estimates of the number of insane from the local authorities (State Boards of Charity, etc.). In these cases, with hardly an exception, the estimate was less than that of the census approximate. If, however, the completed census returns, verified by local censuses, make the number 95,000 or 100,000, it will not affect any inferences to be drawn from my figures, since the distribution of insanity is certainly about as I give it.

[3] In England and Wales in 1859 the ratio was 1–535. In 1880 it was 1–350; in Scotland 1–460. The census of the insane is more accurately taken in these countries than anywhere else in the world.

crease is very largely due to the fact that the insane are being accumulated in asylums, and also that the census of 1870 was extremely imperfect as regards the insane.

The real increase can perhaps be best discovered in Massachusetts. In 1857 Dr. Jarvis, by very careful estimates, made the ratio of insane 1 to 457. In 1880 it was not far

State.	Insane Population, U. S. C., 1870.	Insane-Asyl. Population, 1880.	Estimated Total Insane Pop., 1880.	Whole Population in 1870.	Proportion of Insane to Sane Population, 1870.	Whole Population in 1880.	Ratio of Insane-Asyl. Popul. to Whole Popul., 1880.	Ratio of Total Insane to Whole Popul., 1880.	Number of Asylums in each State.
Alabama	555	402	1550	996,992	1.796	1,262,344	1-6000	1- 850	1
Arkansas	161	—	800	484,471	3.009	802,564	—	1-1000	—
California	1146	1955	2400	560,247	.484	864,686	1- 440	1- 360	2
Colorado	12	—	100	39,814	3.332	194,649	—	1-2000	—
Connecticut	772	671	1750	537 454	.696	622,683	1-1000	1- 355	2
Delaware	65	—	200	125,065	1.923	146,654	—	1- 750	—
Florida	29	—	250	187,748	6.474	266,566	—	1-1070	1
Georgia	634	886	1900	1,184,109	1.867	1,538,983	1-2000	1- 815	1
Illinois	1625	2655	5100	2,539,891	1.563	3,078,636	1-1200	1- 610	4
Indiana	1504	1010	3300	1,680,637	1.117	1,978,358	1-2000	1- 595	1
Iowa	742	932	2550	1,194,020	1.609	1,624,463	1-1800	1- 635	3?
Kansas	131	172	1000	364,399	2.781	995,335	1-6000	1-1000	1
Kentucky	1245	1458	2800	1,321,011	1.052	1,648,599	1-1250	1- 600	3
Louisiana	451	285	1000	726,915	1.161	940,263	1-3000	1- 940	1
Maine	792	390	1500	626,915	.791	648,945	1-1600	1- 432	1
Maryland	733	733	1550	750,894	1.065	935,139	1-1400	1- 620	3
Massachusetts	2662	2409	5300	1,457,350	.547	1,783,086	1- 465	1- 336	6
Michigan	814	1119	2700	1,184,059	1.454	1,634,096	1-1430	1- 600	2
Minnesota	302	725	1200	439,706	1.436	780,807	1-1000	1- 650	2
Mississippi	245	395	1100	827,922	3.379	1,131,899	1-3200	1-1000	1
Missouri	1263	803	3500	1,721,295	1.362	2,169,091	1-2700	1- 620	3
Nebraska	28	193	500	122,993	4.392	452,432	1-2500	1- 945	1
Nevada	2	—	30	42,491	21.245	62,265	—	1-2000	—
N. Hampshire	548	302	1000	381,300	.699	347,484	1-1200	1- 347	1
New Jersey	918	1192	2500	906,096	.987	1,130,892	1-1050	1- 452	2
New York	6553	7566	13,200	4,382,759	.668	5,083,903	1- 830	1- 390	14
North Carolina	779	300	2000	1,671,361	1.375	1,400,000	1-5000	1- 700	1
Ohio	3414	3627	7700	2,665,260	.786	3,197,794	1-1100	1- 420	7
Oregon	122	286	350	90,923	.734	174,267	1- 626	1- 500	1
Pennsylvania	3895	3421	8500	3,521,951	.904	4,282,738	1- 900	1- 505	7
Rhode Island	312	171	650	217,353	.696	276,528	1-1600	1- 423	1
South Carolina	333	420	1150	705,606	2.119	995,706	1-2500	1- 865	1
Tennessee	925	377	2000	1,258,320	1.360	1,554,462	1-4000	1- 770	1
Texas	270	230	1600	818,579	3.033	1,597,509	1-6500	1- 988	1
Vermont	721	447	900	330,551	.458	332,286	1- 800	1- 320	1
Virginia	1125	1025	2400	1,225,163	1.089	1,512,203	1-1600	1- 605	3
West Virginia	374	415	900	442,014	1.182	628,193	1-1500	1- 687	1
Wisconsin	846	1175	2600	1,054,670	1.247	1,315,386	1-1100	1- 506	3
Arizona	1	—	20	9,658	—	40,440	—		—
Dakota	3	36	70	14,181	4.702	135,177	—		1
D. of Columbia	479	897	950	1,131,700	.264	177,624	—		—
Idaho	1	—	10	—	—	32,610	—	1-1900	—
Montana	2	—	50	26,595	13.297	39,159	—		—
Utah	25	—	120	86,786	3.471	143,963	—		—
Washington	23	—	130	23,955	1.041	75,116	—		1
New Mexico	—	—	150	—	—	119,565	—		—
Total	37,500	about 40,000	about 89,000 (The max. est. 96,000)	38,558,321	1.1100	50,155,783		1-570 (The max. est. 1-520)	88

from 1 to 336. In the other New England States the relative increase has been much less.

I present here a complete table showing the ratios in 1870 and 1880 by States; also the insane-asylum population and its ratio.[1]

As regards the *distribution of insanity* and of its *increase*, my statistics show that the proportion of insane is greatest in New England, where the ratio is 1 to 357. Here, however, the rate of increase is undoubtedly becoming slower.

In proportionate number of insane, after the New England and Pacific States, come the Middle States (1 to 446), then the Western (1 to 570), and then the Southern (1 to 780).

In rapidity of increase, however, the Western States come first, and then the Southern States.

As regards

ASYLUM ACCOMMODATION

there were, according to Dr. Conrad, in 1875, 62 active State

[1] RATIO OF INSANE POPULATION TO ENTIRE POPULATION.

FOR THE WHOLE COUNTRY.

In 1860,	1–1,310	In 1875.	1–953
In 1870,	1–1,100	In 1880,	1–570 (to 520)

FOR THE DIFFERENT SECTIONS.

	1880	1870.
New England States.		
In 1880—Population, 4,000,000	Ratio, 1–357	1–600
Insane, 11,200		
Middle States.	1880.	1870.
In 1880—Population, 11,600,000	Ratio, 1–446	1–800
Insane, 25,950		
Southern States.	1880.	1870.
In 1880—Population, 17,400,000	Ratio, 1–780	1–1,600
Insane, 29,150		
Western States.	1880.	1870.
In 1880—Population, 14,500,000	Ratio, 1–570	1–1,250
Insane, 28,480		
Pacific Coast.	1880.	1870.
In 1880—Population, 1,000,000	Ratio, 1,363	1–484
Insane, 2,750		

insane asylums with a capacity for 24,252 patients. These were actually holding 27,600 patients, showing an overcrowding then of 3,358.

In 1881 we had 74 State and 14 large private asylums, with a capacity approximately for 31,900, but holding 39,145. At a very low estimate, therefore, our asylums are overcrowded to the extent of 10,000 patients, while there are about 50,000 who are not in any asylums at all.

The ratio of asylum to non-asylum population is thus nearly 4 to 5. It has usually been considered to be just the reverse, or 5 to 4.

I give a table[1] showing the per cent. of persons who have no asylum accommodation in some of the larger States. I also give a table showing the gradual increase of insane asylums in the United States to their present number[2] (88, with about 10 small private institutions).[3]

[1] *Per cent. of Insane who are not in Asylums, in some of the larger States.*

		Population.
New York,	40 per cent.	3 million
Illinois,	55 "	5 "
Indiana,	50 "	2 "
Iowa,	66 "	1½ "
Kansas,	80 "	1 "
West Virginia,	50 "	⅔ "
Texas,	80 "	1½ "
South Carolina,	60 "	1 "
Mississippi,	70 "	—
Arkansas,	100 "	—
Missouri,	75 "	—
New Jersey,	55 "	—

[2] *Growth of Insane Asylums in the United States.*

	State	Asylums
1773—1824	1	—
1824—1828	4	5
1828—1839	3	8
1839—1850	6	14
1850—1860	16	30
1860—1870	10	40
1870—1876	22	62
1876—1880	14	74

[3] This does not include a number of small county and city institutions.

There is also a list of the private institutions for the insane with various facts concerning them.[1]

AS REGARDS ACCOMMODATION FOR THE INSANE.

While fully aware of the uncertainties of statistics on this subject, I think we may formulate the following as approximately correct:

Our State Legislatures must expect that before many years the New England and Middle States will have an insanity ratio of at least 1 to 350, the Western States 1 to 400 or 500, the Southern States 1 to 500 or 600. *They must provide good asylum accommodation for three fourths of these* if they would do what England does for her insane. Such statements as these make the problem for our Legislatures definite, even if discouraging. We can not yet say whether the ratio of insanity will be less in America than it is in Europe.

THE COST OF INSANE ASYLUMS

And of caring for the insane is a matter which appeals to a part of us that humanity does not touch, and I will refer to the main facts briefly.

[1] List of private institutions for insane, compiled by Dr. J. S. Conrad:

Name of Institution.	County, Town, or City in which located.	Name of Superintendent.	When opened.	Acres of Land.	Capacity.
[2] 1. Butler Hospital	Providence, R. I.	J. W. Sawyer	1847	150	170
[2] 2. McLean Hospital	Somerville, Mass.	George F. Jelly	1818	130	190
[2] 3. Retreat for the Insane	Hartford, Conn.	H. P. Stearns	1824	70	150
[2] 4. Bloomingdale	Manhat'nville, N. Y.	D. T. Brown	1821	—	—
[2] 5. Brigham Hall	Canandaigua, N. Y.	Geo. Cook	1855	100	70
[2] 6. Sandford Hall	Flushing, N. Y.	J. W. Barstow	1841	40	35
[2] 7. Renesslaer Co. Lun'c As'm	Troy, N. Y.	—	1856	12	110
[2] 8. Friends' Retreat	Philadelphia, Pa.	J. Worthington	1817	82	100
[2] 9. Penn. Hospital for Insane	" "	—	1841	113	500
[2] 10. Oregon Hospital for Insane	East Portland	J. C. Hawthorne	1862	150	300
11. Bellevue Place	Batavia, Ill.	R. J. Patterson	1867	16	25
12. Oak Lawn	Jacksonville, Ill.	A. McFarland	1872	90	20
[2] 13. Cincinnati Sanitarium	College Hill, Ohio	W. S. Chipley	1873	18	100
[2] 14. St. Vincent Institution	St. Louis	J. K. Baudery	1858	—	250
[2] 15. Mt. Hope Retreat	Baltimore Co., Md.	W. H. Stokes	1857	425	300
[2] 16. Marshall Hall	Troy, N. Y.	J. D. Lomax	—	—	—
17. Spring Hill Institution	Litchfield, Conn.	H. W. Buel	—	—	—
18. Burn Brae	Kellyville, Pa.	R. A. Given	—	—	—
19. Shepherd Asylum	Baltimore. Co., Md.	—	—	—	—

[2] Indicates asylums that are on the general list.

There are also institutions under charge of Dr. Ralph Parsons at Sing Sing, Dr. E. C. Mann at Washington Heights, Dr. ——— at Cromwell, Conn., etc.

We have about $40,000,000 invested in these institutions, at an average cost of over half a million apiece.

It takes about $8,000,000 a year to run them, or $82,000 for each institution, not including interest. If we should add interest the total annual expenditure for the care of the insane amounts to $12,000,000.

The annual cost[1] per patient has been variously estimated at from $166 to $316. The average in 1878 for 55 hospitals, as given by Dr. J. A. Reed, is $200; by Dr. Hawthorne, for 80 hospitals, in 1878, is $249. (See tables below and on page 248.)

[1] Table showing the cost per capita in fifty hospitals, during 1878: compiled by Superintendent of Western Pennsylvania Hospital, Dr. Joseph A. Reed:

1	State Lunatic Asylum, Fulton, Mo.,	$208 08
2	Oregon Hospital for the Insane, Portland,	286 00
3	State Lunatic Asylum, Worcester, Mass.,	203 32
4	Insane Asylum, State of California, Stockton	155 75
5	Northern Hospital for the Insane, Elgin, Ill.,	220 60
6	Hospital for the Insane, Lincoln, Neb.,	217 36
7	Iowa Hospital for the Insane, Mt. Pleasant,	192 00
8	Minnesota Hospital for the Insane,	169 36
9	State Homœopathic Asylum, Middletown, N. Y.,	332 80
10	Hospital for the Insane, Independence, Iowa,	192 40
11	St. Louis Insane Asylum, Missouri,	194 22
12	Central Kentucky Lunatic Asylum, Anchorage,	182 30
13	New York State Lunatic Asylum, Utica,	281 50
14	State Lunatic Hospital, Northampton,	179 41
15	Pennsylvania State Lunatic Asylum, Harrisburg,	232 96
16	State Asylum for the Insane, Morris Plains, N. J. (State patients),	234 00
17	Willard Asylum for the Insane, N. Y.,	162 24
18	Alabama Insane Hospital, Tuscaloosa,	167 20
19	New Hampshire Asylum for the Insane, Concord,	260 00
20	Lunatic Asylum, Jackson, Miss.	170 00
21	Maryland Hospital for the Insane,	214 77
22	Tennessee Hospital for the Insane, Nashville,	159 87
23	Asylum, Brattleboro, Vermont,	180 00
24	State Hospital for the Insane, Danville, Pa.,	200 72
25	Insane Asylum of North Carolina, Raleigh (some permanent improvements included),	232 10
26	State Asylum for Insane Criminals, N. Y.,	202 43
27	State Lunatic Asylum, St. Joseph, Mo.,	184 34
28	State Hospital for the Insane, Danvers, Mass.,	181 63
29	Government Hospital for the Insane, Washington, D. C.,	223 00
30	Central Hospital for the Insane, Jackson, Ill.,	206 96
31	Louisiana State Asylum,	272 30
32	Western Pennsylvania Hospital for the Insane, Dixmont,	189 28
33	Connecticut Hospital for the Insane, Middletown,	195 00
34	South Carolina Lunatic Asylum, Columbus,	177 00
35	Maine Insane Hospital, Augusta,	162 50
36	Cleveland Asylum for the Insane, Newburg, Ohio,	166 63
37	West Virginia Hospital for the Insane, Weston,	115 95
38	Eastern Lunatic Asylum, Lexington, Ky.,	180 00
39	Western Lunatic Asylum, Staunton, Va.,	141 84
40	Michigan Asylum for the Insane, Lansing,[2]	230 80
41	Northern Hospital for the Insane, Oshkosh, Wis.,[2]	220 00
42	Western Kentucky Lunatic Asylum, Hopkinsville, Ky.,[2]	167 89
43	Illinois Southern Hospital for the Insane, Anna,[2]	203 66
44	Dayton Asylum for the Insane, Ohio,[2]	194 59
45	Columbus Asylum for the Insane, Ohio,[2]	237 80
46	State Lunatic Asylum, Taunton,[2]	215 13
47	Wisconsin State Hospital, Madison,[2]	237 47
48	State Lunatic Asylum, Texas,[2]	189 73
49	Eastern Lunatic Asylum, Williamsburg (1879),	148 94
50	Central Lunatic Asylum, Richmond,	171 23
		$9,772 77
	Average,	$199. 44

[2] Per capita, taken from reports.

We now come to the question of what are the

NEEDS OF OUR ASYLUMS

as depicted by their officers. I do not propose to discuss them, but simply to state what deficiencies are acknowledged and what improvements are called for.

First of all, the want of more room is the universal cry.

In twenty-nine reports new asylums or larger buildings are desired, in many cases urgently demanded.

In only 12 States out of the 38 was there no request for greater accommodation.

COST OF INSANE.

According to Dr. Conrad, in 1875, 55 *State insane hospitals* cost $29,879,258; 1 cost $543,249. Upon this basis 88 would cost $44,000,000. Or, estimating it another way, the per capita cost is in 55 asylums $1,074. For 40,000 persons this would amount to $40,000,000, a sum representing the amount of money now invested in insane asylums.

The *average* cost of maintenance per asylum per annum is estimated to be $82,819, which for 88 asylums would amount to $7,040,000, add to this the interest on buildings and the amount would be $12,000,000 as the total annual expense.

The *per capita* cost of maintenance per annum is $260,65, or adding interest, $316.63. This is a later and higher estimate by Dr. J. C. Hawthorne, of Oregon Hospital. Dr. J. S. Conrad, of Maryland Hospital, gives $161 and $249, as shown above. And table showing cost of 80 asylums (14 private) compiled by Dr. J. C. Hawthorne, Portland, Oregon, for the year 1878, is appended.

Total cost for construction in 80 asylums, . .	$30,403,875 00
Total number of patients intended to be accomodated, .	25,415
Average cost of construction for each patient, . . .	$1,253 50
Average cost of maintenance per capita, per annum, in asylums in United States, exclusive of interest, . . .	$260 65
Average cost of maintenance per capita, per annum, in asylums in United States, inclusive of interest, . . .	$316 03
Average cost of maintenance per capita, per week, in asylums in United States, inclusive of interest, . . .	$6 08

N. B.—In the cost of maintenance, given above, the salaries of officers and the cost of clothing and fuel are in some instances included, in some excluded. In the cost of asylums, the cost of land is in a few cases included, in most excluded. The interest is computed on the basis of the number to be accommodated, and in some cases the asylums mentioned contain more patients than their quota, in others less; so that, while in those containing more, the per capita interest would be less; the reverse of this holds equally good, and when all the institutions are considered, the average will be about as given in the table. In some asylums the cost of maintenance probably includes the cost of buildings, etc., the patients being kept for so much, every thing included. This is the case with this asylum (the Oregon Hospital for the Insane), where buildings, furniture, and every thing else necessary to the outfitting and running of an asylum is furnished by the contractor, the State paying $286 per patient, per year, to cover all expenses. The per capita cost is less than Dr. Hawthorne mentions, because the asylums are crowded.

The condition in some of the Southern States is particularly distressing. In South Carolina hardly one third of the insane can be cared for in the single State hospital. In Georgia 50 applicants were turned away in 1879; the same was the case in Mississippi, where the law is so framed that chronic cases cannot be discharged to make way for the acute. Florida has only an apology for an asylum building; Arkansas, a State with nearly a million of inhabitants, has *no asylum whatever*, though I am informed that one is now building. The superintendent of the single Texas asylum has been obliged to use a printed letter of rejection because surplus applicants for admission are so numerous. His asylum holds only one fifth of the State insane. Alabama has a population of a million and a quarter, Texas and Georgia of over a million and a half, yet none of these States has more than one asylum. It is true that there are fewer insane proportionately in the South, partly because of the preponderance of the colored race, who are, it is said, not so subject to insanity.[1] Yet the importunities of the few medical superintendents there show how negligent these States are.

In the West the story is much the same, but some of the larger States are investigating the matter, and are earnestly urging reform. This is notably the case in Ohio, Illinois, Michigan, and Wisconsin. There are many in these States who have arrived at this stage at least—that the evils are seen and appreciated. They have yet to go through the labor of affecting public sentiment and the public legislature.

The condition of the non-asylum insane in the South and West is about what it was ten years ago in this State. The insane are miserably kept in jails, almshouses, and on poor-

[1] Religion is said to be the chief cause of insanity among the Southern negroes, and it is a form of the disease very hard to cure.

farms, etc. I could recite some pitiable stories of the manner in which this class is treated, but it would be aside from my purpose. We know that by this process the curable insane are often made incurable and a permanent expense to society.

I have a list of other demands made by the superintendents.

A number of them urge the *separation of the acute and chronic insane*, either in different asylums or in detached buildings. I have a note of nine States in which this request was made by one or more superintendents (Virginia, South Carolina, Ohio, New Hampshire, Maine, Kansas, Iowa, Georgia, Alabama).

A separate *asylum for insane criminals* becomes a necessity in large States. Yet it is lacking almost universally. It is asked for in such states as Georgia, Illinois, Iowa, Maine, Missouri, New Jersey, Ohio.

A separate *asylum for epileptics* is also needed and asked for in New York, Illinois, Iowa, and Ohio.

In a number of the Southern States separate buildings or *asylums for the colored insane* are desired.

Improvements in the law of commitments are necessary, according to the superintendents of the Illinois, Indiana, and Kansas asylums. Thus, in Kansas, a person alleged to be insane has to be tried by a jury before he can be committed.

The *lack of sufficient work and amusement* is an evil that exists still in a large number of American asylums. This may be seen in the indifference to the subject shown in many reports, as well as in the records given. Measuring these records by those of Continental and English asylums, we can see that some of the superintendents are much to blame for not utilizing what means they have.

In some States, however, the asylums are so miserably provided with money and grounds that little can really be

done. This is the case in Mississippi and Louisiana, for example. In the latter State the only outlet for the patients' physical energy or mental disquietude is to make bricks. In many large asylums closer home pitiful sums of one or two hundred dollars are are all that is allowed annually for amusements. In Virginia, Tennessee, Maryland, California, Kansas, Louisiana, Mississippi, New York, and other States, the authorities are appealed to for opportunity to give the insane more work, exercise, and amusement.

The *question of restraint* of the insane I shall not take up. Concerning it there is only this to be said as regards the superintendents' reports: It will strike one in reading them that their authors do not treat the subject fairly and candidly. Their discussions are not discussions, but arguments to show that non-restraint may do in some places but not in that special State or institution. There are a few notable exceptions to this; indeed the time is passing by, I hope, when one can refer to the American asylum superintendents as representing a single set of conservative opinions, or as the stolid exponents of "Philistinism" in psychiatry.

The number of medical men connected with the insane asylums of this country is, in round numbers, 300. This gives a proportion of about 1 to 133 patients. This proportion is very unevenly distributed, however. I have a table[1] showing the proportion and number in the different States and asylums.

[1] PROPORTION OF MEDICAL MEN TO PATIENTS.

Ky.,	1–200		N. Y.,	1– 35	B. p.
Kan.,	1– 40		"	1–110	W. I.
La.,			"	1– 30	H. H.
Me.,	1–200		"	1–200	B. I.
Md.,	1–170		"	1–250	Wil.
Mass.,	1–200		"	1– 70	Aub.
"	1–112	P. Earle.	"	1–120	Utica
"	1– 50	p.	N. Y.,	1–140	Flatb.
Mich.,	1–125		Ohio,	1–100	
Minn.,	1–300		"	1–140	
Miss.,	1–200		"	1–170	
Mo.,	1–150		"	1–140	
Neb.,	1– 80		Oreg.,	1– 90	
N. J.,	1–200		Penn.,	1– 60	Kirk.
"	1–180		"	1–120	
N. H.,	1– 90		"	1–200	

There are unquestionably many asylums where the medical staff should be increased, and in some (Md.) this increase is asked for. The

EVILS OF POLITICS

in connection with asylum management is a subject earnestly dwelt upon in Ohio and Kentucky. It is a subject that must be touched upon gently in an asylum report, however, and I did not find it discussed except in the States mentioned. At the meeting of the Kentucky State Medical Society last year the matter was brought up and made the subject of very earnest debate.

The number of deaths by suicide or homicide, when excessive, is an indication of defective management. In 57 asylums there occurred in one year 36 deaths by suicide. These were distributed among 24 asylums, so that some averaged two, or even three in the year.

Other statistics collected by me show that among 13,594 deaths occurring in 146 years in American asylums, there were 124 deaths by suicide. This is a little less than one per-cent. (.9) on the total mortality. A death by suicide occurs in an insane asylum of average size once in about every year and a half.

The number of persons who enter asylums with suicidal impulses is given variously as being from 15 to 25 per cent. on the admissions.

Those who enter with homicidal impulses are much

Penn.,	1-140	Va.,	1-100
R. I.,	1- 80	"	1-100
S. C.,	1-140	W. Va.,	1-200
Tenn.,	1-180	Wash.,	1-225
Tex.,	1-115	Wis.,	1-125
Vt.,	1-140	"	1-170
Va.,	1-100		

Total number of doctors, 291, for 40,000 1 to 138

In private asylums it is below 1-100.
In the best public institutions it is below 1-150 (except where they are for chronic cases). There are, however, asylums where the ratio is 1-200 in Pennsylvania, Kentucky, Maine, Minnesota (1 to 300), Mississippi, New Jersey, New York (Blackwell's Island and Willard), West Virginia, Washington.

fewer in number. I found the record of only one homicide in 57 asylums in one year.

The total mortality rate varies between 5 and 10 per cent.

There are a number of minor points which are more or less dwelt upon in these reports. One of these is the subject of *insufficient attendants.* In the best asylums the proportion of attendants is from 1 to 5 to 1 to 10. In many American asylums it is 1 to 20 or over. In a few asylums this lack of attendants is complained of.

Measures for protection against fire, better heating, drainage, and water supply, and a separate hospital for the sick are things frequently dwelt upon.

STATES AND ASYLUMS.	Number of Patients at end of year.
1.—ALABAMA.	
Alabama Ins. Hosp., Tuskaloosa, 1880.	409
ARKANSAS.	
No insane asylums	
2.—CALIFORNIA.	
State Ins. Asy. Stockton, 1879–80 .	1116
State Asy. for the Ins., Napa, 1880 . .	839
COLORADO.	60
3.—CONNECTICUT.	
State Lun. Asy., Middletown, 1881 .	528
Retreat for Ins., Hartford, 1880 . .	143
4.—GEORGIA.	
State Ins. Asy., Milledgeville, 1880 .	886
5.—ILLINOIS.	
Eastern Hosp. for Ins., Kankakee, 1880 .	96
Central Hosp. for Ins., Jacksonville, 1880 .	633
Southern Ins. Hosp., Anna, 1880 .	501
Northern Hosp. for Ins., Elgin, 1880 .	525
6.—INDIANA.	
Hosp. for Ins,, Indianapolis, 1880 . .	1010
7.—IOWA.	
Hosp. for the Ins., Independence, 1879 .	450
Hosp. for the Ins., Mount Pleasant, 1878-79 . . .	482

STATES AND ASYLUMS.	Number of Patients at end of year.
8.—KANSAS.	
State Ins. Asy., Osawatamie. Topeka, 1880 . . .	172
9.—KENTUCKY.	
Central Asy., Anchorage, 1880 . .	402
Western Asy., Hopkinsville, 1880 .	446
Eastern Ins. Asy., Lexington . . .	550
10.—LOUISIANA.	
State Ins. Asy., New Orleans, 1877 .	194
11.—MAINE.	
Maine Ins. Hosp., Augusta, 1880 .	390
12.—MARYLAND.	
Mount Hope Retreat, Baltimore, 1879 .	370
Maryland Hosp. for the Ins., Baltimore, 1880 . . .	362
13.—MASSACHUSETTS.	
State Asy. for Ins., Danvers, 1880 .	604
State Asy. for Ins., Northampton, 1880	446
State Lun. Asy., Worcester, 1879 . .	490
State Lun. Hosp., Taunton, 1879 .	559
Boston Lun. Hosp., Boston, 1880 . .	153
McLean's Hosp. Mass., 1880 . . .	154
14.—MICHIGAN.	
Mich. State Board of Correction and Charities, Ionia, 1879–80.	443
Mich. Ins. Asy., Lansing, 1879-80 .	657
15.—MINNESOTA.	
Minnesota Hosp. for Insane, St. Peters, 1880 . . .	612
Rochester, 1880 . .	113
16.—MISSISSIPPI.	
State Ins. Asy., Jackson, 1879-80 . .	395
17.—MISSOURI.	
State Lun. Asy., No. 1, Fulton, 1878-79-80	507
State Lun. Asy., St. Joseph, 1879-80 .	159
St. Vincent's Hosp., St. Louis, 1876 . .	137
18.—NEBRASKA.	
Hosp. for the Ins., Lincoln, 1879-80 . .	193
19.—NEW HAMPSHIRE.	
Asylum for Ins., Concord, 1878 . .	272
20.—NEW JERSEY.	
State Asy. for the Ins., Morristown, 1880 .	586
State Lun. Hosp., Trenton, 1879 .	506

STATES AND ASYLUMS.	Number of Patients at end of year.
21.—NEW YORK.	
New York Hosp., Bloomingdale, 1880	214
Asy. for the Ins., Wards' Island, 1879	1096
Hosp. for the Ins., Brigham Hall, Canandaigua, 1880	63
State Homœp. Asy. for the Ins., Middletown, 1878	128
Hudson River State Hosp., Poughkeepsie, 1879	254
Lunatic Asy., Blackwell's Island, 1877	1367
Asy. for Ins., Willard, 1879	1502
State Asy. for Ins. Criminals, Auburn, 1880	149
Marshall Infirmary, Troy, 1878	343
State Lun. Hosp., Utica, 1879	620
Buffalo Asy., 1881	156
Kings County, Flatbush, 1881	868
Sanford Hall, Flushing	30
22.—NORTH CAROLINA.	
State Asy., Raleigh	300
23.—OHIO.	
Dayton Asy. for the Ins., Dayton, 1878	567
Longview Asy., Carthage, 1880	660
Col. Hosp. for the Ins., Columbus, 1880	894
Athens Hosp. for the Ins., Athens, 1879	571
Asy. for the Ins., Newburg, 1879	606
24.—OREGON.	
Insane Asylum, Salem, 1878	360
25.—PENNSYLVANIA.	
Hosp. for the Ins., Danville, 1877-78	360
Western Penn. Hosp. for the Ins., Dixmont, 1880	598
State Lun. Asy., Harrisburg, 1879	426
Hosp. for the Ins., Kirkbride, 1880	356
Penn. Almshouse	766
Asy. for Relief of Persons Deprived of Reason	100
26.—RHODE ISLAND.	
Butler's Hosp. for Ins., Providence, 1880	171
27.—SOUTH CAROLINA.	
South Carolina Ins. Asy., Columbia, 1879-80	420
28.—TENNESSEE.	
Hosp. for the Insane, 1881	377
29.—TEXAS.	
State Asy. for Insane, Austin, 1877	230
30.—VERMONT.	
Asy. for the Insane, Brattleboro, 1880	447
31.—VIRGINIA.	
Central Lun. Asy. for Colored Ins., Richmond, 1878-79	223
Western Lun. Asy., Staunton, 1879-80	479
Eastern Lun. Asy. for Ins., Richmond. 1879	323

STATES AND ASYLUMS.	Number of Patients at end of year.
31.—Washington.	
Government Hosp. tor the Ins., Washington, 1880 . .	897
32.—West Virginia.	
Hospital for Insane, Wheeling, 1877-78 .	415
33—Wisconsin.	
Northern Hosp. for the Ins., Madison, 1880.	489
State Hosp. for the Ins., Madison, 1880.	586
Milwaukee County Asy., 1881 . .	100

STATES AND ASYLUMS.	Number of Patients at end of year.
Dakota Ter.	
Yankton . . .	36
Idaho.	There were 51 in these three Territories in 1870.
Montana.	
Utah.	

I refer lastly to the *general character of the asylum reports.*

There are now too many able men at the head of asylums to justify any sweeping statements as to the cheap character of these documents. Besides, there are in almost every case evidences that the superintendent is making an earnest effort to do his duty.

What, as a medical man, one would criticise most, is the absence of the scientific spirit in the gentlemen who are the authors. To run an asylum on an economic basis is something, but it is not all. There is a science, known as psychiatry. We have in this country three hundred gentlemen who have almost exclusive opportunities of studying it upon their forty thousand patients. But they, as a rule, contribute nothing of real scientific value to our literature. Such a thing as this is unparalleled in any other civilized country or in any other medical specialty. It is for this reason that the medical profession takes a more than

humanitarian interest in the care and treatment of the insane, and in the present movement for its reform.

This absence of scientific work is not always and entirely the superintendent's fault. Asylums are poorly equipped; in some States it is worth his position for an officer to ask the Legislature for a microscope or a laboratory. But when we find one report used in the expounding of phrenology, another in pleading eloquently for 20,000 raspberry bushes, another which seems infused solely with the warm hope that the Legislature will furnish a new boiler, another which happily informs us of the agricultural antagonism between squashes and witch-grass, and a number of others which simply contain the praise of the Lord in a quarter of a column—and then the statistics,—when we read the not infrequent reports of this kind, it is perhaps reasonable to enter a protest. It seems but fair to expect that the reports should show that their authors are not only good superintendents but earnest and studious physicians. And such evidence I have not always found.

THE PHYSIOLOGICAL ACTION OF HYOSCYAMINE.

By Dr. J. C. SHAW,

MEDICAL SUPERINTENDENT, KINGS COUNTY INSANE ASYLUM, ETC., BROOKLYN, N. Y.

(*Continued.*)

THE action of the alkaloid on the temperature and pupil it was thought best to study on man; this also gave us the opportunity of studying the effect on the respiration, pulse, etc. I shall first give the observations on the pulse, temperature, and respiration; another series were made specially to study its effect on the pupil.

These observations were made in conjunction with my assistant, Dr. G. N. Ferris.

OBSERVATION I.

E—— J——.

Dementia, terminal.

Patient small of stature, but fairly developed. Health good.

	A. M.	
Pulse 80. Resp. 26 Axilla 98⅗° Temp. rectum 99⅕°. Pupils normal.	10	Patient is put in bed some minutes before observations are made. Lies quietly. Given ⅛ gr. H. by mouth.
Pulse 80. Resp. 26. Axilla 98⅗° Temp. rectum 99°. Pupils normal.	10.45	No change noticeable in patient.

	A. M.	
Pulse 96. Resp. 20. Axilla 98⅖°. Temp. rectum 98⅘°. Pupils a little larger.	11.30	Patient quiet, but not disposed to sleep.
	P. M.	
Pulse 92. Resp. 20. Axilla 98°. Temp. rectum 98⅖°. Pupils large.	12.30	Sleeping but rouses easily. While observations are being made, restless, talking incoherently to himself, yawns. Conjunctiva injected. Face flushed.
Pulse 80. Resp. 20. Axilla 97⅘°. Temp. rectum 98⅖°. Pupils large.	2	Has been sleeping since last note. Lies quietly. Yawns frequently. Mouth a little dry. Conjunctiva red.
Pulse 72. Resp. 22. Axilla 97⅗°. Temp. rectum 98⅖°. Pupils smaller.	3.20	Does not seem so sleepy, but remains quietly in bed.
Pulse 72. Resp. 22. Axilla 98⅗°. Temp. rectum 99⅕°. Pupils still dilated.	4.45	Effect of drug seems to have passed away. Patient quite lively, but complains of some headache.
Pulse 80. Resp. 24. Axilla 98⅕°. Temp. rectum 99⅕°. Pupils still dilated.	6.30	Ate his supper. Seems as usual. Quite talkative. Pupil contracts by candle light.

OBSERVATION 2.

L—— B——.

Dementia.

	A. M.	
Pulse 84. Resp. 28. Axilla 97⅖°. Temp. rectum 99⅖°. Pupils rather large.	10.45	Patient has been walking around restlessly, laughing and talking to himself. When put to bed, lies quietly and makes no resistance to observations.

11 A.M., given ⅙ gr. hyoscyamine by mouth.

	A. M.	
Pulse 68. Resp. 28. Axilla 98⅗°. Temp. rectum 99⅖°. Pupils the same.	11.30	Patient lies quietly in bed, does not seem sleepy, laughs to himself.

	P. M.	
Pulse 84. Resp. 28. Axilla 98⅖°. Temp. rectum 99⅖°. Pupils the same.	12.30	Since last visit patient got up and dressed, but was put to bed again by nurse. Lies in a quiet state, looks around him, and then pretends to sleep.
Pulse 88. Resp. 22. Axilla 98⅖°. Temp. rectum 99⅕°. Pupils dilated.	1.30	Patient appears drowsy, but opens his eyes when spoken to. Conjunctiva injected; face flushed.
Pulse 88. Resp. 24. Axilla 98⅕°. Temp. rectum 99⅕°. Pupils dilated.	3.15	Is still very drowsy, but wakens easily. Conjunctiva still red.
Pulse 100. Resp. 24. Temp. axilla 98⅗°. Pupils dilated.	6	Pulse though frequent is regular. Patient wide awake.

OBSERVATION 3.

J—— K——.

Chronic Mania.

	A. M.	
Pulse 54. Resp. 16. Axilla 97⅘°. Temp. rectum 99⅖°. Pupils normal.	11	Patient is frequently excited. To-day is talkative and noisy. Is in good physical health. Given ⅙ grain hyoscyamine by mouth.
Pulse 76. Resp. 14. Axilla 97⅕°. Temp. rectum 98⅖°. Pupils dilated.	11.45	Respiration blowing. Sleeping soundly. Yawns frequently. Conjunctiva injected.
	P. M.	
Pulse 68. Resp. 16. Axilla 97⅗°. Temp. rectum 98⅖°.	1	Sleeping quietly and snoring. Does not notice temperature taking.
Pulse 52. Resp. 14. Axilla 97⅖°. Temp. rectum. 98⅘°. Pupils dilated.	2.45	Sleep natural. Pupils are dilated but respond to light; smaller during sleep.
Pulse 50. Resp. 16. Axilla 97⅖°. Temp. rectum 99°. Pupils dilated.	4.45.	Still sleepy, but rouses easily and eats his supper.

7 P. M., effect has quite passed off. Patient very talkative and wide awake.

OBSERVATION 4.

J—— B——.

Dementia.

	A. M.	
Pulse 88. Resp. 24. Axilla 98°. Temp. rectum 99°. Pupils small.	11.15.	Patient quiet. Stands for some time in one position. Circulation poor, hands very blue. Given $\frac{1}{6}$ grain hyoscyamus hypodermically.
Pulse 68.	11.20.	
Pulse 80. Resp. 22.	11.25	
Pulse 120.	11.35	Unsteady, beats strongly and regularly, then rapidly and weak.
Temp. axilla 98°.	11.30.	
Temp. rectum 99°.	11.37.	
Pulse 120. Resp. 18. Pupils a little dilated.	11.40.	Patient asleep, yawns. Commences the peculiar shaking noticed the other day.
	P. M.	
Temp. axilla $98\frac{1}{5}$°.	12.30.	Very difficult to count pulse and respirations, as patient rubs his hands, slaps his hands and face, rolls around. Capillary circulation much improved.
Resp. 22. Temp. rectum 99°. Pupils large.	12.35.	
Pulse 96. Resp. 20. Axilla 99°. Temp. rectum $99\frac{2}{5}$°.	2.00.	Partially asleep. Is agitated during observations as before, but not so markedly.
Pulse 68. Resp. 24. Axilla 98°. Temp. rectum $99\frac{1}{5}$°. Pupils large and respond to light.	5	Patient has quite recovered. Wide awake, laughs in his stupid manner. Does not object to observations. Eats his supper.

OBSERVATION 5.

J—— B——.

Dementia.

	A. M.	General health fair. Capillary circulation poor. Patient restless, stupid and incoherent.
Pulse 84. Resp. 24. Axilla 98⅘°. Temp. rectum 99⅕°. Pupils normal.	10.20	Temperature taken after patient is in bed. Patient goes to bed quietly and makes no resistance to observations.

10.20 A. M., given ⅙ grain hyoscyamine by mouth.

Pulse 116. Resp. 16. Axilla 98⅗°. Temp. rectum 99⅕°. Pupils a little larger.	11	Conjunctiva slightly injected. Is found asleep, but rouses easily; when left quiet sleeps again.
	M.	
Pulse 112. Resp. 18. Axilla 99⅖°. Temp. rectum 100°. Pupils dilated.	12	Conjunctiva more injected. Very restless, hard to take observations, shakes all over, rubs his hands, shakes his head. Capillary circulation much improved.
	P. M.	
Pulse 92. Resp. 16. Axilla 99°. Temp. rectum 99⅘°. Pupils dilated.	1	Pulse rather compressible and difficult to count. Patient still restless and rolling around the bed.
Pulse 80. Resp. 20. Axilla 98⅕°. Temp. rectum 99⅕°. Pupils smaller.	2.15	Patient not so restless, allows observations to be taken easily. Laughs and seems nearer his usual condition. Mouth quite dry. Is given ⅙ grain H. by mouth.
Pulse 104. Resp. 16. Axilla 98⅕°. Temp. rectum 98⅘°. Pupils large.	3.00	Is found sitting on the side of bed looking very sleepy. Becomes restless while taking temperature. Conjunctiva not so red.
Pulse 88. Resp. 16. Axilla 98⅕°. Temp. rectum 99°. Pupils large.	4.15	Looks dazed, but is not disposed to sleep, is restless, rolls about bed, shakes his body and arms.
Pulse 80. Resp. 22. Axilla 98⅖°. Temp. rectum 99⅕°. Pupils still dilated.	5.45	Lies quietly in bed, but does not sleep. Refused his supper.

	P. M.	
Pulse 72. Resp. 20. Axilla 97⅘°. Temp. rectum 99°. Pupils a little smaller.	6.45	Find him walking about the bedroom and chilly. When put in bed laughs and lies quietly. Mouth still very dry.

OBSERVATION 6.

A—— B——.

Chronic Mania.

	P. M.	
Pulse 92. Resp. 20. Axilla 97⅘°. Temp. rectum 99⅘°. Pupils normal.	3.06	Patient restless, noisy, moving about constantly.

At 3.25 P. M., given ⅓ gr. hyoscyamine by mouth.

	P. M.	
Pulse 112. Resp. 17. Axilla 99°. Temp. rectum 100⅖°.	4	Patient quieter but still restless, not disposed to sleep. No effect whatever on pupils.
Pulse 96. Resp. 20. Temp. axilla 99°. Pupils the same.	6	Patient in bed, still restless, going through all sorts of pantomimic movements. Pupils not affected in the least.

OBSERVATION 7.

J—— T——.

Chronic Mania.

	A. M.	
Pulse 100. Resp. 20. Temp. rectum 99⅕°. Pupils rather large.	9.25	Very talkative, not violent at present, but tearing up clothing. Given ⅓ gr. hyoscyamine by mouth.
Pulse 110. Resp. 18. Temp. rectum 99⅕°. Pupils a little larger.	10.20	Still talkative. No sleep. No disturbance of motor apparatus. Given ⅓ gr. hyoscyamine by mouth.
Pulse 116. Resp. 18. Temp. rectum 99⅕°. Pupils dilated.	11.15	Respiration slightly labored. Patient quiet, not so talkative.
	P. M.	
Pulse 96. Resp. 16. Temp. rectum 99°. Pupils dilated.	12.20	Has not slept, but is drowsy. When roused sits up and talks. All his movements are slow. Can walk, but slowly.

OBSERVATION 8.

J—— T——.

Chronic Mania.

	P. M.	
Pulse 88. Resp. 14. Axilla 99½°. Temp. rectum 101°. Pupils slightly dilated.	3.55	Is in good health. Somewhat excited. Very talkative, incoherent. Given ½ gr. hyoscyamine by mouth.
Pulse 92. Resp. 20. Axilla 98⅘°. Temp. rectum 100°. Pupils larger.	4.15	At 4.10 P.M. was drowsy, but would answer questions. Is now soundly asleep.
Pulse 104. Resp. 16. Axilla 98⅕°. Temp. rectum 99⅗°.	4.30	Respirations very deep, puffy, and full.
Pulse 92. Resp. 18. Axilla 98⅘°. Temp. rectum 99⅖°.	6	Still sleeping soundly.
Pulse 88. Resp. 18. Axilla 98⅘°. Temp. rectum 99⅖°. Pupils dilated, but not fixed.	7.15	Still asleep, but commences to be restless when touched during observation.

OBSERVATION 9.

J—— W——.

	A. M.	
Pulse 88. Resp. 20. Axilla 97⅕°. Temp. rectum 99⅖°. Pupils normal.	10.30	Quiet. Goes to bed without resistance and allows observations. Given ½ grain hyoscyamine by mouth.
Pulse 96. Resp. 20.	10.35.	
Pulse 124.	10.42.	Rapid, weak, indistinct.
Pulse 124. Resp. 18. Temp. rectum 99⅕°. Pupils dilating. Conjunctiva congested.	10.50	Respirations fuller and deeper. Commences to yawn. Begins to be very restless, but is drowsy.
Pulse 132.	10.55	Pulse very difficult to count. Patient very restless.
Pulse 116. Resp. 20. Temp. rectum 99⅕°. Pupils large.	11.10	Pulse improved in character.
Pulse 112. Resp. 22. Temp. rectum 99⅗°.	11.45	Seems inclined to sleep, but rouses very easily.

	P. M.	
Pulse 114. Resp 20. Temp. rectum 99⅘°.	1	Has slept a little. Not so restless. Lies with his eyes wide open and looks around in a drowsy manner.
Pulse 92. Resp. 20. Temp. rectum 100°.	2.30	Has not slept since last note. Rises up in bed on door being opened. Not so restless during observations. Conjunctiva not so red.
Pulse 92. Resp. 20. Temp. rectum 100°. Pupils still very large.	5.15	No tendency to sleep. Very little effect noticeable.

OBSERVATION 10.

J—— A——.

Chronic Mania.

	A. M.	
Pulse 60. Resp. 20. Axilla 98⅕°. Temp. rectum 99⅕°. Pupils normal.	10.50	Has been put to bed 20 minutes before observation. Slightly excited this morning, laughing and talking a great deal.

10.55 A. M., given ¼ grain hyoscyamine *hypodermically.*

	A. M.	
Pulse 92.	10.58	
Resp. 18.	11	Commences to feel sleepy, says his head is sore.
Pulse 100.	11.03	
Resp. 16	11.05	
Temp. rectum 99°.	11.08.	
Pulse 104.	11.10	Sound asleep. Will not speak. Pupils dilating. Conjunctiva injected.
Resp. 16.	11.12	Resp. full and deep. Patient snores.
Temp. axilla 98⅗°.	11.15	
Pulse 108.	11.18	
Resp. 18.	11.20	Snoring and blowing. Patient opens and shuts his eyes. Restless, rolls about the bed.
Pulse 108.	11.23	Pupils very large.

	A. M.	
Temp. rectum 98$\frac{4}{5}$°.	11.25	Tries to get up, but falls back in bed. Rubs his hands, knocks his head against the wall.
Pulse 120.	11.30	
Temp. axilla 98$\frac{3}{5}$°.	11.45	
Pulse 116.	11.50	Is asleep, but agitated. Tries to throw himself out of bed.
Temp. rectum 99$\frac{2}{5}$°.	11.55	
	M.	
Pulse 116.	12	
	P. M.	
Pulse 112. Resp. 20. Axilla 98$\frac{2}{5}$°. Temp. rectum 99$\frac{3}{5}$°. Pupils dilated.	12.30	Respiration blowing and snorting. Rolls out of bed on floor.
Pulse 92. Resp. 18. Axilla 98$\frac{2}{5}$°. Temp. rectum 99$\frac{1}{5}$°.	1	Sleeping quietly, but becomes restless during observation. Conjunctiva not so red.
Pulse 80. Resp. 16. Axilla 98$\frac{1}{5}$°. Temp. rectum 99°.	2	Sleeping soundly and snoring.
Pulse 76. Resp. 16. Axilla 98$\frac{2}{5}$°. Temp. rectum 99°.	3.30	Sleeping quietly. Gets out of bed and urinates, but afterward returns to bed.
Pulse 72. Resp. 16. Axilla 98$\frac{4}{5}$°. Temp. rectum 99°.	5	Still sleeping, but rouses easily. Refuses his supper.
Pulse 64. Resp. 18. Axilla 98°. Temp. rectum 98$\frac{4}{5}$. Pupils smaller.	7	Sleepy, but rouses easily and converses. Says his head aches. Pupils respond to candle light.

OBSERVATION 11.

J—— L——.

Melancholia.

	P. M.	
Pulse 100. Resp. 26. Axilla 99$\frac{1}{5}$°. Temp. rectum 100°. Pupils normal.	2.30	Has been quiet all day. Makes no resistance to observations.

2.32 P. M., given $\frac{1}{6}$ grain hyoscyamine hypodermically.

	P. M.	
Pulse 96.	2.34	
" 92.	2.37	
" 96.	2.39	
" 104.	2.41	
" 112.	2.44	
" 116.	2.46	
" 118.	2.50	Pupils commencing to dilate.
Pulse 124. Resp. 28.	2.55	Patient gets up in great anxiety. Says he is dying; that he feels dreadful. Asks for water and drinks it.
Pulse 150.	3	Tries to get up and falls back. Then embraces nurse with both arms. Moans, cries aloud, and says he is done.
Pulse 144.	3.20	
Pulse 136. Resp. 28.	3.40	Tries to walk around but shuffles and stumbles. Tries to pick up clothes, but lets drop what he has in picking up a new piece. Violently resists temperature taking.
Pulse 132. Resp. 28.	4	Quieter but still anxious. Has twice asked for a drink.
Pulse 116. Resp. 26.	5	Has not slept, gets up and dresses. Will not allow temperature to be taken.
Pulse 80. Resp. 30.	6.45	Is found sitting up in bed. Says he feels better, but has not slept any.

They were taken in persons of good physical health as far as flesh, etc., was concerned, and ranging from 20 to 40 years of age. We always placed the patient in bed, well covered up for half an hour before the first temperature was taken; after the first record of temperature then the medicine was given, still keeping the patient in bed until the end of the observation. Examination of the pulse rate shows that in eight cases it was increased in from five minutes to one hour and a half after the dose was taken.

The rule is first an increase in the number of pulse beats, to be followed by a diminution and return to the normal, occasionally to be followed by a slight diminution in the number of beats below the initial number. Sometimes there is at first a diminution in the number of pulse beats, soon to be followed by an increase in the number of pulsations much above the natural beats (in three of the eleven cases), then a gradual return to the normal. The respirations almost invariably are diminished in frequency, to be followed by a return to the normal. In the experiments on animals there was a slight increase in the respirations.

In eight cases in which the temperature was taken in the axilla, in five there was a slight fall in the temperature, and in three there was a slight rise ; in one there was a slight fall, followed by a slight rise, and then a return to the normal.

In six cases there was a fall in the rectal temperature more or less marked, that is, from $\frac{1}{5}$ to 1 degree ; in one case there was a slight fall and then a slight rise ; in three cases there was a rise in temperature ; in one of the cases the fall in temperature was followed by a decided rise.

In one of the first observations we made, the axillary temperature went up so much that we were led to inquire if the rise in the axillary temperature did not coincide with a fall in the rectal temperature, but further observation showed that whenever the axillary temperature falls the rectal also falls, when the axillary rises the rectal also rises ; in one case only was there a rise in the axillary temperature and a fall in the rectal, and this was probably due to the patient's skin having been colder and registering below the normal ; the precaution to cover them up well in bed for some time before taking the first observation and thereafter, avoided any error of this kind.

The dilatation of the pupil began and was at its height in from thirty minutes to one and a half hours, and the full

dilatation was found to take place at about the time when the pulse rate was highest.

Our observations are entirely in accord with Gnauck's recently published researches on the following points: the tired, restless feeling (when the drug is first given there is sometimes a restless, uneasy state; the patient turns about in bed, puts his hands up to his face, rubs his eyes, etc.) coincides with the rise of the pulse rate, and the sleep always ensues with the fall of the pulse rate, when, as a rule, the patient sleeps quietly, and not unfrequently profoundly, and even snoring quite naturally.

The pupil which has been dilated with hyoscyamine we have found to become contracted during the sleep which ensues from the effect of the drug; that is, the pupil is less large during the sleep than it was during the waking state. Gnauck states that with the plithysmograph it was found that in the sleep from hyoscyamine the blood-vessels of the arm are dilated as in normal sleep. We have also found, as he has done, that the pupil dilated with hyoscyamine is not fixed, it will react to light—it does not contract down, as in a normal pupil, but it is mobile, and will contract to a certain degree; this was observed in the cases in which the drug was given internally as well as in those in which it was applied directly to the eye.

As regards its action on the pupil there is no question as to its mydriatic effect, but there appears to be some doubt as to its superiority or inferiority to atropia as a dilator of the pupil. In addition to the observations previously made with Dr. Ferris, in which the drug was given internally and the pupil noted, its local action was studied, observations were made in conjunction with my assistant, Dr. John Bowen. We first of all used a four-(4)-grain solution (4 grains to aqua ℥ i) of hyoscyamine and a four-(4)-grain solution of atropine, putting one drop of the hyoscyamine

solution into the right eye, and a drop of atropine solution into the left eye. We found that the hyoscyamine eye began dilating first, but after a short time they were both dilated alike. This was the uniform result with the four-(4)-grain solution; we then used a half-grain solution with the same result. We then tried a $\frac{1}{8}$-grain solution; the hyoscyamine solution hardly dilated the pupil, while the atropine solution dilated them. The superiority of atropine over hyoscyamine as a mydriatic was well shown in the application of the weak solutions, whilst it was not apparent by the use of strong solutions; its superiority was also shown by the persistence of the dilatation from atropine much longer than the dilatation from hyoscyamine. It was also noted in these observations, as in the previous ones with the internal administration of the alkaloid, that the pupils reacted to light—they were not fixed, as in the atropinized pupil. The other general effects of the alkaloid, when given to man, are: If the dose be large enough, a tottering, drunken kind of gait, with a rather drowsy, heavy expression; soon the patient lies down, apparently unable to stand up any longer, and falls into a deep, quiet sleep, which lasts many hours. Occasionally the patient is restless, uneasy, and yet quite drowsy and partly asleep; he rolls about in bed, rubs his face, etc., and later sleeps quietly if undisturbed.

The degree of profoundness in the sleep varies somewhat in different persons. In one of our observations we met with, to us, an unusual effect: the patient was quite agitated, threw his arms around the doctor and nurse, said he was going to die, complained of dizziness, and evidently had a feeling of oppression; pupils dilated and mouth very dry.

This is, however, an unusual condition and it appears to us that it may have been due to the man having been a melancholic.

The fauces are always more or less dry, its degree varying very much in different individuals.

Only occasionally is there a slight disposition to nausea; the appetite is not disturbed by it; delirium and hallucinations are rare, and are in no way to be compared with those seen in the use of atropia.

The urinary secretion is frequently increased. It has been my object in this article to avoid any discussion as to the therapeutics and antagonism of this alkaloid.

Most of the writers on this subject have been treating of the therapeutics of this alkaloid, and the physiological action has only been touched upon incidentally; without reviewing and comparing the observations of others with my own, I might say in closing that, as far as the physiological action of the drug is concerned, my observations are in the main in unison with those of Lawson, Mendal, Gnauck, and Seguin.

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RANDALL'S ISLAND HOSPITAL.

SERVICE FOR NERVOUS DISEASES.

L. PUTZEL, M.D.,

VISITING PHYSICIAN.

Hemi-chorea.—Christian Ashinfelber, æt. 65 years, entered the hospital on March 8, 1881. On account of the patient's mental condition and difficulty of speech very little of his previous history could be obtained. He stated, however, that his wife had eloped a year ago with a paramour, taking all his savings with her. The patient has been a hard drinker for years, and during the past year has worried very much on account of his domestic misfortunes. The date of the present attack cannot be determined with accuracy, but as far as can be ascertained, it developed within a month previous to his admission to the hospital.

Upon admission the patient is found suffering from intense dyspnœa, and upon examining the chest large, coarse râles are heard over both lungs, together with the signs of emphysema. The patient presented extremely violent choreic movements of the entire left side of the body, though the face was much less affected than the limbs. An extensive excoriation was found upon the outer aspect of the left arm, which was evidently due to the friction of this part against surrounding objects. When first placed in bed he was continually falling out from the violence of the movements, and finally it became necessary to place the two lower limbs in splints (the right leg was in continual motion from the communination of the shock from the left limb). As far as could be determined by the coarse tests which could alone be applied, there was no difference in sensation between the two sides of the body. Nor was there any loss of power in the affected hand, the slight diminution which could be detected being due to the irregularity of muscular movement.

The patient was very garrulous, talking aloud during the night and disturbing the other patients in the ward. He imagined himself surrounded by enemies who were always annoying him; he was also constantly talking about women, money, etc. There was incontinence of urine and fæces. The patient slept very little, even when large doses of chloral hydrate and bromide of potassium were administered.

The urine was of a light amber color, sp. gr. 1,020, and contained a small amount of albumen. Microscopical examination showed small hyaline and granular casts.

The patient remained in the same delirious condition and the choreic movements continued with unabated violence until shortly before death, which occurred on March 21st (two weeks after admission).

Autopsy.—Thickening of pia mater; atheroma of cerebral vessels; dilatation of lateral ventricles; remains of old hemorrhages in right optic thalamus, posterior part of white capsule, and in right lenticular nucleus; softening of posterior half of right white capsule and optic thalamus. Hypostatic congestion of lungs. Cardiac dilatation. Atheroma of aorta. Fatty liver. Chronic diffuse nephritis with cysts.

Autopsy performed 24 hours after death. Rigor mortis present. Under portion of left forearm excoriated from elbow to wrist.

Brain.—Dura mater normal, large increase of arachnoid fluid. Pia mater thickened and œdematous; large amount of subarachnoid fluid. The convolutions appear smaller than usual, most markedly in the lower half of the left ascending frontal convolution and the posterior half of the left third frontal convolution. The pia mater could be readily detached but the surface of the convolutions was not perfectly smooth in places. The thickening of the pia mater was most marked at the base of the brain, and especially in the region of the Sylvian fissures.

The vessels at the base of the brain slightly atheromatous

in patches; the left vertebral artery was much smaller than usual, and the right vertebral correspondingly enlarged. The anterior cerebellar arteries passed around the medulla nearly to the median line, and then bent forward in the usual direction. The lateral ventricles were considerably dilated and filled with a clear fluid; the ependyma was thickened but not roughened. A slight depression, about the size of a pea and very shallow, was visible under the ependyma over the extreme lip of the left nucleus caudatus; upon cutting into this, it is found to correspond to a yellowish-red spot of old softening, which also contains a minute recent clot. In the right lateral ventricle is found a considerable depression over the posterior third of the optic thalamus, and this extends laterally across the posterior third of the white capsule and the tail of the caudate nucleus; this depression is stained of an ochre-yellow color. It is found to correspond to the remains of an old hemorrhage in the following situation: Extending antero-posteriorly as a horizontal slit through the posterior half of the optic thalamus about $\frac{1}{8}$ inch below the upper surface; this extends laterally to the external boundary of the optic thalamus, and also into the posterior third of the white capsule. A minute old hemorrhagic spot is also found in the most posterior portion of the right lenticular nucleus. The entire posterior half of the white capsule looks slightly yellowish and is softer than the surrounding parts. This is also true of the posterior half of the optic thalamus. The remaining portions of the brain were apparently normal.

Thorax.—Firm old adhesions of both pleuræ. The lungs were markedly congested; hypostatic congestion at their bases with beginning hypostatic pneumonia; œdema was also present with considerable pus in the bronchi.

Heart.—Enlarged; great increase of superficial fat. Both ventricles were dilated; small masses of fibrin were found

in both ventricles, some attached to the columnæ carneæ, and others free. The mitral valve presented several spots of calcareous deposit. The aorta was atheromatous.

Abdominal cavity.—Normal.

Liver.—Fatty, slightly enlarged; of a pale, reddish-brown color with localized spots of paleness.

Spleen.—Normal.

Kidneys.—Scattered over their surface were numerous small cysts, which contained a dark-colored serous fluid. One on the anterior surface of right kidney was about $\frac{3}{4}''$ in diameter and contained clotted blood; a branch of the renal artery was found to have ruptured into it. The capsules were adherent and, when removed, left a granular surface. On section the organs presented all the appearances of chronic diffuse nephritis.

Stomach and intestines.—Not examined.

EDUCATION AS A MEANS FOR THE PREVENTION OF INSANITY.

By F. M. TURNBULL, M.D., Ph.B.,

SECOND ASSIST. PHYSICIAN AT THE MCLEAN ASYLUM, SOMERVILLE, MASS.

"The child is father to the man."

"The greatest and most important difficulty of human science is the nurture and education of children."—*Montaigne.*

THE word education I use in its most comprehensive meaning: education of body as well as mind from surrounding circumstances and influences as well as from schools and teachers. An education such as this must inevitably be an important factor among the causes of or means for the prevention of insanity, and although the character and physical constitution of an individual cannot be changed by this means, they can certainly be modified, and tendencies morbid or healthy, good or evil, under favorable circumstances may develop out of all proportion to those which have been discouraged and stunted, as a plant is vigorous under the fostering influences of sun and moisture, and is sickly and dies when deprived of them.

"Man's nature runs either to herbs or weeds; therefore let him seasonably water the one and destroy the other.—*Bacon.*

First of all, any system of education which hinders or neglects health and normal physical development, is radically wrong, for the mutual dependence of the mental proc-

ess and physiological function is such that any departure from health in the latter is attended by a disturbance in the former.

The kindergarten schools and object-teaching are steps in the right direction. By these methods the child can learn without bending over a book, straining his eyes, distorting his vertebral column, and cramping his viscera. Children should not be compelled to remain seated or in one position for a long time, but should have frequent changes. Who does not know what an uneasy, restless creature a healthy child is, and yet children are condemned to long hours within doors in vitiated atmospheres; compelled to sit when it would be more healthy and natural for them when not at play to recline.

When an animal, especially a young one, is tired it lies down, and when a child is tired it does the same if allowed, or at least lounges, and the seats and desks of a school-room are not convenient for this.

Of course it is necessary to have some discipline in a school, and children should be taught a certain amount of decorum, but constrained positions should not last. Standing, as they often have to do in classes or as a punishment at school, is a most injurious and cruel torture, and sometimes aggravates a tendency to curvature of the spine.

Confining children, who are at the plastic growing age, in hard, stiff seats with unyielding desks in front, is like packing green figs in a box. The effects are analogous if not the same.

It is a pretty well-established fact that myopia or short-sightedness among children and young people is on the increase both in this couutry and in Germany, and the cause to which it is ascribed is the vitiated air and leaning forward over a desk to read print which is too fine. The leaning forward produces a congestion of the coats of the eye;

and the prolonged endeavor to read fine print necessitates a persistent accommodation of the eyes to short distances. We have as a result the anomaly of a boy or girl with spectacles.

What is true of the eyes is true of other organs. The prolonged application to the task causes hyperæmia of the brain, and the leaning forward, especially when there is any constriction about the neck, interferes with the return of venous blood from the head and brain, and we have a venous stasis, both producing trophic changes if continued. The child may have headaches, night terrors, and possibly hallucinations, and even insanity.

Constipation and indigestion produced by sedentary habits aggravate all this. Too much indoor inactivity in an atmosphere artificially heated, renders the child sensitive to cold and sudden changes, so that he is more liable to be made sick by them.

Again, a prolonged sitting posture with the constipation which may be induced brings on an unnatural heat and congestion of the genital organs, with a corresponding irritability and excitability of those parts, paving the way for future vices and their consequences.

The following is quoted from an editorial in the *Boston Medical & Surgical Journal*, vol. cv, No 17.

During the past year 2,074 persons died in the State of Massachusetts over five years of age and up to fifteen, or during school years. In the next fifteen years 2,113 died of pulmonary consumption, out of a total of 5,494 for all ages,—a disease the chief causes of which are innutrition and rebreathing over and over again air which has been vitiated, or, in other words, taking into the lungs what has been very properly called the sewage of the atmosphere. There can be no question that our public schools propagate contagious diseases to a certain extent among the very young, and that their insufficient ventilation or bad sanitary condition often deteriorates the constitution to the point of estab-

lishing diseases which sometimes produce death, sometimes a lasting invalidism, making the individuals wretched, and sometimes simply enfeebled health, which imparts weakened constitutions to children and children's children.

In this editorial it goes on to speak of the medical inspection of schools which began in Brussels in 1874:

By the Bureau of Public Health established, five physicians were delegated to the sole work of medical inspection of schools. They give their attention (1) to faults in construction, heating, ventilating, size of class-rooms, seats, desks, windows, etc.; (2) to the temperature and daily condition of the air, and all the causes tending to vitiate it; (3) to all the circumstances affecting the health of the well child: gymnastics, care of eyes, ears, teeth, skin, body, length of lessons, time of study, light, heat, ventilation, books, swimming lessons, instructive excursions, immediate closing of the schools when the temperature exceeds 82° Fahrenheit, accurate anthropometric records as means of constantly learning the conditions as to health of all pupils, and investigations into the best methods of intellectual development; (4) to rigid regulations regarding infectious diseases, including vaccination, and revaccination, and to careful directions for the training of children below the normal standard of health.

The result has been that *no one of the infectious* diseases has reached the height of *an epidemic* in Brussels since the establishment of their inspection of schools, although other cities of Belgium and Europe generally have suffered severely; that the general health of the pupils has improved; that the scholars have much more nearly than before that training which is suited to them individually; and that the public charitable and penal institutions are thought to be less resorted to * * *

It goes on to say:

The New York State Board has commenced a partial medical inspection of some of their schools, but that "no board or municipality has yet undertaken such an important step in Massachusetts."

In the *New York Medical Record*, Nov. 12, 1881 (vol. xx, No. 20) there is an editorial entitled "The Dangers in the American School System," in which it is said:

Some undoubted progress in matters of school hygiene can now be recorded. The subject is being practically studied in Massachusetts, Wisconsin, Ohio, Maryland, and elsewhere. In some of those States the investigations are in the hands of boards of health; in other cases work has been done only by local physicians, under the direction of the school authorities. It is in the Western States that some of the best work has been done in this direction. The Wisconsin Board of Health has, in particular, published some excellent papers on the subject. In its last report there is an article by Prof. T. W. Chittenden, which enumerates very completely the ills that the growing boy or girl may be subjected to at school.

Among the defects of the American school system reviewed in this editorial, there are, in addition to what I have already mentioned: crowded school-rooms, lack of supervision over the play-ground, lack of care to prevent deafness, irregularity in meals, the excitement and worry of examinations, the struggles for high marks, etc.

It goes on to say:

We have recently received from Dr. L. B. Tuckerman, of Cleveland, O., the results of some investigations. * * * He writes that, during the last school year, of the eight hundred pupils in the Cleveland High School nearly twenty-five per cent. of the girls and eighteen per cent. of the boys withdrew from one cause or another. Investigations were authorized in consequence, and personal inquiries were made by a physician. It was found that seventy-five per cent. of the girls who had left had done so wholly or in part on account of ill health, were in poor health while in school, and thirty-three per cent. of those who left were compelled to do so on account of physical troubles. The Cleveland High School is about the same in character as other city high schools throughout the country. Further inquiries were then made into the health of the scholars as well as of graduates. A very interesting fact was developed in regard to the relation of ill-health to the number of hours spent in study outside of school. It was shown, in the first place, that the girls studied, either from necessity or from choice, more hours out of school than the boys did. * * *

Another series of investigations showed that ill-health increased in inverse proportion to the amount of recreation or social enjoyment indulged in, * * * etc.

The following are Dr. Tuckerman's statistics. He says:

The most important fact was the relation of ill-health to the number of hours spent in study outside of school, and that it takes a girl on the average longer to do the same amount of mental work, thus dividing them into four classes: those that study less than two hours at home; those that study two hours or less than four; four hours and less than six; six and over. We have:

	Hours 0—2	Hours 2—4	Hours 4—6	Hours 6
Boys, per cent.	25	65	5	3
Girls, "	8	47	38	6

The number of boys was too small to base any definite conclusions upon, but with the girls, 186 in number, the facts are as follows:

	Hours 0—2	Hours 2—4	Hours 4—6	Hours 6
Health poor while at school, per cent.	29	70	93	100
" very poor " "	14	40	66	100
Appetite deranged "	7	44	47	69
Sleep deranged "	7	18	37	69
Troubled with headache "	22	62	81	100
" back- or sideache, per cent.	14	34	57	45
" weak eyes "	29	39	36	42
Eyes failed since the pupil entered the High School, per cent.	14	13	18	17
No menstrual symptoms were known, per cent.	5	40	31	9
Menses same while at school, per cent.	80	50	19	67
" deranged " "	20	50	81	33
" frequent or profuse while at school, per cent.	20	28	26	11
Menses scanty, irregular, painful, per cent.	—	35	71	33

In the *Boston Medical and Surgical Journal* of Nov. 24th, vol. cv, No. 21, Dr. Tuckerman's statistics have since been published more complete, with tables and diagrams. In addition to the symptoms given above, "nervous trouble"

was mentioned, which may mean any thing from a slight neuralgia and nervousness to serious nervous and mental disease.

Cases where the menses were both frequent or profuse or painful, were tallied simultaneously in each class, hence the apparent discrepancy in the percentages. "The gain in health as the pupils indulge more freely in social relaxation is correspondingly marked. The parents of seventy-six of the one hundred and eighty-six girls attributed their trouble, in part, to stair-climbing. The irregularity of meals necessitated by the one-session system, the worry about rank and examinations, were assigned as causes by others."

These statistics of Dr. Tuckerman's show conclusively that in the present school system we have many of the causes of insanity, both predisposing and exciting: general health injured, headache, deranged sleep and appetite, disordered menstruation, neuralgias, and other nervous affections, which merge insensibly into brain or mental disease. What more favorable conditions could there be for the promotion and increase of insanity?

Under such conditions as these, the boy, if ambitious, by the time he is ready to enter college, may be a "foot in the grave young man," with cramped chest, round shoulders, weak and short-sighted eyes, and a brain and nervous system ill-nourished and weakened from loss of sleep, which he should have had when growing. The girl may become a sickly, hysterical, neuralgic invalid, neither ornamental nor useful. Both are candidates for a lunatic asylum.

At this point the girl's education generally is considered completed, so far as schools are concerned. After entering college the young man's life is changed very much. He is only confined in the college buildings while at recitation, and studies his lessons in his room, where he can place himself in as easy a position as he chooses, and for the first time

during study hours has entire freedom to put his feet as high as his head; and what, with this new liberty and the athletic sports, with perhaps a gymnasium such as Harvard's, he may, in spite of his former injurious training, become a man instead of a mummy.

Now, why should not something of this sort be substituted for the present system of school education when the child has passed the kindergarten age. Let the boy or girl have hours for recitation and explanation at school, but let them study at home, out-of-doors, anywhere they can, but don't crowd them beyond their capacity for learning. Arouse their interest, if possible, but don't make them slaves to their tasks; fastened to their chairs and desks like galley-slaves to their oars. Leave plenty of time for exercise and recreation, even if they do not get along as quickly in their studies. Nothing was shown more conclusively by Dr. Tuckerman's statistics than that different standards must be applied to different individuals. Some are slower to learn than others, and there is great difference in the mental capacity of school-children. Often it would be well to hold back the precocious ones.

In the first place, establish a medical inspection of schools similar to and as thorough as that of Brussels, and the needed reforms will follow in time. In this we have a practical remedy, for then we can know just what changes are necessary.

Montaigne says: "Our very exercises and recreations—running, wrestling, music, dancing, hunting, riding, and fencing—will prove to be a good part of our study. I would have his outward behavior and mien, and the disposition of his limbs, formed at the same time with his mind. It is not a soul, it is not a body that we are training up; it is a man, and we ought not to divide him into two parts."

By training the muscles to the performance of precise and delicate movements, and the senses to capability for accurate perception, as in the fine and mechanical arts, the intelligence and powers of observation are increased. In fact this has been found to be the first step in the education of idiots. For a complete enunciation of these principles the reader is referred to the articles entitled "The Psycho-Physiological Training of an Idiotic Hand," in the *Archives of Medicine*, Oct., 1879, and the "Psycho-Physiological Training of an Idiotic Eye," in the *Archives of Medicine*, Dec., 1880, by the late Edward Seguin, M.D.

But "art is long and our life is short." We must economize time, and we cannot expect the child to excel in all things, so that there must be a selection of books and of studies, and, with regard to physical training, all must be done in moderation and within the limits of endurance and vitality. Athletic sports must not be carried to excess, or vitality will suffer. Moderate natural exercise increases vitality and facilitates the nutritive process and physiological functions.

It is beyond the scope of this paper to enter into any detailed directions for the physical training of children, and for the hygiene of the nursery or of the later surroundings of the youth and maiden the reader is referred to works on those subjects. Here only a few general principles will be stated.

Good and sufficient food is very essential for the production of a sound mind in a sound body. Cleanliness, which is next to godliness, is also. A tepid or cool sponge bath every day, with a brisk rubbing down afterward, is the best for frequent use. This may be done by another person so as not to exhaust a delicate child; and in the winter the room should be warm, and, if possible, the baths given in

the middle of the day, when vitality is greatest. Warm baths occasionally, if not continued too long, are useful, but are apt to be enervating.

Clothing sufficiently warm in winter, but not confining, is necessary to prevent exposure to cold; and here I may say, that the way to enable children to bear cold and dampness or excessive heat, is not to expose them to the vicissitudes of the weather with little protection, with the false impression that they are hardened in this way, but by nourishing their bodies so that they may have good flesh and blood, and an abundant store of vitality to draw upon, and by protecting them from depressing agencies, such as extreme heat and cold. By protection from cold, I do not mean so many wraps as to cause the victim to break out into a perspiration. Scarfs about the neck had better not be worn at all, and fur hats are apt to be so warm as to cause perspiration of the scalp, and render the head more sensitive to cold. A light covering for the head is all-sufficient, and if every boy wore nothing else, we should see fewer bald heads. The feet and ankles should be protected in cold or damp weather, and kept moderately warm and dry. The wrists, also, and the thorax and abdomen should be protected. The external genital organs should be kept cool, and clothing about those parts should be light.

In summer, at mid-day children should be kept away from the direct rays of the sun, and not allowed to get overheated. By all this care we may be able to ward off colds, sun-strokes, diarrhœas, etc., but should colds come in spite of us, they must not be neglected and allowed to run their course, but should be treated immediately and by appropriate means, and perhaps by so doing an inflammation of the middle ear, or a bronchitis or phthisis, may be prevented. Diarrhœas should be treated, and, in short, all diseases of childhood or youth should be taken in time, as

when allowed to go on they may become more serious and lower the vitality very much.

It is a popular superstition that children are better to have the children's diseases, such as measles, whooping-cough, scarlet fever, and be done with them, when on the contrary it would be better not to have them at all, or to wait until older and stronger. Avoid them as you would the small-pox, and quarantine the cases that exist; and here we see the necessity of a medical inspection of schools. In Brussels, "no one of the infectious diseases has reached the height of an epidemic since the establishment of their inspection of schools."

With girls care must be taken to promote and continue normal and regular menstruation, and any thing which causes derangement of this function must be discontinued, and suppression of the menses must be guarded against, as these disorders are not infrequently the starting-point for mental disease as well as other ills. Constipation should be guarded against, also; in short, all the functions of the body should be kept in healthy regular action if possible.

Enough has been said of late by others with regard to drainage with reference to public health, so that it is not necessary to speak of it here. Malarial poisoning should be avoided if possible, and no one needs to be warned against the effects of diphtheria.

Both malaria and diphtheria are apt to be followed by nervous disease.

Perhaps enough has been said concerning physical care and training, and we will now turn our attention to the development of the mind.

First as to mental training at home and selection of studies and books.

In many cases a child is much better to be kept from school, especially where the parents, by their

example and conversation, are a means of education, for as a child is impressible and imitative to a wonderful degree, and oftentimes very observant, its manners and language become the same as its associates. In school ungrammatical expression, vulgarisms, and wickedness are rapidly acquired from other children, and it is hard to eradicate the impressions made at this period. I can do no better here than to quote G. H. Lewes. "One thing, however, he (Goethe) did learn at school, and that was disgust at schools. The boy carefully trained at home, morally as well as physically, had to mingle with school-boys who were, what most school-boys are, dirty, rebellious, cruel, low in their tastes and habits."

The child who inherits a strong moral sense and that stability of character which is to enable him in time to become a social being, and to mould his surrounding circumstances for his own and his fellow-creatures' ultimate good, will come through this ordeal with only scars upon his mental and moral faculties, and may be benefited by the battle, as it will give him greater self-reliance, and there is the stimulus of competition, too; but even here the scars and stains remain, verifying the saying that he who touches pitch shall be defiled.

With a child who is not thus fortunately born, and has some slight immoral tendency, or has inherited a too pliable character, an emotional and passionate nature without corresponding self-control, or the insane temperament itself, to which such a nature leads, the wound may be irreparable, and in some moment of weakness may be fatal to the preservation of a moral sense and self-control.

Parents who feel their incapacity to decide whether 't is better for their children to stay at home or go to school, should submit the question to some person in whose judgment they have confidence, for it may be that the home

influence is not the best that can be had. If every boy or girl were surrounded by such influences as Goethe's childhood was, we would not need to hesitate.

The mother of Goethe "employed her faculty of story-telling to his and her own delight. Air, fire, earth, and water I represented under the form of princesses, and to all natural phenomena I gave a meaning, in which I almost believed more fervently than my little hearers. As we thought of paths which led from star to star, and that we should one day inhabit the stars, and thought of the great spirits we should meet there, I was as eager for the hours of story-telling as the children themselves; I was quite curious about the future course of my own improvisation, and any invitation which interrupted these evenings was disagreeable. There I sat, and there Wolfgang held me with his large black eyes; and when the fate of one of his favorites was not according to his fancy, I saw the angry veins swell on his temples, I saw him repress his tears. He often burst in with, 'But, mother, the princess won't marry the nasty tailor, even if he does kill the giant.' And when I made a pause for the night, promising to continue it on the morrow, I was certain that he would in the meantime think it out for himself, and so he often stimulated my imagination. When I turned the story according to his plan, and told him that he had found out the *denouement*, then he was all fire and flame, and one could see his little heart beating underneath his dress. His grandmother, who made a great pet of him, was the confidante of all his ideas as to how the story would turn out, and as she reported these to me, and I turned the story according to these hints, there was a little diplomatic secrecy between us which we never disclosed. I had the pleasure of continuing my story to the delight and astonishment of my hearers, and Wolfgang saw with glowing eyes the fulfilment of his own concep-

tions, and listened with enthusiastic applause. What a charming glimpse of mother and son." (Lewes' "Life of Goethe.")

The mother's admirable method of cultivating the inventive activity of the boy, finds its pendant in the father's method of cultivating his receptive faculties. He speaks with less approbation than it deserved of his father's idea of education; probably because late in life he felt keenly the deficiencies of systematic training. But the principle upon which the father proceeded was an excellent one; namely, that of exercising the intellect rather than the memory, etc., etc.

Charles James Fox, of whom Walpole says: "Fox had not the ungraceful hesitation of his father, yet scarce equalled him in subtlety and acuteness; but no man ever excelled him in the closeness of argument, which flowed from him in a torrent of vehemence, as declamation sometimes does from those who want argument"; and whom Burke called "the greatest debater the world ever saw," was made a constant companion of by his father, who used to take him when he went to dine with his brilliant associates. The result was that, with a naturally remarkable memory, he acquired such a vocabulary that he was never at a loss for a word.

Many other such instances could be given to show what home education is capable of, and how natural talents can be cultivated. If a child shows a taste for any particular study, for any art, by all means foster it, as we are not only fostering what may prove to be genius, but at the same time providing for the future happiness of the child—for what greater and more lasting happiness is there than to succeed in the pursuit of a chosen and loved profession or art.

It is rare, however, to find a mother such as Goethe's; and Maudsley (page 101, "Pathology of Mind") says:

"Those who have had much to do with the treatment of insane persons have not failed to note the marked mental peculiarities of their near relations in many instances, and to lament that they oftentimes show themselves more distrustful, more difficult to reason with, more impracticable, than the member of the family who is confessedly insane. In the first place, they have such an intimate radical sympathy of nature with those tendencies of character which have culminated in insanity in them," etc.; and (page 163): "Parents, who, having themselves a weak strain in their nature, have given their children the heritage of a morbid bias of mind, are very apt unwittingly to foster its unhealthy development; they sympathize so essentially with it that they do not perceive its vicious character—if they do not actually admire it—and leave it to grow unchecked by a wise discipline, or perhaps stimulate it by the force of a bad example. 'He is so spoiled,' says the silly mother placidly of her child, as though she was saying something creditable to it, or at any rate that was not very discreditable to her, little thinking of the terrible meaning of the words, and of the awful calamity which a spoiled life may be."

Of course in such cases as these there is little that will or can be done to check morbid or vicious tendencies, but even here there will often be some one or two members of the family who have sufficient discernment and common sense to see what is necessary; and it is not uncommon for the insane themselves to have great anxiety about the welfare of their children and a perfect willingness to abide by the decisions of their trusted friends.

We will assume, however, that the parents are judicious, or that they are at least anxious to teach their children, both by precept and example, that which will smooth their path through life, help them to fight their battles successfully, and make them a pleasure to others as well as to

themselves. In the first place, and very important, it is necessary for parents and the older members of a family to avoid doing themselves what they would not wish the children to do.

Cheerfulness should be cultivated both by the parents and in their children. All repining and melancholy should be discouraged—

> "All my griefs to this are jolly,
> Naught so damn'd as melancholy,"—

and if not avoided it may become habitual, and when indulged in to an extreme has a very depressing effect on the health and proper functional activity. It would be too much, perhaps, to say that it may merge into that type of insanity called melancholia; but it certainly is true that it is a dangerous and morbid mental habit and predisposes to mental disease. "The most certain sign of wisdom is a continual cheerfulness; her state is like that of things in the regions above the moon, always serene and clear." It is possible to train one's self to look on the bright side by dismissing resolutely all melancholy ideas and directing the attention to something which will suggest a pleasant train of thought. It is true that a temporary melancholy or "fit of the blues" is apt to be a result of physical depression, fatigue, or disordered function; and in such cases it is difficult to overcome it by a mental effort: thus the cause should be sought for and removed, if possible. If the cause is at all obscure, a physician should always be consulted, as it may be that he can relieve by some simple means, and perhaps avert an attack of mania.

Children should be taught self-denial, that they may be the better able to bear misfortunes and disappointments that are to come later in life, and which, if they have not the philosophical spirit and a persistent optimistic habit, may be the exciting cause of their mental ruin.

A selfish egoism is one of the peculiar traits of character which is most noticeable in the insane; a constant introspection; their symptoms, their miseries, or their imaginary grandeur, etc., are the all-absorbing themes with many of them.

Egoism often manifests itself, in various degrees, in children as well as adults, in the form of self-consciousness or morbid sensitiveness or pure selfishness; and all these should be combatted as dangerous tendencies and as indications, when marked, of the insane temperament. Self-consciousness can be lessened, if not overcome, by avoiding all conversation and personal remarks about children in their presence, and by awakening their interest in any thing which will cause them to forget themselves in the presence of others. Morbid sensitiveness should be overcome, first, by kind treatment, persistent admonitions, and by discouraging all belief in fancied slights or injuries; and by teaching that, in this respect, "where ignorance is bliss 't is folly to be wise."

They should be taught self-control, to curb their passions and vicious impulses, as these lead to insanity and crime. "If the individual's natural habit of thought be of a suspicious, of a vainly conceited, or of a despairing character, what more in accordance with analogy than that the predominant activity, temporary or habitual, should take on a chronic morbid action, and issue in the production of a delusion? Any great passion in the sound mind notably calls up kindred ideas, which thereupon tend to keep it up; the evil eye of envy, the green eye of jealousy, sees only what feeds the passion, and it is plain that the morbid exaggeration of this natural process must lead in a weakened brain to the production of insane delusions." (Page 205, Maudsley, "Pathology of Mind.")

"Passing from consideration of the general method and aim of true education, I may point out that the sound and strong character which it might be expected to form would be well fortified against some of the most common exciting causes of insanity—those passions, namely, which often make shipwreck of the mental health; for the passions are like the wind, which swells the sail, but sometimes, when it is violent, sinks the ship. To get rid of an overweening conceit of self, by bringing home to the individual true conceptions of his humble relations and subordinate purpose in nature—which I take to be one good use of the overwhelming immensity of the heavens and of the revolving multitudes of stars,—would help to moderate and control the emotional and effective element in his nature, inability to moderate and control which is real slavery; and to do that would be to get rid at one stroke of the so-called moral causes of mental disease. Sorrow for loss of fortune or loss of friends, envies, hatreds, and jealousies, disappointed ambition, the wounds of exaggerated self-love, anxieties, and apprehensions, and similar heart-aches, all of which have their footing in a keen self-feeling, and gain undue activity from the want of a proper development of the rational part of the nature, would not then produce that instability of equilibrium which goes before the overthrow of the mental balance. What hold could disappointed ambition have upon him who soberly weighed at their true value the common aims of worldly ambition, who perceived the degradation to be gone through in order to attain them, who foretasted the bitterness of achieved success when they were attained, and who set before himself definitely as his true aim in life, for which he worked definitely, the highest development of which his intellectual and moral nature was capable?" etc., etc. (Page 159, Maudsley, "Path. Mind.")

The reading of boys and girls should have a careful supervision. Dime novels and such sensational literary trash, or I should say poison, as we see in some of the illustrated papers; the sickly sentimentalism of such magazines as one can buy in every news stall or railroad train, and even find in the houses of intelligent people, should be forbidden fruit; and it would be well if such publications as dime novels with their sanguinary stories, and papers which depend for their livelihood upon their chronicles of crime

and scandal and their immodest illustrations, could be suppressed by law, as obscene literature is.

Many a boy or girl receives an education as much from reading out of school as from the prescribed outline of study, and the midnight oil is burned over tales of villainy and passion, or some vapid story of a hysterical girl and an impossible man who adores her in a ridiculous manner.

Boys and girls should know nothing of love until they are old enough to experience it, and should not have their minds prepared by their reading for elopements and foolish marriages and a defiance of good advice from their fathers, whom they have invested with the attributes of the traditional stern and tyrannical parent. Instead of all this morbid excitement of the emotional nature they should be induced to read what would be a benefit and a delighful mental resource in after life,—the tales of Grecian mythology, the poems of Homer and other classics, the classical literature of mediæval and modern times, history, lives of great men, popularized science, tales of adventure if you please, but such as would afford them knowledge of the world, its creatures, and natural phenomena, as, for instance, Robinson Crusoe, Jules Verne, etc.

If children can memorize nursery rhymes and such poems as the "Ride of St. Nicholas," which I once heard repeated word for word by a boy not out of dresses, why should they not memorize Shakespeare, Spenser, Bryant, Tennyson, Longfellow, or Whittier, and have something to think of when grown up, alone, and thrown upon their own resources for amusement. The memory can be cultivated to a certain extent in this way without injury. Of course there must be care and moderation, especially with nervous and precocious children, as in all else.

The excitement of children by religious revivals should be avoided, and in fact they are pernicious at any age.

They excite the emotions dangerously and are positively injurious. Not infrequently they are the exciting causes of insanity. Children should never be frightened by hobgoblin stories, by the terrors of darkness, or with the penalty of eternal punishment. They should rather be taught to fear nothing that is really harmless, even if it be a snake. Cases have probably occurred in which a hallucination has been excited by threatening a nervous child with a terrible black man, or with foolish stories of the devil and ghosts.

Children are sometimes very precocious sexually, and need careful watching to guard against any excitement or perversion of the sexual instinct, or any source of genital irritation, and when the last is present it should be removed if possible. It has been pretty well established that genital and even preputial irritation may alone cause reflex nervous disturbance and perhaps paralysis, and it is probably one of the chief factors in the sexual precocity of some children. It may be that circumcision would be beneficial in these cases. Enough has been said by others of the necessity for watchfulness when boys and girls become older. Suffice it to say that it is of prime importance for the prevention of insanity.

Stimulants and narcotics should never be taken by children, except by the advice of the physician. Tea and coffee are injurious to their health. Boys should be told that the use of tobacco is injurious to their health, and a nerve poison, and that its use will interfere with their growth to well-developed men.

As boys and girls become old enough to understand it, they should be taught to avoid eccentricity and not to defy the requirements of custom without some very excellent reason, as eccentricity approaches, if it does not even cross at times, the border-line of insanity. "If Socrates and Aristippus have transgressed the rules of custom, let

him not imagine that he is licensed to do the same; for it was by great and sovereign virtues that they obtained this privilege." (Montaigne's translation from Cicero, "De Offic.," i, 41.)

Thus far I have not detailed the traits which distinguish the "neuropathic constitution," in which mental and nervous disease is most likely to develop, because I believe that this constitution can be developed by neglect of the laws of health, faulty education, and by the ravages of disease, which might be averted in a child whose mental and physical inheritance is good. But since to be forewarned is to be forearmed, I now insert the following, which is quoted from a paper on the "Prophylaxis of Insanity" by Mary Putnam Jacobi,[1] and is abridged by her from Krafft-Ebing, who, she says, "ranks severe and congenital hysteria with the psychic degenerations, and shows it to be the forerunner of much real insanity. (This statement is not made in regard to acquired hysteria, symptomatic of uterine or other diseases.)"

In neuropathic families the children early manifest a remarkable nervous excitability, with tendency to severe neurotic disorders at physiological crises, as convulsions during dentition, neuralgias at menstruation. The establishment of menstruation is often premature, often preceded and followed by profound chloro-anæmia. The cerebral functions are easily disturbed, slight physical disorders being attended by somnolence, delirium, hallucinations. The nervous system seems to be everywhere hyperæsthetic. Reaction to either pleasing or displeasing impressions is excessive; there are abundant reflex neuralgias, vaso-motor irritations. Pallor, blushing, palpitations, præcordial anxiety, are caused by trifling moral excitement or by agents lowering the tone of the vaso-motor nerves, as heat or alcohol.

"The sexual instincts are precocious and often perverted. The establishment of puberty is often the sign for the development of spinal irritation, hysteria, or epilepsy. The psychic characteris-

[1] *Archives of Medicine*, vol. vi, No. 2.

tics correspond. The disposition is strikingly irritable and touchy; psychic pain arises for trifling cause; at the least occasion the most vivid emotions are excited. The subjects of this temperament alternate rapidly from one extreme to the other; their sympathies and anthipathies are alike intense; their entire life is passed between periods of exaltation and depression, leaving scarcely any room for healthy indifference. On the other hand there is a remarkable inexcitability of ethical feeling. Vanity, egotism, and a jealous suspiciousness are common; and the temper is often violent. The mind is often obviously feeble, with few and monotonous ideas, and sluggish association of them. At other times ideas are readily excited; the imagination is active even to the production of hallucinations; but mental activity is ineffective, because of the rapidity with which it leads to exhaustion. There is no time to complete any thing before the energies flag. The will is equally deceptive in its apparent exuberance and real futility. Its capricious energy and innate weakness is a fit counterpart for the one-sided talent or even whimsical genius which often marks the intelligence."

When such a case presents itself as the above description will apply to, it must require our utmost solicitude and care; and knowing what we have to deal with, our efforts to ward off threatened evils may be successful. For all this care we may have the reward in saving a genius to the world, for Julius Cæsar, Napoleon, Mahomet, Swedenborg, and Joan of Arc, were all of a "neuropathic constitution," or, which is the same thing, the insane temperament. However, only a certain proportion of the insane inherit their disease; and probably there are many cases in which the insane who have married wisely do not transmit their infirmity to their children.[1] Dr. Isaac Ray said, in an address to the trustees of the Danville Asylum, in 1869: "From the sad disorder which is to be treated within these walls, no one has any privilege of exemption. No accident of fortune or birth, no measure of strength, no exercise of prudence may be able to save you from the fate of others,

[1] See Folsom, "Diseases of Mind," page 109.

once as little likely to meet it as you. Or, if you escape personally, the stroke may fall on child, parent, or neighbor, with far more sorrow than if it fell on yourself."

Dr. Kirkbride says: "Insanity is a disorder of the brain, to which, under certain contingencies, every one is liable." (Rep. for 1876.)

"Hagen, too, after exhaustive researches extending over a period of twenty-five years, has concluded that the influence of heredity, although considerable, is still much less than has usually been supposed." (Folsom, "Diseases of Mind.")

"Some of our most experienced and best-informed alienists consider the manifold diseases of the mind no more likely to be transmitted to offspring than Bright's disease and pulmonary consumption." (Folsom, "Diseases of Mind.")

From these statements it may be seen that it is necessary to be careful with all children, as well as those who seem peculiarily liable to suffer from mental or nervous disease; and it would seem also that those who have had the most experience with insanity, and therefore the most likely to have a correct opinion concerning it, think that the insane temperament or constitution most liable to mental and allied diseases can be and is often acquired, so that as we obtain a better knowledge of the causes, we may hope to avert them as easily as we do those of other diseases.

A CASE OF ACUTE MANIA WITH ABSCESS OF THE LIVER.

By GRÆME M. HAMMOND, M.D.,

PHYSICIAN TO THE DEPARTMENT FOR DISEASES OF THE NERVOUS SYSTEM IN THE METROPOLITAN THROAT HOSPITAL.

MR. X., a native of the United States, aged about forty, was sent to this city from the Cleveland Asylum for the Insane, on November 27, 1881, to be placed under the care of Dr. W. A. Hammond for treatment.

The diagnosis made at the asylum was that of "progressive paralysis of the insane" due to sexual excesses and intemperance. Dr. Hammond diagnosticated the case as one of acute mania probably due to the causes mentioned.

When first seen the patient was unable to walk without assistance. This was not due to paralysis, but to general weakness and inco-ordination. There was no wasting of the muscles nor was there any diminution of their electric contractility. His memory though not entirely lost was very defective, and his speech was unintelligible on account of his inability to co-ordinate the muscles necessary for articulation. He had none of the ideas of grandeur so characteristic of progressive paralysis of the insane. Hallucinations and delusions of sight, hearing, and often of taste, were of frequent occurrence.

He was generally quiet and inoffensive during the day,

but nearly every night he would have one or more exacerbations of maniacal fury, attempting to injure his two attendants who, though strong men, often found it almost impossible to restrain him.

Dr. Hammond's treatment consisted in the administration of the bromide of sodium with fluid extract of ergot, and iodide of potassium in large doses, and the application of the actual cautery to the vertex.

About a week after the patient came to New York Dr. Hammond suspected that an abscess existed in the liver. On Dec. 5th an operation was performed and about eight ounces of pus were evacuated. The patient bore the operation well; there was no rise in temperature, nor in fact were there any unfavorable symptoms.

Three days after the operation the patient was able to go out, his mind seemed a little clearer, and he appeared stronger. This improvement was but temporary. In a few days he became even weaker than before, he was unable to retain either his urine or fæces, and although he had no violent exacerbations of mania (for that would have been impossible in his condition of debility), yet his abnormal mental condition was manifested by his incoherent mutterings, his cries of fright or rage, according to the delusions and hallucinations which possessed him, and his inability to recognize, except for brief intervals, his attendants and others who had been with him for a considerable period. He continued to sink slowly, until finally on Dec. 13th he became comatose, and died early on the morning of the 14th.

About twelve hours after death I made an autopsy in the presence of Drs. W. A. Hammond and P. B. Wyckoff. The dura mater was found to be firmly attached to the cranium, opaque, and very much thicker than the normal membrane. Under the dura mater spots of grayish-white

substance were found scattered over the entire convex surface. Between the arachnoid and the pia mater a considerable quantity of bluish effusion was observed, and the pia mater was found adherent to the brain substance. Nothing more of importance was noticed, except perhaps a slight softening of the cerebral tissue, which was probably due to *post-mortem* changes. I prepared several pieces of the brain substance for microscopic observations. In all of the sections the results obtained were the same. I found no deviation from the normal aspect either in size, development, or number of either the small or large cells of the gray substance. Both the gray and white tissues were permeated by great numbers of blood-vessels all in a state of intense congestion. Beyond this nothing abnormal was noticeable.

I also examined the liver to observe the results of the operation for abscess performed nine days before death. There was a depression about half an inch in depth immediately under the point where the needle of the aspirator. had been inserted. Beneath this depression a small cavity was found of about the size of a walnut. This cavity originally contained about eight ounces of fluid, and although the force of aspiration had a tendency to approximate the walls of the abscess, yet the extreme diminution in volume in so short a time demonstrates how quickly an abscess in the liver may be recovered from even in persons in a debilitated condition. Nothing else abnormal was observed in the liver.

This case is of interest insomuch as it makes an addition to the number of cases where an abscess in the liver coexists with cerebral disease, the frequency of which has already been alluded to by Dr. Hammond in "Neurological Contributions," vol. i, No. 3. In this case it is more probable to suppose the abscess in the liver to be caused by

the diseased condition existing within the cranium, than it is to attribute such distinctive lesions in the brain to so small an abscess.

The microscopic examination of the brain substance shows that his feebleness and inability to perform co-ordinate actions were not due to any disintegration or atrophy of the cortical motor-cells, but rather to an interference in the reception and transmission of motor impulses by the congested conditions of both the gray and white matter.

A STUDY OF THE CAUSATION OF INEBRIETY.

By T. D. CROTHERS, M.D.,
SUPT. WALNUT LODGE, HARTFORD, CONN.

THE laws controlling inebriety have not yet emerged from the superstition of vice and sin.

The student of the next century will be amazed to find in this age of inquiry, that the study of inebriety was left almost entirely into the hands of clergymen and inebriates themselves. A few pioneers here and there are urging the profession to take up this subject, and pointing out the wide expanse of unexplored lands, full of mystery that will be found under the domain of law, rich in physiological fact and principle. The time has come for an accurate study of this subject above the levels of off-repeated opinions, that have never been based on any accurate observation from the first. The ordinary observer, reasoning from the fact that he is able to use or abstain from the use of spirits, concludes that all persons have the same power. The mental processes which precede or accompany the act of taking spirits are supposed to be the same in all cases.

When the act is often repeated, the patient is called an inebriate. All symptoms of disease are accidental, and growing out of the toxic action of alcohol. The remedy of course is to stop, and the process is to determine to do so, from fear of both physical and eternal death. Upon this theory a vast army of reformers have studied the subject

for the purpose of showing the danger of inebriety, and the possibilities of stopping at the will of the patient. A careful clinical study of inebriety from a scientific point of view, not only disproves this theory, but reveals a complex and variable chain of causation, which moves on progressively from stage to stage. The supposed cause, alcohol, is seen to be only a symptom; and the apparent accidental use of spirits in the beginning is in many cases a psychical and pathological change. The failure of the patient to stop the use of spirits, although he desires to do so, is a strong hint of nerve degeneration. The strange psychical obtuseness of the mind to realize the results from the use of spirits, associated with all his usual sagacity on other topics, points out clearly a twilight approach of grave disease. Farther on in the case, the functional and organic disturbances appearing in many ways aptly justify the expression that inebriety is the very genius of destruction.

A comparison of the history of cases of this disorder reveals a regularity and certainty, in the progress from some definite cause, on to chronic stages and death. The conclusion that inebriety is a physical disease cannot be doubted.

Nearly every case of inebriety will be found in a person of previously defective organism.

This may be considered an established fact, in which the exceptional cases are not studied or understood. Hence, the first general study must include hereditary influence, and such other general conditions which unite in its growth.

A general outline of many of these facts may be of interest. No other disease is more certainly transmitted, not always directly in a craving for alcohol, but in nerve degenerations, which break out in this direction from the application of many exciting causes. A direct inheritance has been traced, in many cases, in children of inebriate

parents, who manifested a craving for spirits from their earliest infancy.

It follows in collateral as well as direct lines of transmission, and leaves unmistakable marks of degeneration in the next generation.

The very poor, through the irregularities of living and hunger, with bad quality and conditions of food, develop perverted nutrition and low vitality, which is favorite soil for the propagation and transmission of inebriety. The very wealthy, from continuous stimulation and excess, with neglect of healthy activity of both body and mind, develop nutrient degenerations, both functional and organic, which appear in the next generation in inebriety and allied disorders.

Parents who are engaged in intense mental work and leading a sedentary life, such as literary men, clergymen, bankers, bookkeepers, inventors, etc., have often inebriate descendants. Many curious facts have been detailed relating to the physical condition of parents at the time of procreation, which have undoubtedly caused inebriety in the offspring; in one instance, related by the late Dr. Alvoid, of London, in which the children of a retailer of spirits born in this business were inebriates and dissolute, while those born after he had left the business were temperate and respectable citizens. The doctor concludes that occupation and the condition of parents at the time of conception are often the cause of inebriety. In many cases where inebriety has developed without any special chain of exciting causes, the unstable mental organization of the parents will account for it. They are usually people with disordered emotional faculties and unbalanced nutritive functions, the latter manifested in capricious appetites and unusual tastes for food and fluids.

My studies have revealed many cases that were clearly

marked as inebriate diathesis,—cases that might remain free from the use of alcohol during a lifetime, or develop inebriety at once from some unknown exciting cause. Such transmit to their children this tendency either intensified or more diluted and harmless. This diathesis can be seen in the practice of nearly every physician, and is frequently associated with general organic degeneration marked by anæmia, neuralgia, and functional disorders of stomach and head. The body and brain are frequently developed out of proportion, the functional activity is intense, and the mind is uncertain, changeable, and vain, often displaying the force of genius and the weakness of a child, also a peculiar tendency to exhaustion. Such persons are often the visionary, unreal men whose credulity leads them into every new scheme of science and religion. Insanity, inebriety, and a large crop of varied nerve diseases are constantly springing out of this class. Not unfrequently they are fanatical, bigoted reformers in the temperance ranks, leading crusades against every form of evil, but in private life failing to sustain their public reputation. In this field a study of inebriety will point out the danger and give warning of the coming storm, which, if it does not break out in one generation, will in the next. Inebriety rarely comes on at once. The operative causes slumber along insidiously; then, from the application of some special conditions, burst out. Hence, inebriety is the culmination of long trains of degeneration which have gathered and coalesced from the past. These complex chains of causes, growing up in the past generation and handed down or developed in this generation have some special exciting cause. A study of these exciting causes will often throw great light on the nature and character of the case. The use of alcohol is only one of these factors, although it appears to be prominent in many cases. The physical condition at

the time alcohol was first used to excess is frequently of great significance. For instance, when the person is suffering from great physical exhaustion, or any profound disturbance of the organism, the shock from the excess of alcohol is wide-reaching in its effects and influence. Many causes of inebriety have been traced to the ignorant efforts of friends to relieve conditions of physical exhaustion by alcohol as a medicine.

I am sustained in the view that inebriety comes frequently from injury of the brain or spinal cord. Such injuries may be obscure, but are always followed by neurasthenic states, and physical changes, with alteration of nutrition, for all of which alcohol is a pure sedative, and has the same apparent effect that food has in relieving the cravings of hunger. From these and other causes insanity or inebriety may come, depending on some unknown factor which determines the form of disease. Among the causes that are prominent may be mentioned blows on the head and injuries to the nerve trunks. A previously temperate man falls, striking on his head, or receives a blow which is soon forgotten. Soon he becomes a different man, and an inebriate without any reason or cause that can be seen by his friends. Injuries to the extremities react by some unknown law, in inebriety. A chaplain in the late war was injured in the leg, and drank spirits to intoxication for two years until the wound healed, then he recovered and was temperate ever after. A very temperate physician broke his arm and drank from this period on through life. A farmer became an inebriate from the time of amputation of a foot for frost-bite. Physical injuries that are recognized have frequently been found active causes of inebriety. Of these, railroad accidents, where the concussion and alarm are sudden, causing intense excitement and reaction, seem to be very prominent. A train on the Hud-

son River Railroad jumped the rails and ran over the sleepers for some distance. The windows were broken and the lights went out. When the train stopped, a number of passengers were so paralyzed with fear that they could not walk. One continued his journey with difficulty, but began to drink from that time, and could not give any reason or cause for it, although suffering no apparent injury. A man who witnessed the blowing up of the steamer *Adelphi* in Norwalk, Conn., a few years ago, became profoundly excited, drinking to intoxication that night for the first time. From that moment he used alcohol constantly, and is now an inebriate. These instances are not uncommon, and may be found in the history of many cases. The same results follow prolonged exhaustion, loss of property, disappointment, grief, and occasional religious or political excitement. In one case a clergyman after excessive labor in a revival, drank and became an inebriate. A merchant who lost his property drank at once to intoxication and never recovered. A lawyer became an inebriate from the death of his wife. A student failed to secure a prize and suffered from inebriety from this time.

The roll might be extended to almost every conceivable condition of exhaustion, either of the brain or body. Injury from temporary disease is often the starting-point of inebriety: as, for instance, a farmer in the harvest field drinking large quantities of ice-water, which produced a violent colic, for which alcohol was used, reacting speedily into inebriety. A prominent lawyer, after prolonged overwork, suffered from fever and exhaustion, then drank spirits, and later became an inebriate. Dyspepsia merges frequently into inebriety. Excessive hunger and thirst passes quickly into inebriety from some unknown causes. Practically, any disease which breaks up the nutritive function, causing different forms of perversions and changes,

predisposes to inebriety in most cases. There is a field of causes which, in my opinion, will, when understood, explain much of the obscurity that now exists about the early stages of inebriety. It may be designated by the name of *psychical traumatism.* In general terms, this describes some obscure condition of degeneration and impairment of structure and function. The brain and nervous system has lost some power of restoration by which its integrity is preserved, and has taken on conditions favorable to the development of inebriety. This may be illustrated by the defective lung-power after an attack of pneumonia, or debility after a severe typhoid fever; although the patient has recovered and seems well as ever, there is a certain impairment of strength of which he is thoroughly conscious, but cannot clearly define. Injuries to the body and severe organic disturbances terminating in recovery, may, months and years after, be followed by some grave disease, which the patient obscurely traces back to these causes. Sunstroke, the action of poisons, or the profound impressions from fear, alarm, joy, or sorrow, leave entailments of degeneration which cannot be described, but nevertheless exist, as conditions of soil favorable for the growth of disease.

In these cases there is something wanting, and hints of changes which, like switches on the railway, indicate the point of departure from the main line. Along this field will frequently be found cases of inebriety that can be traced to some disease occurring long before. For instance, a severe attack of scarlatina, typhoid, malarious fever, or other disease, will recover with some condition of exhaustion and debility, that will remain and be followed years after by inebriety.

While the connection between these diseases and inebriety cannot be clearly traced from our present knowledge, yet there are many reasons for believing that such a

chain exists. The first use of alcohol will be for its sedative effects, and although the reason and taste may repel its use, the impulse for it will always triumph. The various neuralgias seem to especially prepare the way for inebriety, and many forms of alcohol are often found almost specifics to lessen the pain of this affection. There is undoubtedly a very intimate connection between nutritive disturbances and inebriety. Dyspepsia very often precedes its outbreak; and the extensive use of bitters, whose chief substance is alcohol, depends largely upon this fact. For this reason, bitters or some lighter drinks are often called the causes of inebriety, when in reality they only serve to explode combinations of causes which may have been gathering through several generations. Along this same line may be classed all the perversions, the mental and physical dyspepsias from injurious education, etc. The varied combinations of bad influences in the early training of children, by which the natural harmony of growth is broken up, resulting in angular and imperfect development, is often the fertile soil for inebriety as well as insanity. Ambition that becomes an absorbing passion, filling every moment of thought, is attended with weakened nutritive functions which may react speedily in inebriety. There are a large class of men who are living constantly on the very brink of insanity and inebriety. They are always the centres of excitement and irregularities, of mental and physical health. The capricious appetites and thirst for different fluids, the free use of patent medicines, and many other symptoms, clearly forecast both inebriety and insanity. Some slight change and they are victims of these diseases at once. Inebriety, like many other diseases, will be found more prevalent at certain periods of life, which may be called more dangerous than others. No doubt certain physiological eras have a direct pathological influence over the nervous and nutrient system. In in-

ebriety the period of puberty is full of danger. Prolonged excitement or intoxication after or during the first intercourse, is frequently the starting point of inebriety which may not break out for some time after. Dr. Mason found, in the statistics of two hundred and fifty cases, that inebriety appeared most frequently from fifteen to twenty-five, and from thirty to thirty-five.

Surroundings have a potent influence to either check or encourage inebriety. Among these may be mentioned, as active in the causation, mental states associated with a monotonous treadmill range of thought over and over again, that give no time for change or rest, notable among farmers, light-house keepers, men on the frontier, and workmen confined to the same special circle, etc.; in the other extreme, where the brain is never at rest, from the continuous change and strain to accommodate itself to the ever-shifting scenes that appeal to the reason and emotional faculties. Both are alike dangerous in their influence. Social surroundings enter largely into the early stages of inebriety. Physical surroundings have been recognized in the causation. Of these, high degrees of heat and cold are prominent, and are supposed to impair the nutrition of the nerves to such an extent as to produce paresis of the vaso-motor centres, bringing on inebriety.

It is found that firemen exposed to great heat soon become inebriates, particularly when employed on steamers that ply between northern and southern ports, where the extremes of temperature alternate in rapid succession. When inebriety has begun, a marked influence has been noted in many cases from the mountain or sea air. Some very remarkable instances have been stated of persons who had impulsive cravings for drink on the sea-shore, but in the interior these pass away, and complete self-control can be exercised. It is a common observation in every inebriate

asylum, that recently admitted patients seem very susceptible to all changes of the atmosphere. The danger of relapse is always greater at these times, showing a wide field of causes yet to be studied. Certain kinds of labor are thought to be prominent factors in the causation, especially night work, and labor in damp cellars excluded from the sun and proper air. Certain districts of this country and Europe are known to develop pauperism and inebriety in excess of all other sections. Here it may be called indigenous. These are only some of the general line of causes out of which inebriety and insanity spring. Inebriety is undoubtedly associated either as a symptom or cause of insanity, in many instances, but in a large proportion of cases it stands out alone as a distinct disease. The causes and conditions which govern its march, the pathology, symptomatology, and treatment, must be studied from the physical side to be understood.

From such study the obscure phenomena of periodicity, seen in many cases, will be made plain. The return of the desire for spirits after an interval, can often be predicted with great certainty. This drink-craving appears to move in regular cycles, which may be calculated within an hour. In one case this period was forty-one days and eight or ten hours, and never varied through a long course of years. In another this cycle is complete in one hundred and four or five hours, never varying under any circumstances or conditions. The interval was one of perfect freedom from spirits up to the hour of the returning influence.

The insane-like madness which characterizes inebriates, ignoring every thing but the impulse to procure spirits; and the precipitate revolution of character and motive, which passes swiftly from one extreme to another; and the sudden explosion of the diseased impulses into inebriety under ad-

verse conditions,—all point significantly to disease under control of forces, whose movements are as certain as the march of the planets.

A noted violin-player was urged to take spirits for a nervous feeling before going on the stage, to allay this state and give brilliancy to his execution. He refused on the ground that, although it would steady his nerves and quicken his execution, he would after a time blurr his notes, and, worse than all, he would never realize it.

This aptly expresses the strange delusion seen in all inebriates, who never comprehend their words or actions, or the consequences of them. Alcohol seems not only to produce but intensify a form of moral paralysis, in which the consciousness of right and wrong is suspended, as well as a delusion of perfect control over all the actions of mind and body. This strange psychical condition is frequently limited to this special disease. On all other matters the reason and action will be unimpaired, but in the later stages the organism takes on profound degeneration. This strange blunting of the consciouness of right and wrong, and accurate conception of their own condition, is anomalous and not noticed in other diseases. The inebriate who from the lecture-stand recites, with vivid details, his own danger and condition, never carries it out practically. He is keenly alive to the conditions of others, but his own case is always an exception to the rule, in his opinion. M. Moreau wrote of the insane:

"It is only by incessant personal observation of such cases by day and by night, by watching their most trifling acts and prying into their thoughts, by inquiry of those around them, especially of their companions, toward whom they act freely and naturally, by identifying one's self, so to speak, with them, that we can succeed in obtaining an exact idea of their mental state, and comprehending to what extent their thoughts, desires, will, and actions are con-

trolled by an irresistible, fatal, automatic influence in spite of the specious appearance which covers them with a false varnish of reason, moral liberty, and all the essential attributes of a man truly worthy of the name."

This is literally true of the inebriate. In addition, his entire life must be studied, and all the evidence of heredity carefully examined; also, all the circumstances of his mental, physical, social, and sexual life considered as bearing on the disease. From these facts the questions of prognosis and treatment may be ascertained. What is needed to-day is accurate clinical, physiological study of inebriety, above the level of dogmatic assumption and speculative theory. Dr. Bellows wrote as follows:

"Inebriates, like the criminals and insane, will all be eventually restrained in hospitals and treated with medical and psychological skill the moment their liberty becomes dangerous to society. The terms of their confinement will be limited only by the possibilities of care and the conditions of their disorder. Society gains nothing by holding prisoner for an hour any man who is fit to be at large. Liberty and human rights gain nothing by allowing any man to be at large for a moment who is destroying himself, his family, and his neighbors. What we need is what we are fast gaining, namely, a possession of the tests and gauges of this fitness or unfitness, and we shall be able to treat the inebriate successfully, the same as in other disease."

This very general review of the facts and conditions which the future study of inebriety will make clear, only faintly outlines a vast realm of truth now practically unknown,—a realm occupied by *squatter frontiersmen* and *non-experts*, who will some day vanish before the settlements of truth and a knowledge of the laws and forces which govern this disease.

CONTRIBUTIONS TO PSYCHIATRY.

By JAMES G. KIERNAN, M.D.,
CHICAGO, ILL.

X.—PSYCHOSES PRODUCED BY SCARLATINA.

THE relations between scarlatina and insanity have been recognized for a long time; still there are but few cases in which the etiological relation has been determined with certainty. Mendel,[1] Kräpelin,[2] Schulz,[3] Rabuske,[4] Krauss,[10] and Bucknill and Tuke,[5] have all reported cases, the predominant characteristics of most of which were hallucinations accompanied by marked motor excitement. Many cases of dementia are reported by the first two authors as having resulted from a meningeal change secondary to the scarlet fever. Acute dementia has in a few cases made its appearance. This might, with more propriety, be called melancholia with stupor. Rabuske's case most resembles what may be termed the acute cases coming under my observation. In this case the disease began with the usual symptoms of scarlet fever, and on the third day of the disease the mental symptoms made their appearance. The patient had marked hallucinations of sight and hearing, of depressing type, relating chiefly to the military, a parade of whom had been seen by him just before falling ill. The fifth day of the disease the psychical disturbances had reached their greatest height. The patient recovered, on

the tenth day of the disease, under chloral hydrate, morphine, and seclusion in a dark room. Just previous to the onset of the psychical disturbance, the temperature sank from 102.5° F., which it reached by the second day of the fever, to normal. There was no hereditary tendency in the case. The patient was twenty-one years of age and had hitherto enjoyed good health. The cases coming under my observation were all younger than this.

The psychical phenomena resulting from scarlet fever, which have come under my observation, might be ranged in three classes. First: Those in which hallucinations and motor phenomena made their appearance, accompanied by depression of an agitated type. Second: Those in which dementia resulted from the disease. Third: Those in which a marked change in the patient's character occurred. Hereditary taint was very marked in the first class of cases. These cases, some of which are cited elsewhere,[8] are as follows:

CASE I.—D. P., æt. six; family history shows marked neuropathic taint; the paternal grandfather died of apoplexy; the father is liable to attacks of vertigo, in consequence of which he was forced to abandon his trade (mason), after having sustained serious injuries by falling from a ladder during an attack of this kind. His eldest daughter is a hystero-epileptic, and has, at irregular intervals, a hard, brassy cough of hysterical origin, the lungs and larynx being healthy. She has had stigmata make their appearance from time to time, as a rule, during suppression of the menses. All the children, nine in number, have suffered from convulsions during the first dentition, of which two of them died. One child died from a convulsive attack brought on by overheating. Just previous to the menstrual period three of the girls had somnambulistic attacks, which vanished on the appearance of the menstrual flow. The little girl first mentioned was attacked by scarlet fever, which went through its early stages in the usual way. About the fifth day after the appearance of the scarlatinal eruption, the temperature, which had risen to 104°, suddenly sank to 98°, and the child became extremely restless and violent.

About two weeks prior to the attack of scarlet fever, while coming home from school, she had been much frightened by a Chinaman. She now complained that she saw this man's face at the window, and that his hands were stretched out to grasp her. This condition continued for two days, and then gave place to one in which the child was greatly agitated and very incoherent; she was at the same time much depressed. She remained in this condition a week and then fully recovered. The treatment used was purely symptomatic, consisting of conium to control the motor excitability, and cold packing.

CASE 2.—While this child was ill her sister, nine years old, was taken sick with scarlet fever. About the seventh day of the disease, the temperature, which had ranged between 102° and 106°, fell to 98½°, and symptoms similar to those of the first case made their appearance, followed by marked hallucinations of hearing. She claimed to hear some one crying to her: "Help! help!" She had no other hallucinations. These persisted for a week and then disappeared to give place to the condition of depression, agitation, and incoherence present latterly in the first case. The patient remained about ten days in this condition and then recovered. The treatment was much the same as in the former.

CASE 3.—The next case occurred in another family. J. H., aged 8 years, belonged, like the cases last cited, to a neuropathic family. The maternal ancestors, for three generations, died of apoplexy. The father was very intemperate. The patient was one of twelve children, of whom three were still-born, one died a day after birth, and five are still living. Of the latter, one sister is a hystero-epileptic; one brother is an epileptic, and presented some other symptoms elsewhere described.[7] J. H. was attacked by scarlet fever, which went through its usual stages till about the fourth day of the disease, when the temperature, which had reached 107°, suddenly fell to 98½°. The patient at the same time became markedly stupid and did not respond readily to any stimulus from the outside world. This condition persisted for about twenty-four hours; then the patient became agitated and restless; poked cotton in his ears and shut his eyes, complaining that he saw rats running all over the room and heard them squeaking. Five-minim doses of cannabis Indica tincture were given him every four hours. No effect was visible for about two days, after which he sank into a profound sleep which lasted ten hours, on waking from which the patient was much exhausted, but had

fully regained his normal mental condition. The patient ultimately fully recovered.

CASE 4.—The father of this patient had suffered from locomotor ataxia a year previous to her birth. One brother was an epileptic, and a sister was insane. The child, a bright, lively little girl, was attacked by scarlet fever at the age of ten. About four days after the appearance of the eruption the temperature fell suddenly from 100° F. to 97.5° F. The child then displayed marked agitation and had well-marked hallucinations of sight and hearing, which related chiefly to her father. She claims to see people running needles in him and heard him cry out. Under the use of conium and tincture of cannabis Indica the agitation disappeared and soon after the hallucinations. These psychical phenomena remained altogether about four days. The child had often heard her father complain of the fulgurant pains of his disease, which he compared to needles, and his agony under which was extreme.

That these four cases were due to scarlatina, as an exciting cause, there can be, it seems to me, no doubt. From the case cited by Rabuske, it would appear that scarlatina of itself is a sufficient cause at times. The hallucinations were evidently what Laségue[8] has termed initial or casual, and had not the systematized and complex character of those found in the chronic psychoses. What the relation between the fall of the temperature and the onset of the psychosis was, seems difficult to ascertain.

The influence of strong antecedent impressions was shown in the hallucination respecting the Chinaman, in the first case, and the hallucinations displayed respecting her father by the fourth patient. The hallucination of hearing, in the second case, was, I think, due to the cries of the sister for aid against the Chinaman. The hallucinations in the third case were, I think, due to an accidental remark made by one of this boy's sisters, that there were rats in a closet downstairs. The temperature in all these cases had risen higher than in Rabuske's case; no doubt the strong neuropathic diathesis played some part in determining this. The

duration was markedly different from that of the cases described by Mendel[1] and Kräpelin.[2]

Of the second group I have seen two cases. Both came under my observation when assistant physician to the New York City Asylum for Insane. The first case was a marked dement, with impaired memory, very much diminished perception, and given to the performance of semi-automatic acts; for example, placing his hands together in the attitude of prayer would start him kneeling and crossing himself. This patient had been a bright intelligent boy up to the age of seventeen, when he was attacked by scarlet fever. From this sickness he was ill about two weeks. When the eruptions were desquamating there was a marked increase of the fever, followed by delirium. On recovering from the fever and delirium, the patient was found to be in the condition already described. For this he was treated a year at home and was then transferred.

A second case was that of a man aged thirty, whose only evidence of mentality was his always repeating "Sixty-six," and who could only be induced to feed himself after a spoon had been placed in his hand and lifted from the dish to his mouth several times. Like the former case, he had been perfectly sound mentally up to the age of eighteen, when he was attacked by scarlet fever, followed by meningitis, on recovering from which he was found to be in the condition already described. It is probable that in these and analogous cases there has been a meningeal process set up which becomes meningo-encephalitic in character. These, and analogous cases, are the so-called dements who are occasionally reported as becoming victims of progressive paresis.

The third group of cases are very frequent. They cannot, as a rule, be called insane, but is a marked change of character from what existed prior to the illness, or the gen-

eral boyishness of disposition existing prior to the attack remains permanently during life. Occasionally this change of character proceeds to the extent of producing moral insanity, as in the case cited by Bucknill and Tuke. A boy was attacked by scarlet fever at the age of five; from that time there was a certain change of character. A want of self-reliance and inability to help himself in any difficulties, so that he continually wanted help in his employments. Great excitability was also manifested. He excelled in spelling at school, but in no other department. He was a great reader of ordinary tale books and popular scientific works. His memory was very tenacious of both the facts and the words. In his moral character the change was extreme. He appeared to lose the distinction between truth and falsehood, he having been truthful and conscientious before, and while making a high profession of religion, he was deceiving himself and his friends also. He chose low society in preference to the refined associations by which he was surrounded at home. For some time after his regard for truth had disappeared, he distinguished between *meum* and *tuum*, but this distinction after a while was removed also, and he possessed himself of articles of trifling value from a morbid desire to steal and not from any use he could make of the articles. To sexual immorality he was not addicted.

Soon after he reached his majority, his friends had reason to fear that he would commit some act of violence which would bring him into the hands of justice, and they very sensibly had him placed under proper care and restraint. There was no hereditary taint.

These patients rarely reach asylums, but every general practitioner has seen many such cases. From the cases observed by Mendel, Kräpelin, Schulz, Rabuske, Krauss, and Bucknill and Tuke, and those cited by myself, it seems safe

to conclude: First, that three groups of mental phenomena are produced by scarlatina, independently of delirium. Second: That the first is a species of melancholia agitata, attended by hallucinations, and its inception is preceded by a decline to normal of the high temperature previously existing. Third: That the second group consists of cases of dementia, due to meningitis of scarlatinal origin, the patient passing from the hyperpyrexia of scarlatina to that of meningitis, on recovery from which he is found to be demented. Fourth: That the third group of patients show either marked change from the character antecedent to the attack of scarlatina, or else retain in after life some of the juvenile characteristics of the period prior to the attack of scarlet fever, or, occasionally, become victims of moral insanity.

XI.—WITCHCRAFT AND INSANITY.

In the psychological field certain beliefs are found surviving among the delusions of the insane which at one time swayed the minds of large communities. It would appear that there is a certain analogy between the minds of the insane and certain countries. The former preserve beliefs and acts belonging to an archæological epoch, in like manner as the latter preserve living fossils the representatives of long-extinct genera of animals. The peculiar codes of morality that many of the insane at times display cannot fail to remind one of the codes held by the Highland caterans, who thought it no wrong to "lift" the herds of their Saxon neighbors.

Among the peculiar ideas now regarded as extinct, and found among the delusions of the insane, is that concerning witchcraft. Strictly speaking, this belief, strange as it may seem, is not entirely destroyed, but survives among certain rural communities of the white race both in the United States and Europe. I say white, because the negroes are

admittedly on a lower intellectual plane, and among them that particular phase of the belief in witchcraft known as Voudooism flourishes in full luxuriance.

The wife of a workingman in Somersetshire, England,[11] recently became mentally affected, and was removed to a lunatic asylum. Immediately before her departure it was stated that she was bewitched, and the following mode of removing the spells was proposed to the husband. First, he must stick a large number of pins in an animal's heart, which, in the dead of night, was to be roasted before a quick fire, the revolutions of the heart to be as regular as possible. After roasting, the heart was to be placed in the chimney and left there, the belief being, that, as the heart rotted away, so would the heart of the witch rot, and the bewitched would be released from the power of her enemy. Not a few persons in the neighborhood are firm believers in witchcraft. A similar method of treatment of case of progressive paresis supposed to be due to witchcraft is reported by Bucknill and Tuke,[12] as having occurred in Plymouth, England.

During the year 1881 no less than two manifestations of the belief in witchcraft made their appearance in the United States. In a village in Wisconsin an American farmer was bound over to keep the peace toward an old woman whom he regarded as a witch, and treated accordingly, by attempting to find out whether she could drown or not. According to all accounts the man came up to the rural standard of intelligence. In Pennsylvania a whole township chiefly Americans believed that a case of chorea was caused through witchcraft, the assumed witch being a handsome young woman. As a result of this belief many parents in the neighborhood of the supposed witch restrained their children from going out after dark. The general terror was so great that even middle-aged people were afraid to venture

out late at night, and horseshoes were in demand on account of their supposed protective power. I cite these cases not so much for their intrinsic psychological interest, as to show that the veneer of the nineteenth century sits very thinly over the seventeenth, and that even at this late day a sane man might be found of American birth who believed in witches, and who might in consequence be wrongly incarcerated in an insane asylum.

The existence of witches in the delusions of the insane has an intimate relation to the prior intelligence of the patient. There are many cases of insanity in which abnormal subjective sensations occur and form the basis of hallucinations of touch. A lunatic has abnormal sensations, the proper associating power being disarranged. There is an attempt made to account for these phenomena out of the patient's self-consciousness. His abnormal sensations are obviously the work of enemies who play their nefarious part in a mysterious manner. Electricity is an agent not much understood, and to it therefore the educated man refers the source of his sufferings. Certain lunatics have been investigating the various phenomena presented by spiritualism prior to becoming insane, and as in its doctrines there is much that is mystical, they find in them evidence of the fact the spirits have been the agents through whom their sufferings have been caused. Some intelligent German and Irish Catholics are at times found to believe that the Freemasons, or Hearts of Steel, or some such secret order, are at the bottom of their misfortunes. Perhaps the largest proportion of the lower-class Irish, Germans, and Americans adopt the theory that witchcraft has been the agency by which they are made to suffer. These delusions are found in all forms of insanity, and a brief account of certain cases coming under my observation will not be without interest. A case of katatonia, cited elsewhere in full, came to the con-

clusion that since the house clock stopped and he could not account for this extraordinary circumstance, therefore the house must be bewitched, and as his mother was the ablest person in the house she must be the witch; which view he supplemented by a fierce denunciation of her crimes. A case of chronic melancholia, who suffered from certain anomalous sensations in his head, came to the conclusion that these were due to witches who entered through his mouth and ears, and then would have hammered these out of all recognition with the idea of destroying the witches, who, he imagined, passed in and out through these openings had he not been prevented.

The most interesting case, in many respects, was that of a typical case of monomania, the manie raisonnante of the French, the primä re Verrucktheit of the Germans. The patient in question was illegitimate, and but little was known of his ancestral history. He had received an excellent classical education; but at one time suddenly abandoned a college professorship to which he had been appointed, to become a botanic physician. He wrote some works on physiology, which are still quoted by the botanic physicians of England. He gradually became convinced of the fact that the other botanic physicians were attempting to poison him, and so abandoned the practice of this profession, to secure a tutorship, which he again gave up, and wandered to and fro, borrowing money from friends, at times almost starving himself, in the hope of avoiding poisoning. He was at length transferred to the asylum. Here his head was found to be markedly deficient in the occipital region, markedly asymmetrical, and very protuberant in the left frontal region. His delusions were markedly systematized; most of them were delusions of persecution, but persecution on account of the persecutor being jealous of the patient's superior ability. He claims

that Dickens wrote "Bleak House" to injure him, because of his greater descriptive powers. The way in which the book injures him, is that Dickens describes an illegitimate child, Esther Hawdon, in it, and he is an illegitimate child. He was sent to the asylum on account of the jealousy of the chief landscape gardener of Central Park. This patient at one time believed that certain new abnormal sensations were produced by his enemies, and through the agency of electricity. The enemy who produced them was a much-demented hebephreniac. An assistant physician attempted to point out to him that according to the known laws of physics such use of electricity was impossible. The patient took a work on physics loaned by the physician, read it carefully, and returned it, stating that he was fully convinced that he was wrong about the electricity, but kept at a suspicious distance from the hebephreniac, who, it was found, he now believed had bewitched him. On being asked how he, an educated man, could believe such nonsense, he said that it must be true. According to the book lent him it was impossible for electricity to have been used, and as from the time this hebephreniac looked at him he had felt badly, his injuries must be done through witchcraft. These facts are of interest, chiefly from the standpoint of diagnosis. It is not, as before said, an absolute test of insanity that a man believes in witches, but in cross-examining a man of the lower class for delusions of persecution, to turn the conversation to the subject of witchcraft will often bring out hidden delusions. Delusions of this type should lead to careful supervision, as a suicide or homicide is an extremely probable outcome, the suicide very likely after an attempted homicide.

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A CASE OF THREE TUMORS OF THE ENCEPHALON.

By WILLIAM R. BIRDSALL, MD.,
NEW YORK.

ASSISTANT PHYSICIAN TO THE DEPARTMENT FOR NERVOUS DISEASES OF THE MANHATTAN EYE AND EAR HOSPITAL.

ON January 3, 1880, a female, aged 20, a native of the United States, but of foreign parentage, single, applied for treament to Dr. Amidon, assistant at Prof. Seguin's Clinic for Diseases of the Nervous System, at the College of Physicians and Surgeons, New York, when the following history was obtained.

She was in perfect health until July, 1879, when she commenced to have headache, followed in a few days by a severe chill, which lasted an hour and was succeeded by a fever of several hours' duration. At this time there was pain over the left eye and contraction of the left occipito-frontalis muscle. Headache has existed ever since, except that it is occasionally absent for a day or two. It is usually occipital, sometimes frontal, and is preceded by stiffness in the back of the neck. Her head, especially, feels hot; she thinks she has fever, to some extent, continually. Nausea has occurred at times. Complete amenorrhœa, and constipation have existed since the chill. She has not been confined to her bed but has felt ill during the whole period. For two months her left foot has felt dead, as if asleep, and she cannot move the toes. The left leg trembles when she walks, and is becoming weak. The left hand has been weak since the chill, and sometimes formication is felt in the tips of the fingers on the same side. Her

mother states that the mouth has been drawn to the left side for the past two weeks. She also states that the tongue has always been atrophied on the left side, and that she was always a little tongue-tied. There has been no dysphagia. She thinks that the patient is getting exophthalmic. This is confirmed also by the statement of Dr. Candidus of Williamsburg, who saw her before her sickness and again in November, when he treated her for hemiplegia with electricity. Three weeks ago diplopia was observed. Her vision has been blurred since childhood. Tinnitus aurium has been present for the past two or three weeks in the left ear. Specific or rheumatic trouble is denied. Her mother died of tuberculosis.

Examination.—There is complete right facial paralysis; paresis of right sixth nerve; not much weakness in the left hand. (With dynamometer, right, 14–12–13; left, 11–14–11.) All movements can be made, but there are some athetoid movements in the ring and little fingers. She cannot move the toes properly, and movements of the foot are very much restricted. The flexors of the thigh are especially weak. She has a hemiplegic walk. The tendon reflex is exalted. The ophthalmoscope reveals double optic neuritis. Potassium iodide was given in three-gramme doses three times a day; after a few days the headache disappeared for a brief period. She appeared at the clinic several times and then did not return. Later her vision failed rapidly until she became entirely blind. She had frequent attacks of vomiting, which ceased, however, some time before her death. About two weeks before her death more difficulty in articulation was noticed, and some dysphagia; this disappeared again. Her stepmother states that on the day before her death she was very much exhausted, and went to sleep at 9 o'clock A.M., slept until 5 o'clock P.M., when she awoke, complaining indistinctly and almost unintelligibly of acute pain on the top of her head; she could not swallow saliva, which accumulated and dribbled from her mouth. She died the following morning after a convulsive movement of the left arm.

At Dr. Seguin's request I made an autopsy fifteen hours after death, permission having been secured through the kindness of Dr. Candidus, who was present with Mr. W. T. Baker, student of medicine, to whom I am indebted for some of the notes in her case. Circumstances prevented

an examination of any thing but the cranial and orbital contents.

The cranium was normal. The dura was not adherent except at one point in the right parietal region, under which was found a tumor projecting above the level of the convolutions about one centimetre. Several vessels formed the connection between it and the dura. It was encapsuled by the pia mater which separated it completely from the convolutions which formed its bed. The tumor, globular in form, measured seven and five tenths centimetres in its antero-posterior diameter, seven centimetres transversely, and four and five tenths centimetres in depth. A section through it exhibited a firm structure, not much soft material being obtained on scraping the cut surface. It was quite vascular, however, and of a dark reddish-brown color. The microscopical examination of the tumor showed that it consisted, for the most part, of fusiform cells, with an oval, distinctly granular nucleus arranged in whorls and knots. The cells became more elongated toward the periphery of these knots, where it presented a distinctly fibrous appearance. All grades of these elements could be found from that of a cell consisting almost entirely of a nucleus through the various gradations of more or less fusiform cells, to long flattened fibres still retaining a nucleus near its centre. This knotted, twisted mass of spindle cells was quite richly supplied with capillary blood-vessels.

The convolutions forming the walls of the cavity in which the tumor was deposited, consisted of the upper half of the ascending frontal (anterior central) convolution, the upper two thirds of the ascending parietal (posterior central) convolution, all of the superior parietal lobule and part of the inferior parietal lobule. The convolutions posterior and to the outer side of these were compressed so as to form two or three concentric curves. All the convolutions de-

scribed by name were pressed directly downward or outward, except that part of the ascending parietal which forms the præcuneus on the median surface. It had been crowded against the opposite hemisphere until it was not thicker than ordinary bristol-board. The remaining portion of the ascending parietal convolution and also the superior parietal lobule as a whole formed the principal part of the floor of the cavity, and were flattened to nearly twice their usual breadth, but could be recognized by the fissure of Rolando (sulcus centralis) and the interparietal fissure. The secondary fissures had disappeared under the pressure of the tumor. No softening was found in these convolutions, no induration, nor in fact any change except the thinning, flattening, and general displacement produced by pressure. The pia mater appeared normal, except that there was marked venus congestion over both hemispheres. The whole right hemisphere was broader than the left, whose median surface was also pressed upon by the tumor, displacing it to a slight extent out of the median line. The ventricles contained a very little fluid. The central ganglia on the side of the tumor were somewhat flattened, but no evidence was found of any other abnormal appearances, either within or upon the cerebrum or its membranes. Unfortunately, the microscopical examination of the cortical portion which had undergone compression was entirely unsuccessful, as the specimen was not well hardened.

At the juncture of the pons with the medulla, in contact with the latter, and lying upon the inferior surface of the cerebellum, which it compressed to a slight extent, was found an irregular growth, two centimetres long, one centimetre thick at its thickest portion, and five tenths of a centimetre thick at its thinnest portion, attached to the left auditory and facial nerves, which ran over its inferior surface. The facial nerve did not seem to be involved by the growth,

but was easily stripped off. The auditory nerve was firmly attached to it and spread out upon it to three times its usual width, a portion apparently running through the tumor.

A microscopical examination after the tumor had been hardened in potassium bichromate and stained with hæmatoïdin, revealed a tissue similar in structure to the large tumor, except that the cells were more numerous and less fusiform, the fibrous and fully formed connective tissue being almost entirely absent. It was not as vascular as the large one, but the same whorl-like formation was present. In the superficial portions of the tumor, corresponding to the auditory nerve, were found nerve fibres. They seemed to be pretty well preserved, though in some places they seemed to be surrounded by the spindle cells of the growth, and in the deeper portions no nerve fibres could be found. There was no evidence of degeneration of nerve fibres.

The orbital cavities were opened from the cranial surface, and the posterior segments of the eyeballs removed, together with the optic nerves. The elevation of the swollen papillæ could be seen with the naked eye. After hardening in potassium bichromate, sections through the specimen in the long axis of the nerve exhibited it to a more marked degree, though the specimen was not in a proper condition to make objects capable of showing the finest histological details of the retinæ and papillæ. The nerve, however, exhibited complete absence of normal nerve fibres, and consisted of bundles of granular matter and finely fibrous material and lymphoid elements. Thickening of the walls of the vessels and distention of the perivascular spaces were observed. This condition of degeneration was traced beyond the commissure to the point where the optic tracts enter the cerebrum. The specimen was too soft to follow further, as was intended.

A transverse section through the pons at its centre and another through the medulla below the striæ medullare revealed nothing abnormal to the naked eye, even after hardening. On making a few transverse sections of the lowest segment, beginning at the upper surface, which was through the lower third of the floor of the fourth ventricle, a small round mass was discovered situated directly in the median line, and somewhat nearer the anterior than the posterior surface. This rapidly increased in circumference until at the calamus scriptorius it occupied more than one half the diameter of the section in any direction, involving a little more of the left side than the right, and coming nearer the posterior, than the anterior surface. From this point it rapidly decreased in size until only a small dot was left, which still occupied the median line. The outline of the tumor was somewhat irregular and very distinct. A microscopical examination revealed a structure similar to the other growths, although they were more cellular tissue even than in the auditory-nerve tumor. The surrounding tissue exhibited a remarkable preservation of the normal appearance. It seemed to have been crowded gently aside. The nerve fibres appeared crowded together in some portions like bands of sclerosed tissue. In other regions, at the circumference of the growth, a certain amount of sclerosis was found, but no other abnormal changes which were limited to any special parts or regions, with one exception to be mentioned presently. There were changes in all regions at the level of the tumor nearly everywhere, such as thickening of the walls of the blood-vessels and the presence of a larger number of lymphoid elements than usual, and occasional amyloid bodies. The calibre of the nerve fibres was extremely regular, and the nerve cells appeared normal, with here and there a doubtful exception in the shape of a

very granular cell and an irregular crenated appearance of the nuclei. The nuclei and roots of the cranial nerves presented a normal appearance, with the exception of the hypoglossal nucleus on the left side. Here the large motor cells were not more than one third as numerous as on the opposite side, and nearly all of them presented a shrunken appearance. As a rule they were small. This was determined from an examination of the whole column of cells and not from a single specimen. The nuclei and roots of the sixth and seventh were normal; also the acusticus roots and nuclei. There was no evidence of ascending or descending degeneration above or below the tumor.

Let us now review the facts. First, what is the nature of the morbid growths? They belong to the connective-tissue group of neoplasms, and will very properly bear the name of fibro-sarcoma. The two small growths may be fairly considered to be of more recent or of very much slower growth than the larger one, in that the formation of the fibrous tissue is very much less marked. The origin of the large tumor seems to have been from the pia mater. The growth on the auditory nerve seems to have originated in the nerve sheath. The tumor of the medulla appears to have started in the median line, probably from the vascular prolongations of the meninges.

One of the remarkable features of this case is that such extensive abnormal growths should have produced so little change in the neighboring parts, but as the lesion was excluded from all parts except the connective tissue, the effect of these bodies could only be that of pressure. Will the tumor in the right hemisphere account for the paresis on the opposite side? That part of the cortex which had been rendered thin by pressure (the upper part of the ascending parietal) corresponds to the motor centres from the lower extremity. The centres from the upper ex-

tremity (part of the ascending frontal convolution) escaped with less damage, and we find that the paresis in the hand was less than in the lower extremity. The motor centres from the facial muscles are situated too far externally to be affected by the pressure of the tumor to a great extent, and we have no facial paresis on that side. As the paresis was never very decided, the opinion is not unwarrantable that it was due to pressure on the regions described, producing changes which interfered with the nutrition of the part sufficiently to bring about an improvement of function. We cannot account for the paralysis of the seventh and paresis of the sixth nerves by any lesions found, and will not speculate upon it. The atrophy of the left side of tongue and the abnormal conditions found in the hypoglossal nucleus would seem to stand related to each other as cause and effect. How long this condition had existed is unknown; the stepmother stated that it had "always been so." The specimen does not give any evidence that the changes were recent; the attacks of dysphagia and inarticulate speech, the accumulation of saliva, and the marked disturbance in temperature might be expected from the pressure of a tumor on the medulla in a neighborhood where so many hypothetical centres, salivary, vaso-motor, etc., are supposed to exist. The tinnitus aurium in connection with the tumor of the auditory nerve is of interest. It is unfortunate that we have no record of her hearing. The optic nerve atrophy was found as was expected from the ophthalmoscopic examination.

Explanation of Plates.

Plate I. Fig. 1.—Right hemisphere showing size and location of tumor.

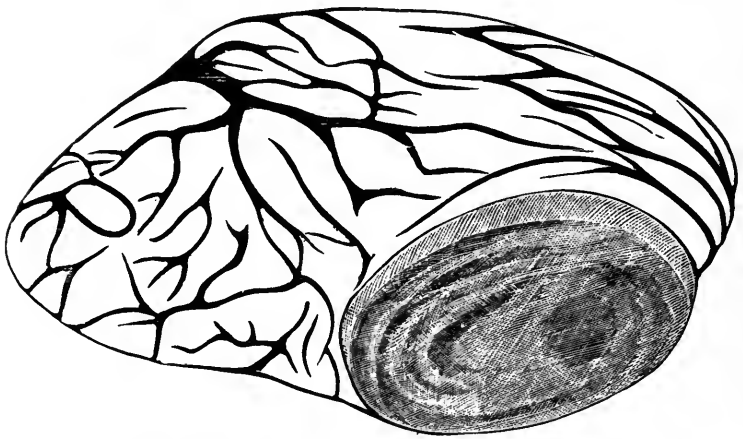
Fig. 2.—Tumor on auditory and facial nerves.

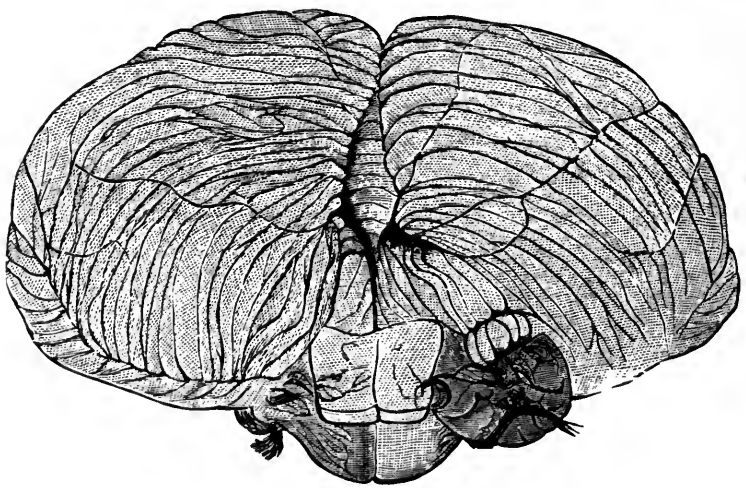
Plate II. Figs. 1–6.—Sections at different heights of tumor in medulla ; nat. size.

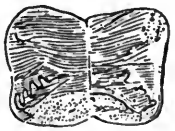
Fig. 7.—Showing atrophy of hypoglossal nucleus.

Fig. 8.—Section of tumor.

Fig. 9.—Diagram showing longitudinal projection of tumor.







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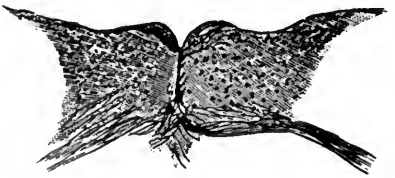

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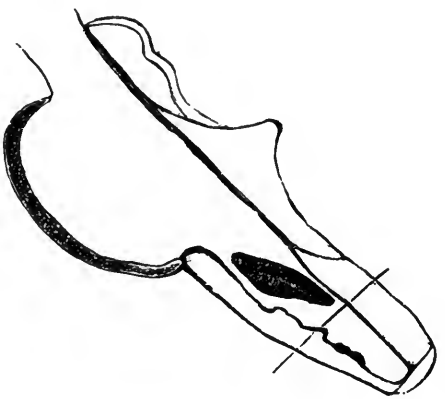


FIG 9

A CASE OF HYSTERO-EPILEPSY.

By A. B. ARNOLD, M.D.,

BALTIMORE.

INSTANCES of this disease which present the remarkable features described by French writers are confessedly of rare occurrence in this country. The patient whose case I shall briefly relate, is a young unmarried woman of American birth, but of German parentage. She was orphaned at an early age, and had to make a living by working day and night, as she said, at a heavy sewing machine, and for small wages. Her catamenia have always been irregular, and she has suffered much from dysmenorrhœa. According to the statement of her aunt with whom she lives, "she was a child hard to raise," and caused her people much trouble and anxiety.

For the last two months she had been affected with permanent flexion of the ring finger of the right hand. The arm of the same side became gradually stiff and useless, and when I first saw her the limb hung dangling by her side, twisted and rigid. The arm was sharply pronated, the elbow thrown outward, and the hand forcibly flexed upon the forearm, so that its back rested against the thigh. The fingers were firmly interlocked in a manner that forced them to assume painful positions. These violent contractures caused lividity and coldness of the whole extremity from arrested circulation. Any attempt to straighten the

limb, or to free the fingers from their unnatural positions, was immediately followed by very painful cramp of the muscles of the arm. The occasional spontaneous relaxation of these parts was invariably followed by a spasmodic condition of the masticatory muscles. The trismus was then complete and of long continuance. In consequence of some emotional excitement the disorder became aggravated both in extent and severity. In fact every following day brought forth some new symptom. Paroxysms of tonic and clonic spasms alternating with each other or affecting different portions of the muscular system at the same time, came on in rapid succession. The fingers assumed every conceivable position from undue action of the flexors or extensors of the several phalanges. Sometimes they were rigidly extended and widely parted, or the last phalanges only were flexed, and presented the appearance of "*main en griffe.*" More frequently they remained tightly pressed together until a new paroxysm changed their whole aspect. Sometimes both arms were violently jerked forward and backward, as if to deliver hard blows. The lower extremities were far less affected, and their movement principally consisted of rigid extension varying with extreme flexion. During the height of the paroxysms, at a later stage of the trouble, very alarming tetanic spasms made their appearance. Every species of this form of motor disturbance came into play. Prolonged spasm of the glottis and diaphragm often made me fear for the life of my patient. But at no time did she present the hideous expression of face of the epileptic. The tongue was sometimes caught between the teeth, the pupils were contracted, and divergent strabismus was well marked. Such attacks would continue for days with but short intervals of respite. Consciousness and sensation seemed to be entirely abolished when the paroxysms reached this height; and even after

their subsidence she could neither see nor hear for some time. The trismus would often persist for a considerable while longer than the other spasms, and greatly interfered with the feeding of the patient. Grotesque posturing was very common, the limbs and trunk assuming every possible, and I may say impossible position; the whole muscular apparatus appeared to be in a state of insanity. I often saw the girl lying on her back with outstretched arms, the legs fully extended, and the feet in an extreme valgus position—heel touching heel. Suddenly the body would twist into the form of a spiral, and then roll itself together like a ball, and as suddenly again, like a spring relaxed from its tension, the patient would be forcibly thrown clear of and sometimes entirely out of the bed. The right shoulder, and less frequently the left, was occasionally alone affected; inordinate elevation alternated with its violent downward movement, or the joint rotated with such force that the scapula seemed about to be wrenched off. Successive retraction and bulging of the abdominal walls was a conspicuous symptom.

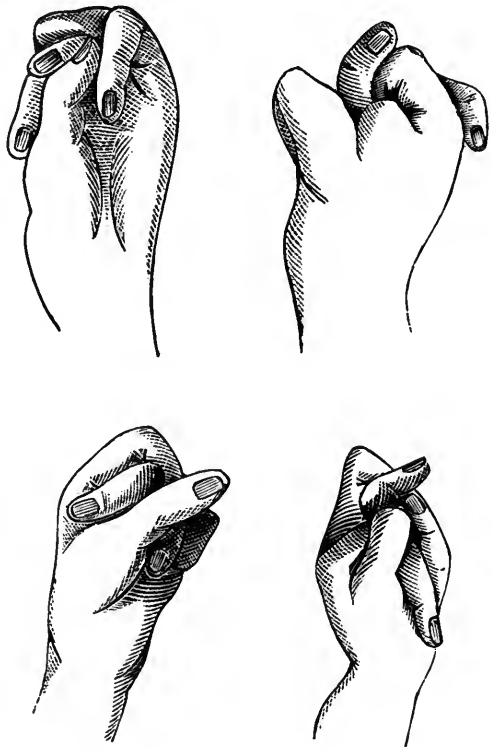
During the intervals of comparative rest, she complained of violent headache, and pain in the limbs, chest and back.

The right arm and hand, and face of the same side were anæsthetic, and are still in this condition at the date of this writing. There was not only loss of tactile and thermal sensation, but analgesia was also complete. Flushes of heat frequently overspread the affected side of the face; its temperature was then $99\frac{4}{10}°$, whilst that of the opposite side was $98\frac{8}{10}°$. Electric muscular contractility of both sides was normal. Electric sensibility of the face and arm of right side was absent.

A no less remarkable feature of this remarkable nervous disorder, was an immunity from the effects of the most powerful narcotic poisons. Chloroform and ether, separ-

ately or combined, allayed the spasms only momentarily. I once administered eight ounces of chloroform in as many hours, without any other result than procuring a few moments' rest. The subcutaneous injection of enormous and repeated doses of morphia mitigated the pain, but failed to produce the least narcotic effect. Several times I ventured to increase atropia to one tenth ($\frac{1}{10}$) of a grain, with no other result than a moderate mydriasis. During the course of one night, two grains ext. Calabar bean were introduced hypodermically, for the relief of the tetanic convulsions, without any appreciable effect. Only once did I succeed in stopping the paroxysms for thirty-six hours by the brisk action of an infusion of senna leaves. The bromides and chloral-hydrate were entirely useless, although these drugs were given in no stinted measure. A powerful sensory impression proved, however, of more avail. Owing to an awkwardness in soaking the sponge with chloroform, some of this fluid dropped into her eyes, whereon the spasms ceased at once, and the patient complained bitterly of an intolerable burning pain in her eyes. Perhaps an emotional excitement, subsequent to this mishap with the anæsthetic, must rather be credited with the improvement that followed. Some one in the room suggested that the girl might easily keep off the "spells," if she so desired. Upon hearing this remark the patient fell into a fit of sobbing, and ordered every one out of the room. There were no more hysterical fits after this for three months, after they had played their strange and sometimes serious pranks for nearly six weeks. Against my strict prohibition the girl resumed her work at the sewing machine, and before long the previous rigidity of the right arm and hand again made its appearance.

The accompanying diagrams, which were hastily made at the bedside, and upon ordinary prescription papers, illustrate some of the peculiar positions assumed by the fingers, as alluded to above.



COLONY TREATMENT OF THE INSANE: A VISIT TO FITZ-JAMES, AT CLERMONT, IN FRANCE.

ABSTRACT OF REMARKS MADE AT THE ANNUAL CONFERENCE OF MEMBERS OF THE STATE CHARITIES AID ASSOCIATION.*

By WILLIAM J. MORTON, M.D.

NO one can doubt after listening to the able letter written by Mrs. Lockwood and read by our Chairman, that occupation, exercise, amusement, light, air, and space, are most important desiderata in the treatment of our insane; one does not need to appeal to any further authorities than those already given on these points. But Dr. Potter has, I fear, rather magnified the scope of the few remarks which I stated I would make, when he says that I shall refer to a considerable number of asylums. I had particularly in my mind only a few points relating to two special institutions, which I took care to visit this summer while in Europe, because I thought that they would be extremely instructive to Americans who are interested in treating the insane,—instructive in these very points of occupation, labor, amusement, light, air, and space; and these institutions are indeed very suggestive in holding up a contrast to our own methods,—how strong a contrast I shall call attention to, simply by comparing facts gained from my visits with facts gained from personal observation of some of our own asylums, and statistics culled from their reports, a few of which I have in my hand.

The easiest way to place before the Conference the great and reasonable amount of liberty with which insane patients can be treated, and the amount of work which they will willingly perform, is to take a bird's-eye view, so to speak, of these two

* Report No. 27, State Charities Aid Association, November, 1881.

famous institutions I have alluded to—I refer first to the colony of Gheel,[1] in Belgium ; and, secondly, to Fitz-James, at Clermont, in France.

VISIT TO FITZ-JAMES.

I went to Fitz-James a few weeks after visiting Gheel. And here I may say at once that I think—though I know there are violent sides taken in the whole matter of the comparative merits of the colony system and the close asylum system,—I may say that I believe Fitz-James to be a most splendid example of what may be termed the segregation or separation system of treating the insane, and of the curative effects produced by labor and occupation.

On the day of my visit there were 1,000 patients in the colony —and here the word colony may be appropriately used, for Fitz-James consists essentially of two main portions, a central asylum and some immense farms, lying about a mile away. The central asylum corresponds in certain main characteristics to any other close asylum. It is its association with outlying farms that gives to Fitz-James its special distinctive features, and in the use that is made of these farms. The farms themselves consist of about 1,500 acres of the most cultivable and excellent land. An omnibus service goes back and forth between the asylum and the farms, conveying outward the insane who are willing and able to work, and bringing in those who are tired and wish to return. Comfortable lodgings are provided for those who are out at work. And here I may note in passing, that no threat more effective in inducing a refractory patient to obedience can be found than telling him that he will be taken back to the central asylum. There are no exceptions to the classes of patients received at Fitz-James. As far as the quality of its patients is concerned, Fitz-James is exactly like the institutions on Blackwell's and Ward's islands. The comparison that I must soon institute must, therefore, in this instance, be an extremely fair one. The main characteristic of the central asylum was a number of large and roomy court-yards in which were trees, walls, grass-plots, plants, and benches. These court-yards, of which there were six, communicated directly with the sleeping apartments. I recall very nearly the numbers who occupied these courts or their connecting

[1] The substance of the remarks on Gheel appeared in this journal in January, 1881, under the title of "The Town of Gheel in Belgium, and its Insane, or Occupation and Reasonable Liberty for Lunatics."

wards. In the first there were fifty patients who were old, feeble, convalescent, or desiring to escape ; in the second, 45 on trial before going out to the farms ; in the third, 50 epileptics ; in the fourth, which was the infirmary, there were also 50 sick ; in the fifth, 46 who were "dirty" ; in the sixth, 10 who were "excited,"— in all 251 out of about 850 men who were at the central asylum. Now this is what astonished me, the remaining 600 were out at work ; how enormous this ratio compared with our own similar institutions we shall soon see. Another 150 patients, making up the full thousand, were women, subject to the same classification as above.

I saw no form of restraint anywhere in the whole asylum, except bars on the second-story windows of the part used for a hospital. The reason given for this conspicuous lack of restraint was that nearly all the patients, being at work, were extremely docile and did not require restraint. I never saw patients so quiet, calm, and interested in their pursuits as in this asylum.

An interesting feature of the central department is the so-called "trial garden," a large tract of cultivated ground, where the patient about to be trusted on the large farms is first tested to see if it will do to send him out.

I next went to the farms and took a note of the condition of affairs ; I regret that time will allow me to present, in the briefest manner, a few only of the most salient points. The farms are two in number, large and adjoining, comprising 1,500 acres, and named respectively Fitz-James and Villers. Fitz-James has three departments : first, for men, both paupers and paying ; second, for pauper women ; and third, for paying women. Of the men and women who paid, little need be said ; the average price was $50 per month ; their quarters were pleasing ; each, as a rule, had his or her own servant, and wandered about the farms and gardens pretty much at will. But the work and occupations of the pauper men were more interesting. I traversed fertile fields, where the crops were being harvested ; haystacks and piles of potatoes and other root vegetables gave evidence of the fertility of the soil, while approved and modern tools showed the practical farmer. The patients worked in gangs of from 20 to 30 men, each with an associate attendant. In all 167 were employed here. In the stables were 40 horses, in the sheepfold 1,800 sheep ; there were also 200 cows, 80 pigs, and 400 hares. All this I mention, not alone to show that there was room for labor for all, but to point out also, at the same time, the self-sustaining character of this colony. Near by was a black-

smith's shop in which the insane were employed, a mill, and a butchery.

But the most interesting of all, perhaps, was the second department—that devoted to the labors of 150 insane women.

A pretty little stream came down through the trees from the neighboring hills, and over a section of this stream was built the laundry; near by was a dining-hall and dormitory, with 150 plates set along the tables in the lower halls, and as many beds on the second floor. In the laundry is done all the washing of the entire institution. Here were washing machines, drying machines, and a steam-engine of 10-horse-power, whose engineer was a woman attendant, and whose *fireman* was an insane woman. Along the edges of the stream, as it passed through the building, were arranged, in double and facing rows, fifty patients engaged in washing clothing; they were happy, industrious, and interested; if they did n't want to work, they were at liberty to return to the central asylum. Other women were busy in the drying-room, and still others were ironing and folding. And to direct and manage these 150 women there were simply one chief directress and eight sane employees.

The second farm, Villers, resembled in most respects the first, except that it was more exclusively devoted to agricultural field labor. Here most of the kitchen vegetables of the institution were raised; nothing is sold, but all is consumed by the colony; 130 patients were employed, with fifteen guardians or head workmen; here there were 600 sheep, 32 oxen, and 15 horses. The dormitories were comfortable, and the patients apparently contented.

Each farm has its head agriculturist, who in turn is responsible to Monsieur Labitte, the brother of the medical superintendent.

Here again, then, we find, as at Gheel, an administrative, distinct from a medical, service.

But I am passing, I am sure, far beyond the time allotted to me. Your attention to these details must be my apology.

It only remains to contrast the two institutions of which I have spoken with some of our own in regard to this single point of occupation for the insane.

The Government Asylum at Washington is as good as any for this purpose. According to its report in 1879, out of a total of 819, fifty were trusted to take part in some occupation. I visited the hospital in April last, and then, out of a total of 873 patients one hundred and twenty-seven were at work outside the building. Here a beginning has been made in the right direction; the gov-

ernment made a small appropriation for temporary buildings, and fifty selected patients were placed in them, with doors and windows unfastened. "The result," says Dr. W. W. Godding, the able superintendent, "has more than justified our expectations." And now Congress has appropriated $30,000, which is being expended in erecting another building, of the open-door-and-window type, where manifold avocations will be furnished to patients willing and glad to employ their time in this manner.

At Ward's Island, in 1874, there were 673 patients, of whom 40 were sent out-of-doors. In 1877 no mention at all is made of employment. I can only find that certain squads were taken out on pleasant days. In the next year's report—1878—we are told that in the previous year there were 83 employed in various kinds of labor outside the wards, and that in 1878 out of nearly a thousand patients there were 125 employed. Contrast this with the 600 out of 850 employed at Fitz-James; or contrast the penned-up female insane of Blackwell's Island with the busy laundry on the same farm.

The best example of the colony system to be found in our own country is the Willard Asylum for the chronic insane poor, at Ovid, N. Y., under the intelligent control of Dr. John B. Chapin. Here exists great farms, and extensive and organized labor, occupation, and amusement; in short, a humane method of treatment that will compare favorably with the best colony systems abroad. This institution should be well studied in connection with Gheel and Fitz-James.

But I do not wish to criticise our institutions. I must, however, confess, in closing my remarks, that in studying Gheel and Fitz-James, I have been astonished at the industry of the insane and at the large liberty which may be safely and reasonably granted them. Of the curative power of this industry and liberty no one has any doubt, and I will not here delay to prove the point by an appeal to statistics. A single case, one of many taken from Dr. Peeters' record, tells its own simple story:

"A patient named Mary V., No. 6,094 on the register, suffered from delirious melancholy. Energetic moral and other treatment, and the devoted attentions of the 'sisters' did not succeed in modifying her condition. She spent the day in lamentation, saw the preparations for the frightful punishment which she believed she would be obliged to suffer, and slept neither day nor night.

"She was entrusted to an intelligent and devoted nourricier,

who lived on the farms, with instructions to exercise proper supervision and kindness, to make her life as calm as possible, to provide proper occupation for her, and to look after the regularity of the excretions. Mary V. was scarcely installed in her new home before her condition modified favorably. Her delirium became somewhat less active. She mourned less, and soon took part in the household labor with the wife and daughters of her guardian. Her appetite became excellent, her sleep normal, and she increased in flesh. This improvement developed at the end of four months into a permanent cure. Before leaving, the patient came to thank us, and when I congratulated her on her rapid and complete cure, she replied: 'I would never, I believe, have recovered at the infirmary. *The presence of the other patients fed my delirium and my unrest.* As soon as I had entered into the calm and happy home of nourricier G. I felt my senses grow clearer and my heart encouraged.'"

It is true that Gheel is exceptional, but clearly the comparison with Fitz-James is a fair one. Gheel in its entirety is probably an ideal which can never be repeated by any other nation, for the simple reason that there is but one village of Gheel, removed from the world's traffic and turmoil, where the inhabitants, by reason of centuries of inheritance, have learned patience, tact, and fearlessness in their dealings with the insane.

But though the "Gheel idea," *i. e.*, the "family system," consisting of a large number of families who would receive into their midst a thousand or more insane, may not be repeatable, the essence of this idea, *i. e.*, a large and reasonable liberty, healthful and sufficient employment, and accustomed and congenial surroundings, is repeatable, but not certainly in any of our great asylum buildings. Gheel teaches us the possibilities that exist in the treatment of our insane. It shows that the insane will work cheerfully if well managed; that they may be trusted, under proper precautions, with great liberty and not abuse it; and that though in the highest degree intractable in restraint, with liberty they become docile.

In Gheel we find our suggestions. In Fitz-James we find these suggestions carried out with a degree of practical, organized, working perfection, which I believe both in its humane and its utilitarian aspects has yet to be equalled either at home or abroad.

Surely these institutions are worthy of our profound study.

THE SENATE COMMITTEE ON THE INSANE ASYLUMS OF NEW YORK.

By L. A. TOURTELLOT, M.D.,

UTICA, N. Y.

ON March 6, 1882, a select committee of the Senate, appointed two years before, presented their report on the management of the State lunatic asylums. It was ordered printed, and its publication in full may be expected, after the usual delay of some weeks or months in the hands of the State printer. But its conclusions have already been given to the public through the daily press, and have therefore become a proper subject of comment in this JOURNAL. Such comment seems indeed to be called for at this time, as no bill for carrying into effect the recommendations of the committee has yet been prepared.

The report is introduced by the following statements:

"On March 30, 1879, a petition was presented to the Legislature in which charges of mal-administration were made against the various lunatic asylums of the State and against the State Commissioner in Lunacy. The matter was referred to the Committee on Public Health. That committee made its report on May 22d in that year. The investigation made by that committee and their report based thereon were made the subject of comment and criticism by the New York Neurological Society—a society numbering among its members some of the most eminent men in the medical profession in the city of New York, who, in January, 1880, published an answer, in which it was claimed that

the report of said committee was unjust, *ex-parte*, and untruthful, and said charges were therein reiterated. The action of this society was widely circulated, the effect being to create a general feeling of distrust in the public mind as to the management of the lunatic asylums of the State, and a demand for further investigation was pressed upon the attention of the Legislature, and in pursuance of said demand this committee was appointed.

"The committee have visited most of the lunatic asylums of the State, and have examined as witnesses superintendents of asylums, attendants, trustees, managers, medical experts not connected with asylums, patients confined therein, the State Commissioner in Lunacy, and whomever they thought might be able to throw light on the matters under investigation. As their labors progressed new and additional subjects of inquiry unfolded themselves, so that your committee have not limited their examination to the specific charges made, but have attempted to go over the whole field of lunacy administration."

The field which the committee have undertaken to explore is in truth an extensive and difficult one, but we judge from the clear and intelligent conclusions which have been reached, that their work has been thoroughly done. It is plain, from the paragraphs above quoted, that the claims of certain officials and State institutions to be beyond the proper sphere of investigation by such a committee, have not been recognized. In the sham investigation by the Committee on Public Health, in 1879, it was held by Dr. Ordronaux, State Commissioner in Lunacy, that the managers of asylums "having franchises given them for the purpose of acting in official capacities, there is no proper ground upon which the Legislature can intervene, so long as laws can be found to redress alleged wrongs" to the insane and the public. And Dr. Gray, superintendent of the Utica asylum, in his plea for non-supervision at the meeting of asylum superintendents in Toronto last year,[1] maintained that these managers "are charged with the complete government, inspection, and visitation of asy-

[1] *Am. Journal of Insanity*, vol. xxxviii, p. 217.

lums." It is probably upon this theory of each asylum as an independent and coördinate branch of the State government, that a detailed account of the expenditures of the Utica institution has been so persistently refused to the Governor and the State Board of Charities. But such an interpretation of the law organizing the State asylums does not seem warranted. The statute declares, simply, that the managers "shall maintain an effective supervision of the asylum"; and the proof that they have wholly failed in this duty has become so clear to the Senate Committee as to convince them that "the first great need of our State is the appointment of a lunacy commission, consisting of three or more persons specially fitted for such an important trust," after the model of the English Commissioners in Lunacy.

This commission, "the creation of which we recommend," say the Committee, "should be given ample powers to look after the interests of the State in the matter of expenditures, and to protect the patient in the matter of physical care, with full powers to redress all grievances and remedy whatever wrong they may discover."

In this scheme of a new commission, with important functions and ample powers, no mention is made of the present office of commissioner in lunacy. But that it was devised by the asylum ring to neutralize the efforts of the State Board of Charities in the direction of asylum reform, is well understood. It is also well known that Dr. Ordronaux was formerly employed by the Utica asylum as a writer, and was appointed to his office mainly through the influence of Dr. Gray, its superintendent. How well he has done what was expected of him, in defending the asylums against investigation, appears from the notorious proceedings at the Bloomingdale and Buffalo institutions. But the fact is—as the history of the Tarbell case, presently to be

given, will prove—that the asylums, with large sums of public money and powerful political agencies at their command, have really no need of a special commission to shield them from public inquiry. The necessity of a lunacy commission in this State is, however, denied by Dr. Gray on the ground that "the boards of managers of our asylums represent the same power" as that now exercised by the English Commissioners in Lunacy.[1] In these local boards, he declares, "we have a body of asylum inspectors equal to all our needs." But there is too much reason to believe that it is to the "needs" of asylum managers and officials, rather than their patients, that these managers are equal. In support of the conclusion of the Senate Committee, that "to protect the patient in the matter of physical care" some other form of supervision is imperatively demanded, the following history is condensed from a public document within reach of every one:

Norris Tarbell, a wagon-maker, aged 32, living in Brookfield, Madison Co., N. Y., became insane while at a public auction, Nov. 22, 1859, and continued to have frequent paroxysms of mania, alternating with periods of "quiet and rational behavior." In one of these paroxysms, on the morning of Nov. 24th, he was unusually violent, and was restrained with some difficulty. It was afterward claimed that in this struggle Tarbell received eleven fractures of the ribs and sternum and a penetrating wound of the lung, causing his death on the 11th of December following. But it is not disputed that no evidence, rational or physical, of such injuries was manifested during the next eight days. The history shows that Tarbell became calm and rational soon after he was bound, and complained of nothing except a slight scratch on one finger. He was seen by numerous relatives and neighbors and by three physicians on

[1] *Am. Journal of Insanity*, vol. xxxviii, p. 217.

that day, and no other injury was suspected. The next morning, after a comfortable night, he changed his shirt without help, and pulled on a pair of tight boots with such force as to break the straps. On the same day he was taken in a wagon, over rough roads, twenty-two miles in two and a half hours, to the Utica Asylum. He was there examined by an assistant physician, to whom a history of the case was given by a brother and two neighbors. Still, nothing appeared to excite the suspicion of any one that Tarbell was suffering from any physical illness or disability. No bruise or other mark of injury was found on his person by the attendants in bathing him. He was placed at once in a crib or covered-bed, which he never left, except at times for a few moments, until the day before his death, sixteen days later.

On the 1st day of December, Tarbell had a violent contest with two attendants, which suggested no doubt of his physical soundness and strength. This was not reported to his physician until the next day, when he was found greatly exhausted, with difficult respiration, suppressed cough, and fetid breath. His attendant attributed this condition to "a fit in the night" previous. His case was diagnosed as pneumonia and gangrene of the lungs, but on account of his restlessness no physical examination of the chest was made until Dec. 10th, the day before his death. On that day he declared to his wife and brother that he had been abused by the attendants, and was "all stove in." Post-mortem examination revealed fractures of the sternum and seven ribs. Three of the ribs were each fractured in two places, and at one point a broken rib had penetrated the lung.

No coroner was notified of Tarbell's death by the asylum officials, but after the removal of his body to Brookfield an inquest was held, and the jury found that he "came to his

death by injuries received at the hands of the attendants and employés of the asylum." Soon afterward, a memorial was presented to the Legislature by the foreman of the jury, Dr. A. L. Saunders (late vice-president of the State Medical Society) and others, asking for an investigation. Accordingly, a committee of the Assembly was appointed to take evidence and report. The inquiry which followed was fairly and carefully made, although strong influences, political and medical, were brought to bear upon the committee in favor of the asylum. As already stated, the managers held that Tarbell's injuries were received in the struggle of November 24th, at the hands of his family and friends. But the hypothesis that this terrible crushing in of the thorax was done eight days before the first symptoms of illness or physical disability manifested themselves, is wholly forbidden by the principles of medical science, as it is by the facts testified to in the case. Surely, we should find it less difficult to believe that President Garfield might have proceeded for eight days on his journey after he was shot without suspecting he had been touched by the assassin's bullet. Under ordinary conditions, it is certain that twenty-four hours could not have passed after Tarbell's injuries were received without the appearance of the grave symptoms presented by him on December 2d. Nor was it possible for Dr. Gray to bring the slightest evidence to the support of his theory that all physical disability was prevented, and all morbid action at the seat of the injury delayed for eight days, in this case, by reason of the insanity. To suppose, indeed, that insanity *per se* has any thing more to do with the mechanical action of the muscles upon the skeleton, or with the laws of inflammation after injuries, than with the laws of gravitation or chemical affinity, is wholly impossible.

The committee were not able to arrive at any positive

and unanimous conclusions in the case, although the belief that Tarbell's injuries were inflicted at the asylum is plainly shown in their report. As the report was presented only a day or two before the close of the session, it was ordered printed, with the testimony, for the use of the next Legislature. But this purpose of the Assembly was thought contrary to the interests of the managers, and a bold expedient was adopted to prevent it. By collusion with the public printer or his employés, all the pamphlet copies of the report were sent to the asylum, where they were carefully kept from the public, and the Tarbell inquiry was finally ended. The report is preserved, however, in the volume of Assembly Documents for 1860 (No. 43), where it may still serve as a pregnant text for the advocates of asylum supervision and reform.

A single case like that of Tarbell is sufficient to prove not only the need of some supervision of asylums, but of a better system of management and administration for them. The radical fault of the present system is, that while built and supported by the State these institutions are left wholly in the hands of local managers. In the address before referred to, Dr. Gray declares that the asylums of Great Britain are "all on the order of local self-government," and that in this country, also, "people can be found in every part of every State quite competent to manage their local affairs and to guard the interests and rights of their citizens, whether sane or insane." But the truth is that the English Commissioners in Lunacy represent an intelligent and impartial public opinion, permanently organized, which is practically supreme in its control of insane asylums. Moreover, the asylums of England are supported by the counties in which they are situated, and their managers are always among the largest tax-payers who contribute to this support. Our asylums, on the contrary, derive their revenues from State or other

non-local sources chiefly, while their managers are local politicians, to whom the asylum represents merely so much patronage or profit, for themselves or their constituents. That most of these gentlemen may be safely trusted to manage the savings banks and other charitable institutions of their town or county honestly and efficiently, may be readily admitted. But as local politicians they are constantly reminded that the chief end of a State institution is to draw the largest possible sums of money from the State treasury, for the benefit of local interests. From this point of view, their first duty is to defend the asylum against all criticism and investigation, and they forget that annual appropriations are mere trash compared with the good name, the liberty, and the life, even, of the unfortunates committed to their charge.

The second important function of the lunacy commission recommended by the committee is, "to look after the interests of the State in the matter of expenditure." And this duty is of far greater moment than the mere saving of State funds to the amount of some hundreds of thousands of dollars a year. It cannot be too strongly insisted upon that honesty and economy in the management of asylums lie at the very foundation of all reform in the treatment of the insane. Every one must admit that to prevent the neglect and abuse to which insane patients are so peculiarly exposed, the best and most unremitting efforts of managers and resident officers are absolutely necessary. It goes without saying, that where official energy is mainly directed to lobbying for appropriations from the State treasury, and devising modes of expending them, the insane will be neglected. Nor will it be doubted that where these expenditures are enormously excessive, while the greater part of this excess is concealed by false accounts, other and more serious abuses must prevail.

It is, then, with good reason that the friends of asylum reform have insisted that honesty and economy should be

shown in the plainest manner in the financial reports of asylums. In the second volume of this JOURNAL (p. 781), Dr. Bucknill, the well-known English authority, is quoted as expressing his astonishment at "the difference in the weekly cost of maintenance between $4.50 at the asylum for the State of New York [Utica], and of $1.30 at the asylum for the city of New York." In seeking an explanation of this difference, it was found that the true weekly cost of maintenance at the Utica Asylum in 1874 was $7.18, instead of $4.50, as Dr. Bucknill had been told. It appeared, also, that this weekly cost had been reported to the State Board of Charities as $5.42, and that to support this fiction $55,602 had been stricken out of the ordinary expenditures of the year. Here was either a gross error or an attempt of the managers to conceal their enormous expenditures from the public. For whether these expenditures are, in round numbers, $200,000 yearly, as reported to the Legislature, or $100,000, as they would be at the rates of the model State Asylum at Northampton, Mass., such figures give no definite idea of economy or extravagance in management. It is only when the weekly or yearly cost per patient is given, that the financial returns of an asylum have any real meaning to non-experts in accounts.

At this point we are reminded that in his testimony before the Senate Committee on Public Health, in 1879,[1] Dr. Ordronaux says: "Whenever the asylums make reports their reports are *prima facie* evidence of their workings." But it must be held that *prima facie* evidence should not be a sufficient proof of facts to a State official who is paid $5,000 yearly to study and report upon those facts. An easy examination of the reports of the Utica asylum, shows that the weekly cost per patient has always been omitted from them, and the data for calculating it studiously dis-

[1] Report of Committee on Public Health relative to Lunatic Asylums, p. 8.

guised. Again, comparing these reports with those of the State Board of Charities, we find that when it became necessary, in 1868, for the Utica managers to return a weekly cost to the State Board, an incorrect statement was prepared and sent; and further, that such misrepresentation has been repeated each year since that time, in a manner to indicate a deliberate purpose to deceive the Legislature and the public. Nor are the sums thus concealed, amounting to nearly $50,000 per year for the last twelve years, included in the extraordinary expenditures of the asylum, which are at least ten times greater than those of Northampton for the same purposes. It may be remarked that an English asylum whose returns should show an excess of sixpence per week over its ordinary cost per patient, or over the average cost of asylums of the same grade, is forced to give the Lunacy Commissioners a detailed and satisfactory account of this excess, for publication in their annual report. But the duties and powers of the English Commissioners in Lunacy were not fixed by the asylum superintendents, nor was the personnel of the Commission left wholly to their choice.

We cannot suppose that the flagrant "cooking" of asylum accounts above described has entirely escaped the notice of our State Board of Charities, and this fact may help to explain the request made to the Utica managers to furnish a detailed statement of their expenditures. And it is perhaps because such a statement would inevitably convict them of the deception which they have practised for so many years, that this request has been persistently refused, in defiance of law and of official courtesy.

There are many other points in the report of the Senate Committee which offer excellent material for quotation and comment. These, however, need not be touched upon in the present paper, the object of which is simply to enforce the argument for a lunacy commission as a prime necessity to reform in the care of the insane of this State.

Clinical Notes.

OUT-DOOR DEPARTMENT OF BELLEVUE HOSPITAL, CLASS OF NERVOUS DISEASES.

By L. PUTZEL, M.D., Attending Physician.

Gunshot wound of the ulnar, just above internal condyle, in a man aged 45. The nerve was evidently cut almost or entirely through. The wound healed up in three months. The healing was followed by contracture of little and ring fingers. When seen by Dr. Putzel eight months later, there were paralysis and atrophy of interossei and thenar muscles, with contracture still present. Considerable anæsthesia of the forearm and hand where supplied by the ulnar. A bulbous enlargement of the central cut end of the ulnar could be felt. It was tender at this point. The descending constant current caused no reaction, but improved the patient.

Spinal hemorrhage from cerebral injury, with general paralysis. The patient, a man of middle age, was struck heavily on the top of the head. He fell down and was unconscious for a little while. When consciousness returned he was found to be entirely paralyzed except in his facial and respiratory muscles. There was also a general anæsthesia of body and extrimities. Power returned to the muscles very rapidly. A few weeks later he could use his legs well, his arms were still paretic and numb. There was tenderness over the cervical spine. The patient presented the appearance of a case of mild cervical paraplegia.

Three cases of *spinal paralysis in the adult* came under Dr. Putzel's observation in the past few months. Death ensued, and microscopical examination showed in each case the typical lesions of anterior polio-myelitis.

Nitrite of amyl in chorea has been used by Dr. Putzel with good results. It is fairly assumed that in chorea there is often defective nourishment of the brain. Occasional small amounts of amyl help furnish more blood to the brain tissue.

Total paralysis of brachial plexus. A man, aged 45, was struck on the right shoulder by a bale weighing 450 lbs. It knocked him down and broke a rib. The right arm and shoulder were completely paralyzed, and swung helpless at his side. Some anæsthesia, numbness, and pain were present when examined a few days later. Electrical reactions were very poor, but there was a slight response to descending galvanic currents. In three weeks there was some improvement in electrical reactions, but no other especial change. Prognosis bad. An erythematous eruption appeared on the back of the shoulder.

Obstetrical paralysis of deltoid and extensors. The baby was delivered with forceps. The right arm and forearm when first seen, two months after birth, could not be moved at all, though the fingers could be flexed. Electrical reactions were almost absent. Treatment with constant current was followed by return of motion almost completely in three weeks. The child was a healthy one aside from its paralysis.

Pruritus cured by jaborandi. The patient, a shop-girl, aged 21, had suffered from chronic urticaria, with the most troublesome pruritus, for two winters. She was a healthy girl except for occasional attacks of malaria. Suffered also from constipation.

She would have occasional attacks of intense congestion of the face, often obliging her to lie down. At night the symptoms of urticaria were the worst. The legs and arms became very red, and wheals appeared. Patient suffered intensely from the itching.

The first winter she was treated with ordinary remedies with little success. Baths, laxatives, and carbolic ointment did the most good. The skin being noticeably dry and harsh, and patient saying that she rarely perspired, it was thought that deficient innervation of the sweat-glands might be the cause, in part, of the peripheral irritation. She was put upon ext. jaborandi fluid., m., v t. i. d., with almost immediate relief. Two months later she returned saying she had been free from urticaria and pruritis, but that when she left off the jaborandi it returned. She felt perfectly well. The dose given made the skin slightly moist, but caused no other symptom.

NORTH-EASTERN DISPENSARY; CLASS OF NERVOUS DISEASES.

By C. L. DANA, M.D., Attending Physician.

The use of pure bromine in epilepsy and other nervous diseases. The formula recommended by Dr. Hammond for the use of pure bromine is ℞ bromine, ʒ i; aquae, ʒ viii ♏. Dose ʒ i, largely diluted. As bromine is not soluble to the above extent in water, the formula must be modified by the addition of potassium bromid. q. s. A small amount is sufficient.

This was given in four cases of epilepsy. The first was that of a young man aged 22. He had had "fits" from childhood. Had been on the Island for a year, and during eight months had had no trouble. Soon after leaving the Island hospital, and one month before coming to the dispensary, the convulsions returned. They came on every other day or every day, sometimes several times a day. For three months he was treated with bromides, chloral, oxide of zinc, conium, ergot, etc. Temporary relief was given, the oxide of zinc being most efficient. Aug. 12th, while he was having fits every day he was put upon pure bromine, m. 1, t. i. d. Aug. 22d, he had had no fits since taking the medicine. The medicine gave out Aug. 27th, and two days later he had a fit. Medicine renewed. Patient never returned. The bromine produced a longer relief from convulsions than any other drug prescribed.

The second case was that of a single woman aged 31, who had had epileptic seizures ever since she began menstruating 16 years before. They came on generally at the time of the menstrual period. Of late she had been having two a month. She was put on bromine and took it for a fortnight. No especial change in her condition was noticed.

A third case was that of a young man aged 19, who had been treated with bromides, etc., with no very good results. No especial change was produced by the use of bromine.

A fourth case was that of a young man aged 18, who had had fits for 8 or 10 years, and had been under all kinds of treatment. Of late nitrite of amyl had done the most good. Bromine seemed to lessen the intensity of the attacks.

In none of the four cases, except the last, was the drug given for a long time—not over three or four weeks.

A case presenting the symptoms described by Beard as sexual

neurasthenia was given the drug. The bromides had acted very well, making him more comfortable, but they produced so much acne and occasionally sleepiness, that bromine was substituted. The patient could not take more than two drops a day. It produced no effect whatever. Bromine is extremely disagreeable to take, and seems to be of very doubtful utility, though having some controlling action on epileptic fits.

Choral in chorea. A young girl in the service of Dr. Wooster Beach, suffered from a very obstinate chorea, with disturbed sleep. The usual remedies and tonics produced no relief. The patient was put upon chloral, with immediate subsidence of the bad symptoms and speedy progress to recovery.

A second case, a patient of Dr. Dana's, a girl of 5, anæmic but well nourished, was treated with arsenic tonics, cod-liver oil, etc., for two months, the disease not improving, but rather the contrary. The child was very restless, awkward, slept poorly, temper perverse, articulation impaired. Chloral produced considerable immediate improvement.

A third case was that of a girl of 15, who had had the disease for two or three weeks when seen. While under arsenic she grew worse and could hardly walk without stumbling. Sleep was disturbed. The addition of chloral at night to the regular use of arsenic was followed by improvement in sleep and in the other symptoms also.

Post-hemiplegic athetosis. Patient is a widow aged 60. Thinks her husband gave her syphilis 30 years ago. Fifteen years ago had a sudden attack of hemiplegia involving left side. Recovered in a few weeks and was able to walk about. Two years later fell down stairs and was laid up in bed for a month. Recovered. Five or six years ago symptoms of athetosis came on. These as now shown consist of slow, painful, clonic, contractions in muscles of left hand, arm, leg, and foot, most severe in upper extremity. The fingers are strongly extended and spread out, the forearm extended, and arm drawn down and back. The foot is extended, the leg flexed, and the thigh drawn back. The spasm is slow and lasts several seconds, then relaxes. There is blindness of the left eye from atrophy of optic nerve; also external strabismus, and left facial paresis; no anæsthesia; Faradic reactions good; no muscular hypertrophy. Treatment did no permanent good.

DEPARMENT OF NERVOUS DISEASES, METROPOLITAN THROAT HOSPITAL.

SERVICE OF WM. J. MORTON, M.D.

Aborted epilepsy. V. M., 46. Has for a year had occasional attacks of vertigo and mental confusion. Staggers along street like a drunken man, does not fall or lose consciousness. Of late has had the attacks almost daily. Exertion brings them on. Recently had a "fit" while lying in bed. Lost consciousness and had convulsions. During the attacks of vertigo, says that his face reddens. Patient very rapidly improved under bromide of sodium.

Glonoin in epilepsy has been used at this and at Dr. Hammond's clinic at the University College, with results in some cases nearly equal to those obtained by the bromides.

Bell's palsy. Sarah A., aged 45. Had suffered pain in right side of head, with mental confusion, for a week. Then, July 26th, right face became suddenly paralyzed. Pain diminished. When seen July 28th, patient cannot close right eye. Uvula straight. Static electricity (sparks) applied. Aug. 9th, much better. Sept. 13th, discharged well.

Paralysis agitans—subcutaneous nerve-stretching. G. H., German, 65. Left arm began to shake one year ago, then right hand and arm; legs became affected slightly, head not at all. Shakes at night in bed and sleeps badly. Legs stiff and bent at knees. Head drawn forward with fixed look. Pain in back, arms, and legs. Is easily excited and nervous. Subcutaneous nerve-stretching every night. This made his joints more limber and his gait better. He shakes less. Tonics and laxative pill given.

Sparks in sciatica. H. Meyer, German, brewer, 34. Had had severe attack of sciatica lasting three weeks. Powerful sparks from static electrical battery were applied high up. Two applications relieved him entirely. It is the experience in this dispensary that no other single agent gives so much and so rapid relief in sciatica as static electricity.

C. L. DANA, M.D.

NEW YORK NEUROLOGICAL SOCIETY.

REPORT OF THE PROCEEDINGS OF THE SOCIETY AT ITS STATED MEETINGS IN FEBRUARY AND MARCH AND ITS ANNUAL MEETING IN APRIL, 1882.

Stated Meeting, February 2, 1882.

Dr. LANDON CARTER GRAY, President *pro tem.*, in the Chair.

The paper of the evening was read by Dr. WM. J. MORTON, and was entitled "A contribution to the subject of nerve-stretching in lateral sclerosis, paralysis agitans, athetosis, chronic transverse myelitis, sciatica, and reflex epilepsy."

[This paper appeared in full in the last number of this JOURNAL.]

Discussion.

The discussion was opened by Dr. JOHN WYETH, who related the history of a case of locomotor ataxia in which he had stretched the sciatic nerve. The patient had had the disease for six or seven years, and had suffered intense pain. The operation was done as had been described by Dr. Morton, and both nerves were stretched. In the left leg the nerve was stretched and pulled much more severely than in the right. The result was that in the left limb the pains ceased entirely, and did not return for three months, when they were much lighter, while in the right they recurred. There was no improvement in the gait or in co-ordination. The patient was in bed for ten days after the operation.

Dr. A. P. GERSTER reported a case of nerve-stretching in locomotor ataxia. The patient was a German, aged forty-five, a carpenter, who came to the German Hospital, September 19, 1881. The characteristic symptoms of the disease were present: absence of tendon reflex, ataxic gait, anæsthesia of feet and legs, fulgurating pains which caused great distress. Rectal and vesical action normal. Both sciatic nerves were stretched vigorously, the leg being lifted up by the nerve. The wound healed very sluggishly,

as though there was some trophic disturbance. The sutures came away, the edges not uniting, yet there was no good suppuration, but only a kind of serous discharge.

The result of the operation was: no improvement (or increase) in ataxic gait or anæsthesia, but considerable relief from the pains, up to four months after the operation.

Dr. G. M. BEARD asked if nerve-stretching had been used in the treatment of writer's cramp. He thought that it might prove useful in that disease, and would not hesitate to try it. He considered nerve-stretching to be a form of mechanical treatment which did not differ in kind from those formerly used, such as acupuncture, electro-puncture, electricity, massage, etc. The speaker believed that nerve-stretching would take its place permanently in the therapeutics of nervous diseases.

Dr. WM. A. HAMMOND said that he had stretched two sciatic nerves in the same person for locomotor ataxia. The patient, a lady, was unable to walk, and the pains were simply atrocious. The symptoms were confined to the lower extremities. At times there was both rectal and vesical sphincter paralysis. He stretched both sciatic nerves vigorously. As in all his other cases (now seven or eight), the wound healed by first intention, though he had not used any antiseptic treatment. There was no improvement, either in locomotion or in the pains. In sciatica the speaker had stretched the nerve in a patient with immediate favorable result. The case was a very bad one. He had repeatedly stretched the nerve by flexing the thigh upon the pelvis, keeping the leg perfectly straight. He found it necessary, however, to give ether, for the operation was a painful one, and, besides, there was antagonistic effort on the part of the patient. By this method the speaker thought that the sciatic could be stretched, as well as by cutting down upon it, and, in his opinion, the former method would supplant the latter in most cases. In large and fat men the cutting operation, however, would probably still have to be performed.

The speaker referred to Dr. Morton's reported case of lateral sclerosis, which he had seen, and thought the result a remarkable one. [The patient was exhibited to the Society.]

Dr. C. L. DANA related an experiment performed by him to test the question whether stretching the sciatic moves the cord, as is asserted by some. A dog weighing twelve pounds, which had been dead twenty hours, was taken, the skull-cap removed, and one sciatic nerve exposed and pulled upon strongly. There

was no movement of any part of the brain. The brain was removed and the medulla exposed, both sciatics were found and both pulled upon powerfully and simultaneously, but not the slightest movement could be obtained. The spinal cord was then exposed in the dorsal region. The most powerful traction failed to move the cord either when lying in the canal, or when raised out of it upon a knife-handle. The cord was cut in the lower dorsal region, but no movement of the lower segment could be obtained. The tissues were not softened.

The speaker said that no positive inferences could be drawn from such an experiment. Still, if powerful traction (over seventy-five pounds) upon both sciatics of a twelve-pound dog failed to move the cord appreciably, it might be inferred that ordinary nerve-stretching in human beings did not move it.

[Subsequent attempts upon a human cadaver and upon a camel failed to move the medulla or cord.]

Dr. WM. A. HAMMOND said that while the last speaker's observation was no doubt correct, it did not prove that some of the fibres in the cord connecting with the sciatic were not moved. The motion might be slight and unappreciable.

Dr. WYETH asked what was the mortality rate from the operation.

Dr. W. J. MORTON said that, so far, five fatal cases had been reported. Of these three were indistinctly attributable to the operation, while two were distinctly attributable to surgical procedures.

Stated Meeting, March 1, 1882.

Dr. T. A. MCBRIDE, President, in the chair.

The paper of the evening was read by Dr. W. R. BIRDSALL, and was entitled "A contribution to the pathological anatomy of lead-poisoning."

The speaker said that cases of lead-paralysis in which a *post mortem* was obtained were so rare, and the pathology of the disease was so unsettled, that he ventured to offer the present contribution to the subject.

The clinical history of a patient suffering with lead-palsy was then given. The disease had lasted over two years, and showed itself with no unusual symptoms. (The facts regarding the paralysis are given in the discussion.) The patient finally died. A *post mortem* was obtained, but under such difficulties that it was not so complete as could be wished.

The muscles were not examined, but they were not atrophied.

There was no change of importance in the brain or its membranes.

The changes were most marked in the spinal cord, from the decussation of the pyramids to the middle of the cervical enlargement. Below this point they gradually became less decided. The changes in this section were greatest in the gray matter about 4 ctm. below the decussation of the pyramids. At this part for a distance of 2 ctm. hardening did not take place well. Here there was increased vascularity. Many lymphoid cells were also present. The cells of the anterior horns were remarkably large. The only approach to a pathological change in them was in the upper cervical region. Here the outer of the two cell-groups of the anterior horns seemed to be affected, the cells being small and indistinct. The largest cells, in most cases, were normally developed. There were no positive changes in the fibres of the anterior roots, although in some cases there was an abnormal vascularity, and lymphoid bodies were seen lying between the fibres to a greater extent than usual. As regards the white columns, there was some thickening of the septa near the gray matter, and some spots of sclerosis in the antero-lateral columns. There was also a very slight appearance of beginning sclerosis in the columns of Goll. On the whole the speaker was inclined to consider the changes those of a very mild grade of myelitis.

A summary of the literature upon the subject of the pathological anatomy of lead-poisoning was then given. The observations and views of Bernardt, Vulpian, Friedlander, Zenker, Monokau, Morritz, Seguin, Bromwell, and others were given.

Discussion.

The paper being open for discussion, Dr. E. C. Spitzka, in response to a question, was told that the paralysis was bilateral, that it affected the upper extensors of the fingers chiefly, but also the index finger and the thumb. The deltoid was not paralyzed. The right side was rather the more affected. The atrophy of the cell-groups was quite symmetrical. The cells of the anterior horns were not smaller in size than normal, but the large cells seemed to be fewer in number, while the number of small cells was apparently increased. There were certainly many healthy cells, and Dr. Birdsall could not say positively that there was any sclerosis as regards the columns of Goll. There was an increased vascu-

larity of that part. This increased vascularity and an increase in the lymphoid elements were about the only changes observable.

Dr. SPITZKA said that the localization of the atrophy interested him as a possible confirmation of a view previously advanced by himself: that the cell-groups of the outer part of the anterior horns innervated the extensors of the arm, and those of the inner part the flexors. Some of the reasons for this view based on comparative anatomy, were given.

Dr. M. PUTNAM-JACOBI discussed the question of the mode of action of the lead.

It seemed to her a fact of very great interest that the three metals, lead, silver, and mercury had the common effect, in certain cases, of producing paralysis and other indications of a direct impairment in the nutrition of the nervous tissue. This was particularly the case with lead, in the use of which, so far as she knew, no symptoms of excitement were ever observed, and in which almost all the pathological changes might be interpreted as due to interference with nutrition. The vascularity of the nerve-centres and cell-groups, described by Dr. Birdsall, might indicate a defective nutrition, since it showed, perhaps, a slackening of the blood-current. This question, whether the action of the three metals mentioned was not primarily upon the nutrition, seemed of much importance in view of their extensive use medicinally.

The speaker asked whether there were any microscopical changes noted in the muscles of the intestinal walls; such as might explain the colic in lead-poisoning.

Dr. BIRDSALL said that no examination had been made by himself and he knew of no records of any. Dr. Birdsall exhibited microscopic sections of the cord.

Dr. SPITZKA, after examining them, said that they did not, in his opinion, show the existence of myelitis. He thought the columns of Goll were quite normal.

Dr. BIRDSALL, in reply, reiterated his opinion that there were probably, slight inflammatory changes. He had at first been in doubt, but more careful examination convinced him that the cord was not normal. There was a spot of softening in the cord, and this, he admitted, was very likely *post mortem.* But some previous pathological change was the primary cause. As regards the question, whether the lesion in lead-paralysis was primarily in the cord or in the muscles, he acknowledged that there were many cases which seemed to show that the muscles were chiefly and first affected. Still he believed that the opposite view was not without support, and was, on the whole, the more reasonable one.

Annual Meeting, April 4, 1882.

Dr. T. A. McBride, President, in the chair. The annual election of officers replaced the usual papers and discussion.

The following officers were elected.—*President*, E. C. Spitzka, M.D.; *First Vice-President*, William J. Morton, M.D.; *Second Vice-President*, A. D. Rockwell, M.D.; *Recording Secretary*, Graeme M. Hammond, M.D.; *Corresponding Secretary*, Mary Putnam Jacobi, M.D.; *Treasurer*, E. C. Harwood, M.D.; *Councillors*, W. R. Birdsall, M.D., E. C. Seguin, M.D., T. A. McBride, M.D., C. L. Dana, M.D., L. C. Gray, M.D.

NEW YORK MEDICO-LEGAL SOCIETY.

Stated Meeting, February 1, 1882.

CLARK BELL, Esq., President, in the chair.

Abstract of the Fourth Inaugural Address by Clark Bell, Esq., on assuming the Presidency of the Society.

Gentlemen:—The Medico-Legal Society has for some years engaged my careful thought, earnest labor, and its prosperity and success been worthy my constant endeavor.

When first called to its chair in the fall of 1872, though small in numbers, there were a few who so ably seconded my efforts that 148 new members were added to the roll the first year. The second year the roll numbered 348 names, and at the close of my third term the roll exceeded 400 names. If I understand correctly that sentiment within this Society which has resulted in my re-election after these six intervening years, it was that certain practical changes and reforms were believed to be needed for the welfare and prosperity of the science of medical jurisprudence, and the growth and importance of the Society, which it was hoped and believed I might be useful in introducing.

This Society has regarded it always its duty to take a deep interest in matters of

LEGISLATION,

when it affected questions connected with science. The most noticeable and urgent subjects which have recently engaged its attention are:

1. In regard to experts, expert testimony, and the proper regulation and conduct of the defence of insanity in criminal trials.

2. Proposed modifications and reforms in the law regarding the office of coroner, and suitable provisions for preliminary proceedings in criminal cases in lieu of those now conducted by coroners.

3. The question of health in our public schools, and the proper medical supervision over all public schools by competent medical men.

The science of medical jurisprudence is receiving increasing attention, not alone from the professions represented in this body, but on account of recent events the public mind has been called to some remarkable phases of our present legal status in a most extraordinary manner.

The assassination of President Garfield, the extraordinary spectacle and scenes at the trial of the assassin, as delineated by the public press, have aroused popular interest and attention to the defects of the present system of "expert testimony" and the defence of insanity, which cannot fail to be useful for beneficent changes and legislation on these all-important and widely misunderstood subjects. This trial has created a profound sensation throughout the civilized world, while the conduct of the trial and the evidence of the medical witnesses have, as it seems to me, demonstrated the necessity of a change in the administration of justice in criminal trials as one of the most pressing needs of the hour.

The records of this Society will show its past relations to these exciting questions. Both legal and medical gentlemen have well defined existing laws and their administration here, and the true tests to be applied, to determine the question of insanity and responsibility in doubtful cases. The public execration and detestation of the crime of Guiteau extends now in so marked a degree to the prisoner, whose conduct on the trial has so intensified this sentiment in all minds, that it is hardly safe to regard the result as of any particular moment or force in the settlement of the question, further than furnishing an unanswerable reason for a substantial change in existing systems.

From a purely scientific point of view, little reliance can be placed upon the verdict of the jury empanelled in that case upon the question involved—insanity or responsibility,—if insanity was conceded. The verdict under the charge will receive general popular approval, now that the public mind will not listen to any extenuation of the crime or feel one spark of pity for the assassin. The questions still remain: Was Guiteau insane?—on which the jury do not pass—and, if insane, was he responsible for his acts?—which may or may not have been the opinion of the jury. It may be urged that the verdict, "guilty as indicted," as a logical sequence, is a finding that Guiteau was not insane; but under the

charge, if the jury believe him insane, yet with a sufficient knowledge in regard to the nature and consequences of his acts to discriminate between right and wrong regarding it, their verdict would be sustained by the courts.

It is a matter of profound regret, for the credit of the American name and the verdict of history, that we could not have had all doubt set at rest as to the mental condition and responsibility of this unfortunate wretch by such an examination and tests as would have been made in France or Germany by a Tardieu in his day, a Caspar, or either of their confreres, who are there called, not as the paid witness of either side, but as the scientific, educated, independent medical witness and sworn public official, in the higher name of science, of justice, and of law.

If the government had taken the authorized legal steps before the trial to inquire into the sanity of the assassin on the fatal day, by the usual inquisition, we might have come to an intelligent conclusion as to his mental condition; we certainly would have been spared on that inquisition the scenes that have scandalized the public mind upon the trial.

It is perfectly safe to say that this remarkable case will demonstrate irresistibly the necessity of adopting some system which will spare the country a repetition of these events that have excited the astonishment of our countrymen, and indeed of all thoughtful minds throughout the world.

Science in its Relations to Medical Jurisprudence.—Every educated physician is not a competent expert upon insanity or mental diseases, or on poisons, or indeed any question requiring expert evidence. A higher test than hitherto made should be placed on the question of who are experts, and who are qualified to testify when special knowledge is desired. The wiser men grow in science, the more certainly do they frequently come to the knowledge of how little they really know of subjects which the neophyte who has read a good deal fancies he understands fully, and about which he often knows little. The professional man should have the courage, the breadth, and the wisdom to say "I do not know" in doubtful cases, rather than to state what his idea is, and to make his ideas or theories or beliefs stand as evidence of a scientific fact. Much of what seems irreconcilable difference in the testimony of medical experts grows from a want of knowledge in the witness of the questions concerning which he swears, often positively.

It should be the laudable object of this Society to elevate the

standard of medical evidence, to define the true status of medical experts, and to adopt such tests as would prevent men from coming to the stand as experts, who had not the knowledge, experience, or qualification for the position.

Appeal.—The Medico-Legal Society of New York has voluntarily assumed the labor of organizing and maintaining a complete library of all accessible works upon medical jurisprudence, especially in the English, French, and German tongues.

This work, inaugurated in 1872, was creditably commenced, and it only remains to call the attention of members of the professions of law and medicine throughout the United States to the merits of this enterprise to insure its early completion.

There is besides this library only one collection in this country of any note—the library of the Surgeon-General's office at Washington—under the intelligent and enterprising management of Dr. J. S. Billings. This library is now by far the best, and aside from that of this Society, the only one in this country. It has been accumulated mainly since the year 1872.

The enormous value of such a collection to both professions, accessible for use, cannot be well overestimated. Such a library to be called complete should contain, besides all known works on the subject :

1. The proceedings of all the medical societies of the various States, because their proceedings contain, in many instances, papers and discussions of the highest value upon these topics, which can only be reached through these very published transactions.

2. The reports of the various asylums for the several States of the Union, as well as those of England and the continental countries, and the reports of legislative committees or State officials upon the subject of the insane, insane asylums, or kindred topics.

3. Those papers, pamphlets, or publications contributed by either profession, which, published by societies or individuals, are inaccessible to the student or the practitioner except through the aid of such a library.

This Society proposes to make it the duty of each member to contribute one volume each year to the library, or its equivalent in pamphlets. Contributions in money also will be received and invested by the Library Committee in volumes and works obtained by correspondence with all the dealers and librarians of the world.

If money is given, it will be expended for volumes on which the donor's name will be inscribed, and the annual statement of the committee will announce the names of all donors, both in cash and volumes, with the titles of such volumes and pamphlets as are contributed.

It is proposed that in case a contribution is made by a person not a member, but accepted by the Library Committee as a contributor, that such contributor shall have the right of access to the library for reference, under such rules and regulations as the Society shall, from time to time, establish.

The library is at present at the Mott Memorial Hall, through the courtesy of Dr. A. B. Mott.

The aims and claims of this enterprise are respectfully commended to the various librarians at home and abroad, who are invited to exchange works or pamphlets on these subjects for the publication of this Society, which can only thus be obtained.

The undersigned calls upon the public press of the country to aid this movement by publishing this appeal, so as to bring the work to the public notice.

Contributions or communications concerning the library can be made through any member of the Library Committee to Mr. R. S. Guernsey, Chairman of the Library Committee, 150 Broadway, or to Mr. Clark Bell, No. 128 Broadway, New York City.

The recommendations of the inaugural address, suggesting the appointment of various committees, were approved by the Society.

The following committees were authorized by the vote of the Society at its February meeting, in adopting certain recommendations of the inaugural address.

Committee on the Library.—R. S. Guernsey, Esq., Chairman, Wm. A Hammond, M.D., Fordyce Barker, M.D., Frank P. Foster, M.D., Hon. Elbridge T. Gerry, Hon. David Dudley Field, Hon. Geo. H. Yeaman.

Committee on Proposed Changes in Law Regarding Coroners.—Hon. D. C. Calvin, Chairman, Wooster Beach, M.D., J. G. Johnson, M.D., Prof. C. A. Doremus, Austin Abbott, Esq., A. B. Mott, M.D., Geo. M. Beard, M.D.

Committee on Proposed Changes in the Constitution and By-Laws, —Hon. B. A. Willis, Chairman, Wm. M. Fleming, M.D., Lewis A. Sayre, M.D., E. C. Spitzka, M.D., Gen. Geo. W. Palmer, Judge Meyer S. Isaacs, O. H. Palmer, Esq.

Committee on Plans for Increasing the Usefulness of the Society, and Best Methods of Work.—Wm A. Hammond, Chairman, J. Clarke Thomas, M.D., Stephen Smith, M.D., Jacob F. Miller, Esq., J. W. Wright, M.D., Clinton Wagner, M.D., Charles P. Crosby, Esq.

Committee on Sanitary Supervision of the Public Schools.—R. J. O'Sullivan, M.D., Chairman, Hon. Geo. H. Yeaman, Hon. A. G. Hull, Prof. R. Ogden Doremus, T. B. Wakeman, Esq., John A. Taylor, Esq., Ralph L. Parsons, M.D.

Stated Meeting, March 1, 1882.

CLARK BELL, Esq., President, in the chair.

The paper of the evening was read by Dr. WILLIAM A. HAMMOND, and was entitled "Reasoning mania: Its medical and medico-legal relations, with special reference to the case of Charles J. Guiteau."

[The paper was published in the January number of this JOURNAL.]

The Discussion.

Dr. R. L. PARSONS said that the form of insanity described by Dr. Hammond was well recognized by writers, and was on a basis equally strong with that of any other form of mental disease. He agreed with the reader of the paper that in every case of emotional insanity the intellect was also involved. The mind is a unit and its faculties interdependent. He said that cases of general paralysis often appeared at first to be cases of emotional insanity.

As regards motive, the speaker said that there were very few insane who were not governed more or less by motives, much as sane persons are. The government and order of asylums depend on this. They are not governed by the *same* motives as the sane however. The insane are, therefore, responsible, but in a narrow and peculiar sense.

With regard to the legal punishment of the insane, the speaker was not in accord with Dr. Hammond. The insane are not influenced by such motives as the sane are, and they should not be punished in the same way. It was said that their punishment might be required to keep others from crime. But he did not think that it could act in that way. The insane would not be able to feel the force of such examples.

In cases of trial the verdict should be on the question whether the person is sane or not, and on that alone.

Mr. G. H. YEAMAN said that to lawyers who were not often so deeply versed in insanity and physiology, there seemed to be a good deal of unnecessary refinement of terms among medical men. He did not see what was gained by using the term "reasoning mania." He had always thought that a lunatic was a man bereft of reason. He knew that there might be cases of partial insanity, just as a handkerchief may lose part of its whiteness. One may call such persons reasoning maniacs, but we do not gain any thing. The speaker thoroughly agreed with the view that Guiteau was not a man of perfectly sound mind, but he was amenable to the law because he knew the act he was doing was wrong. The speaker believed that the

OLD TEST OF RESPONSIBILITY,

which excused a man when he did not know right from wrong, was the test which would have to be kept and used in criminal courts. He thought that in persons who know the difference between right and wrong, a knowledge that they would be punished if they did wrong would have a tendency to prevent them from committing crime.

The speaker, in conclusion, repeated his objection to the term reasoning mania and to the unnecessary burden of names which the medical profession put on science.

Dr. E. C. SPITZKA said that he had been greatly interested in the question of Guiteau's mental condition, and had studied his case carefully. He had been invited to testify as an expert by counsel for both sides and had refused. He had learned several things from his experience with the Guiteau trial. He had learned that a medical man could be compelled to go three hundred miles, leaving his practice, going for a fee that would not pay his travelling expenses. He had also learned another thing that might interest all of the audience. There had been a prevailing delusion that an expert in insanity was a man who had made profound study of the anatomy, physiology, and pathology of the nervous system. In this, however, it seems there was a mistake. At Washington he found a

RECEIPT FOR MAKING EXPERTS

in insanity. Take a gentleman who has a line of medical practice

as far from insanity as could well be. Place him on board the cars to Washington with some lawyers, who put him through a series of questions. Then let him go on the witness-stand and answer to a set of carefully pre-arranged questions. Such an expert as this went on the witness-stand at Washington and coolly declared that there was no such thing as moral insanity. Yet in Bucknill and Tuke's work, which this gentleman quoted as a standard treatise on insanity, there are many references to moral insanity, and its existence is maintained there.

The speaker had made a careful examination and study of the mental state of Guiteau. He found him full of insanity.

The speaker referred to some of the facts which illustrated Guiteau's mental peculiarities. The term reasoning mania, used by Dr. Hammond, he thought was a bad one. He spoke of partial insanity, and said that there was no insanity of a single faculty of the mind, but there were some forms of insanity in which one part is much more affected than others. There were certain conditions in which the intellect was deranged, leaving the rest of the mind almost entirely sound ; and, on the other hand, there were cases in which it is scarcely at all affected. The most proper term for Guiteau's insanity was a German one, and, as nearly as may be, is translated original insanity.

The speaker thought that Guiteau was born insane. His history was full of insanity. He (Guiteau) did not learn to speak until he was six years of age. He had a slight defect of speech, his father was unquestionably a lunatic, his mother was sick when Guiteau was born, and she had other children which were deformed or sickly. He gave some other facts regarding the history of Guiteau and then read a case of somewhat similar nature, which was reported in *Westphal's Archivs*. The case described was that of a man who had been born with a bright intellect, but absolutely no moral sense. He developed homicidal tendencies and was eventually confined in a lunatic asylum.

With regard to the question of the

RESPONSIBILITY OF GUITEAU,

he did not wish to speak positively, but he would be very slow to endorse the position of Dr. Hammond. The question here, he thought, was not one of retribution or punishment, but whether Guiteau was insane. The punishment of Guiteau or of lunatics he did not think would lessen the number of crimes per-

formed by them. After the murder of Garfield there was a number of attempts on the part of "cranks" to murder other prominent persons.

Dr. G. M. BEARD said that he agreed, for the most part, with what Dr. Spitzka had said, and with most of Dr. Hammond's views. He did not like the term reasoning mania, since all mania is reasoning mania, and the expression is, therefore, bad from the outset. He preferred the term affective monomania, the term used by Esquirol. It seemed to him that if we simply used the terms mania, partial mania, monomania, etc., we could get rid of all the trouble that Mr. Yeaman had referred to.

There is, strictly speaking, no mania that is limited to one faculty of the mind alone. He represented the term general mania by the hand, then the fingers would represent the different forms of monomania or partial insanity. He believed in the assertion that had been made that the mind was a unit. It was not possible to have any sharp demarcation of the faculties, and while there might be partial insanity affecting certain faculties chiefly, yet there is no form of insanity which affects one faculty absolutely alone.

We cannot have, therefore, a purely moral insanity. He would use the term monomania, however, because it is a familiar one, and indicates the special character of the disease.

In one point he differed entirely and strongly from Dr. Hammond. He held that it would be the greatest disgrace to hang Guiteau that could befall our nation. If he is hung, it would be because he shot a prominent man and had not power or money to defend himself as other insane criminals have had. It would be a return to the spirit of the Middle Ages.

The speaker described the way in which the experts at Washington decided upon the character of the testimony which they would give. They met together in a caucus, discussed the question of Guiteau's insanity, and decided to testify all in one way. The speaker said that he had seen Guiteau, had examined him carefully three times, and had been thoroughly convinced that he was insane. With regard to the punishment of Guiteau he thought that the only way to do it was to say that Guiteau was not insane. It would not do to punish him because he knew the distinction between right and wrong. A great many of the insane know this difference, and if we attempt to punish them on such a ground, great injustice would be done. It was very rare that the insane commit murder without knowing that it is wrong.

Moreover, it is a peculiarity of the insane that he often does the act because he knows it is wrong, and if it were the right and proper thing to do he would never attempt it.

The speaker thought that Guiteau knew the difference between right and wrong, but had a standard of his own which was not that of a sane man.

Dr. E. C. MANN spoke briefly, and agreed in general with the views that Dr. Hammond had expressed. He thought Guiteau was insane. He said that the prognosis in his case was very bad.

Dr. L. C. GRAY said that the principle of the Guiteau trial was an important one, although the question whether Guiteau is hung or not is unimportant. The object of the punishment was to prevent other men from committing crime, and the question is how we can do this in the case of Guiteau. To kill lunatics because they have attempted to kill others is very irrational, if we can get rid of them in any other way. All the forms of insanity which lead to crime, except transitory mania, are acknowledged to be incurable. Hence there would be no injustice in making a law confining insane homicides to asylums for life without power of release or pardon. Thus if we took such cases as Guiteau and consigned them permanently to asylums, it seemed to the speaker that we best solved the question of the punishability of lunatics.

Dr. LEWIS A. SAYRE said that he only wished to refer to the peculiar way in which the Guiteau trial had been conducted. He thought that Guiteau should have been examined by experts before the trial, and if he had been pronounced insane there need have been no trial at all. He should have been committed to an asylum for life, and we would have been spared the disgrace of the past few months.

Dr. HENRY said that he was not an expert in lunacy, but he had learned that gentlemen could be made experts in a few hours, and he thought that he might be induced to become one himself. He rather agreed with the views of Dr. Hammond in regard to the punishability of the insane. He believed in the old English doctrine. If a man committed murder knowing that he was doing wrong and would be punished, then such a person should receive punishment. He referred to the case of Walworth, in which he had been summoned with Dr. Hammond as an expert, and had testified that the man was not insane. He had, after the release of the prisoner, met him again, and the ex-pris-

oner had expressed his opinion that he (Dr. Henry) was a very good expert.

The President of the Society said that he would close the discussion with a few remarks, and referred to the opinions in regard to the responsibility given by the fifteen judges to Parliament.

Mr. SCOVILLE asked permission to make some remarks. He referred at once to the question of the

PUNISHABILITY AND RESPONSIBILITY OF THE INSANE.

He said that if the test laid down by the President and Dr. Hammond were carried out, three fourths of all the persons who are committed to lunatic asylums for crime would have to be hung, because three-fourths of the insane know the difference between right and wrong when they commit a crime. He thought that until the law was prepared to take such a radical step it could not afford to take such a position as Dr. Hammond's. If the ordinary legal test, as it now stands, was less unjust, it was because it could almost always be modified in special cases. He gave an example of an English judge who had recently tried a case in which the prisoner, though undoubtedly insane, knew the difference between right and wrong, and in which the judge modified his charge so that the jury brought in the verdict "not guilty on the ground of insanity." The man in this case had seized his sister, thrown her down, and attempted to cut her throat with a knife. He said that he had to do it because he wanted to be hung himself, and he knew it was wrong, and knew he would be punished if he committed the act. Now, in such a case, the man undoubtedly appreciated the nature of his act, and yet was just as undoubtedly insane. The speaker said that there were many other instances of a similar character, and it seemed to him unjust that any such doctrine as that upheld by the English law should continue to prevail. He referred to the fact that the doctrine had not been followed in many cases in this country. He said that he did not speak from any personal feeling, but that it was a matter of general importance to the whole country.

Dr. HAMMOND said, in conclusion, that in reply to Mr. Yeaman he would have to say that he was not responsible for the term

REASONING MANIA.

It had been used in the science of insanity for many years. Many medical terms were bad; but he did not wish to take the

responsibility of changing them. He thought the term was a good one. It had a different meaning from the term monomania. In regard to the responsibility and punishability of the insane, he said that all laws are made for the protection of society and have no other purpose whatever. They are not made for purposes of abstract justice, are not based upon the principles of abstract justice, but they are necessary to the protection of society. Now how are we to protect ourselves from the insane? He had found records of seventy-three criminals, who had been tried for murder, acquitted on the ground of insanity, discharged as cured of that disease, and then had perpetrated other crimes. He thought it all very well if they could be kept in insane asylums, but they must be kept there. At present our laws are not such that we can be sure that insane criminals can be kept in asylums, and we must discuss things as they are, not as they ought to be. As the law now is, an insane murderer can be acquitted on the ground of insanity, sent to an asylum, then discharged by the superintendent in twenty-four hours. If it were possible to keep them imprisoned for life that would be very well, but that is not possible now, so that he thought we should, in certain cases, take away the lives of these lunatics, doing it decently and without any disgrace. A man with a morbid impulse is like a tiger loose in society, and we may treat him very much the same way we would treat such an animal.

There is another point we do not know, whether a man has a morbid impulse or not. He may say he has one; but he may be lying. Nobody will be able to deny it. It may seem to be very cruel that these persons should be punished whether it be just or not. But all legal processes are attended with a certain amount of injustice. If they hang Guiteau injustice is done to his friends and relations. If any person is hung we must necessarily do some injustice to his family by bringing disgrace upon it. With regard to the assertion that the insane are not likely to be influenced by the punishment of a lunatic, he disagreed entirely. The whole government of lunatics in asylums is founded on the fact that a lunatic feels his responsibility and is influenced by rewards and punishment. The cases cited by Dr. Spitzka of the attempts to commit murder or other crimes immediately after Garfield's assassination are not to the point, because they were committed before Guiteau was condemned. We must wait until after Guiteau's punishment to see whether that punishment has any effect on other lunatics. The speaker related several instances

of morbid impulse. He endeavored to show that their possessors were responsible, and that, by making them feel their responsibility they would be restrained.

The Society then adjourned.

Special Meeting, April, 1882.

Discussion of Dr. J. G. Johnson's paper on "Anæsthetics medico-legally considered," with a brief abstract of the paper read at a stated meeting Dec. 7, 1881.

Mankind has in all ages and in all climes sought relief from pain.

Among the Egyptains was an art of producing sleep by inhalation.

Pliny describes a mineral brought from Memphis, which. when pulverized and mixed with sour wine, and applied to a wound, would destroy pain.

Baron Larry, after the battle of Eylau, found in the wounded who required amputations a remarkable insensibility, owing to the intense cold, this being the first use of cold as an anæsthetic.

Of all drugs known to the ancients, mandragora wine undoubtedly was the most potent and efficient. Apulius states that half an ounce of this preparation would render the patient insensible to even the pain of amputation.

But to our country and century is the world indebted for the discovery and application of anæsthetics for the purpose of rendering persons insensible under surgical operations. If America had contributed nothing more than this to the stock of human happiness, the world would owe her an everlasting debt of gratitude. The name of Morton, of Boston, will descend to posterity as benefactor of the human race, the benefaction he has conferred on suffering humanity in the relief of pain being as great a boon as those conferred by those other Americans, Fulton, who first applied the steam-engine to the navigation of vessels, and Whitney, who invented the cotton gin, have been to the material prosperity of the world.

Anstie, a celebrated English authority, has added immensely to the knowledge of the profession on this subject. He experimented on various animals, carrying the chloroform narcosis to death, and he invariably found in every animal that the ano-geni-

tal region was the last to give up its sensitiveness—that by irritating the ano-genital region he could produce a response when all other parts were so thoroughly narcotized that death was impending.

Anstie's precise language at the conclusion of his experiments is of interest: "The first effect on sensation which is noticeable is the removal or mitigation of any pain from which the patient suffers. This is often affected by one or two inspirations only. Evidence of paralysis of skin sensibility, on the other hand, could only be obtained in four patients during the first minute, and in the lower limbs. Before the end of the second minute, however, there was considerable paralysis of the whole skin surface in forty-seven out of fifty patients. The conjunctiva always retained sensibility later than the skin, with certain exceptions, presently to be noticed. In the great majority of instances, however, it was rendered insensitive by the time the contraction of the pupil was well marked (third stage). Certain portions of the skin and subcutaneous tissue, however, retain their sensibility with extraordinary tenacity: these are the matrix of the great toe nail, the margin of the anus, and the whole of the skin of the organs of generation. It is impossible to obliterate their sensibility without pushing chloroformization to a degree which greatly surpasses that required for ordinary purposes. This observation is confirmed by my experience with animals, and its importance cannot be too highly estimated, for it explains the frequency with which death has happened in the course of anæsthesia, induced for the performance of operations for phymosis, evulsion of the toe nail, hemorrhoids, etc. All kinds of fanciful reasons have been given for the fatality of chloroform in such trifling operations, but there is no doubt in my mind that this is the true one." —"Stimulants and Narcotics," by Francis E. Anstie, M.D., M.R.C.P. Philadelphia: Lindsay & Blackiston, 1865.

With this fact demonstrated, as it has frequently been by others since he brought it to the notice of the profession, the explanation of these grave charges made by females of respectability becomes easily enough understood. Those parts conveying sensations after all other parts have had the sensibility overpowered, the pressure of her clothing against the parts, stimulating them as she is struggling under the influence of chloroform, and her being held, naturally convey to her the idea of something wrong, not knowing beforehand that the effect of chloroform will make her struggle and resist, and that she may forcibly be held down.

When it does occur, and this sexual stimulation also occurs, the facts, to her mind, are overwhelming, that the restraint was for the purpose of sexual gratification ; and she testifies as she honestly believes.

Next to deaths in the dentist's chair comes the frequency of deaths from operations for piles and other operations of this kind about the rectum. When we recall the fact of the ano-genital region being the last to give up its sensitiveness we can well understand this result, because the boundary line between danger and death is so slight, that before the anus ceases to respond the patient is across the line of fatal narcosis. Again, the patient is rolled over very frequently for the surgeon's benefit, and thus there is danger of interfering with the abdominal respiration.

The question that was so exhaustively discussed by a former president of this Society, Stephen Rogers, M.D., has been renewed recently in our courts.

Dr. J. V. Quimby of Jersey City was called as a witness in the noted case of the murder of the policeman Richard Smith by his wife's paramour. She claimed that she was asleep in bed with her husband when the murder was committed, hence the blood on her underclothing. She was tried as a *particeps criminis*, the State holding her claim that she was chloroformed in her sleep to be an impossibility. Dr. Quimby was called as a witness. He knew nothing of the possibility of administering chloroform successfully while asleep. He tried it, and found that he successfully chloroformed three persons : one a man, the other two being boys, one of ten, the other of thirteen years of age. He took about seven minutes to chloroform the man. *Transactions of American Medical Association*, 1880.

The experiment has frequently been tried by experts since Dr. Rogers' paper, and it has been found that with children it can be done by a skilful hand after a little practice ; but with adults it is a matter of great difficulty, and unless the person who uses the chloroform is an expert, it is an utter impossibility.

For the dentist's chair nitrous oxide holds pre-eminence on account of the quick return to consciousness ; yet eight deaths from its use are already published. The same rule as to reclining posture and loose dress should be followed as with chloroform. It does also stimulate the sexual function of both sexes ; and the same precaution should also be observed to have third parties present.

One of the deaths from nitrous oxide was an English physician,

and it was administered by his own dentist, who agreed to make him snore before commencing. The administrator should never take his direction from the patient, but use his own enlightened judgment as to what is best for that patient.

Numerous other anæsthetics have been brought forward for public favor, but they have not yet passed beyond the region of experiment.

The following medico-legal points were made :

1. Anæsthetics do stimulate the sexual functions ; the ano-genital region is the last to give up its sensitiveness. Charges made by females under the influence of an anæsthetic should be received as the testimony of an insane person is. It cannot be rejected ; but the *corpus delicti aliunde* rule should be insisted on. Dentists or surgeons who do not protect themselves by having a third person present do not merit much sympathy.

2. Death from administration of chloroform after a felonious assault, unless the wounding was an inevitably fatal one, reduces the crime of the prisoner from murder to a felonious assault.

3. The surgeon has no right to use chloroform to detect crime against the will of the criminal.

4. The army surgeon has the right to use chloroform to detect malingerers.

5. The medical expert, notwithstanding he is sent by order of court, has no right to administer an anæsthetic against the wish of the plaintiff in a personal damage suit, to detect fraud.

6. Gross violations of the well-known rules of administering anæsthetics, life being lost thereby, will subject the violator to a trial on the charge of manslaughter.

7. A surgeon allowing an untrained medical student to administer anæsthetics, and life being thereby lost, will subject the surgeon himself to a suit for damages. What he does through his agent he does himself.

8. The physician who administers an anæsthetic should attend to that part of the work and nothing else. He should have carefully examined the heart and lungs beforehand. He should have the patient in the reclining position, with his clothes loose, so as not to interfere with respiration ; should have his rat-tooth forceps, nitrate of amyl, and ammonia, and know their uses, and when to use them and artificial respiration.

9. In operations on the ano-genital region and the evulsion of the toe nail, complete loss of sensation in these parts should never be allowed, and no operation on these parts at all should

be had under an anæsthetic unless by the approval of a full consultation, who have a knowledge of the dangers.

10. Chloroform cannot be administered to persons who are asleep without waking them, by a person who is not an expert. Experts themselves, with the utmost care, fail more often than they succeed in chloroforming adults in their sleep.

Another question I should have discussed should time have permitted, is whether a physician has the right to administer anæsthetics to mitigate death agonies. Take hydrophobia, for instance, when death is inevitable ; when the paroxysms of pain are frightful ; when the danger to the surgeon in the administration in the ordinary way is extreme. Has he any right to alleviate this suffering, when the patient may pass away suddenly from the chloroform? A few years ago, a clergyman was convicted of murder in the second degree in England. He was a missionary among the poor in London, and when he found them with cancer and other incurable diseases, and without the means to obtain necessaries for their comfort, at the sick person's request he would administer a dose of morphia sufficient to carry them off, and he was transported for life as a convict for thus relieving incurable suffering. Would the physician who intentionally administered chloroform enough to a hydrophobic patient to cut short his suffering come under the same rule ?

Discussion on Dr. Johnson's Paper.

Dr. FINNELL opened the discussion. Referring to the question of the administration of chloroform without the patient's knowledge, he expressed the belief that this was impossible.

Dr. GIRDNER argued at some length against the possibility of anæsthetizing a sleeping subject without awakening him. He related the result of some experiments lately instituted by himself with a view of testing this question, and stated that in each instance the subject awoke with a slight cough and indications of alarm.

Dr. MORTON being called upon by the Chair for remarks, thanked the reader of the paper for the graceful allusion to his father's services to humanity in giving to the world the discovery of practical anæsthesia.

Any exhaustive discussion of the paper would be beyond the limits of the time and patience of the Society, and he would therefore confine himself to one or two points. The reader apparently

used the term chloroform in his paper in a sense synonymous with anæsthetics—as if this agent were that one most employed. This was a little misleading, for chloroform is but very little used in this country; and in England and on the Continent there has been, on account of its danger, and the decided reports of scientific societies against it, an enormous decrease in the frequency of its use. The choice of an anæsthetic seemed to the speaker perhaps the most important medico-legal point after all. The present year, 1882, begins with an appalling list of deaths from chloroform. At the same time severe expressions of condemnation of its use are frequent. Indeed it is always a "toss up" with death when we use chloroform, and it is not carelessness in administration that kills—it is chloroform. Speaking of its use, a distinguished surgeon says: "It is criminal and it is unscientific, and so much so as to justify the stern interference of the law." Since the relative safety of ether might be considered demonstrated he hardly saw why chloroform was used. True, chloroform had advantages in agreeableness and amount. As to rapidity there was little difference to be seen in the practice of surgeons. Ether, on the other hand, has a somewhat disagreeable smell—but, as some writer has remarked, which is the more disagreeable, the unpleasant smell of ether or the corpse from chloroform? Chloroform, according to statistics, and we all know how many deaths are not recorded, is stated to be eight times more dangerous than ether. Richardson places the death rate from chloroform at 1 in 2,500; Andrews, that from ether at 1 in 43,000. Chloroformists are blind to the weight of scientific evidence against this agent.

The Royal Medical and Chirurgical Society of England, about 1872, adopted a report that ether was less dangerous than chloroform; this they reiterated in 1874, and so recently as 1880 a distinguished committee of the British Medical Association, after occupying three years in exhaustive investigation, states that "as regards comparative danger the three anæsthetics may be arranged in the following order: chloroform, ethidene, ether." "The advantages which chloroform possesses over ether" * * * "are more than counterbalanced by its additional dangers."

At St. George's Hospital in London the report in 1875 was "no anxiety with ether." Prof. Schiff, of Florence, regards chloroform deaths as unavoidable. He uses ether in his experiments upon animals, since with this agent the animal may be safely carried to the very last stage of insensibility, while with chloroform the ani-

mal is easily killed. Dr. Snow, a distinguished authority, believes a death from ether to be almost impossible. Dr. Ormsby states that in the various hospitals of Dublin very few surgeons use chloroform.

Dr. MORTON brought forward these points to correct the impression created by the paper in regard to the prevalence of the use of chloroform, for in this point was involved to a great extent the question of the right of choice of an anæsthetic, since the physician's liability, from a legal point of view, depended upon his accordance with or divergence from orthodox practice. To the speaker's surprise on examining some reports made by Dr. H. McNaughton Jones in 1876, it appeared that ether was used in a greater number of hospitals in Great Britain than chloroform was. For instance, out of a total of 43 hospitals, 20 used ether alone, 13 used chloroform alone, and 10 used both chloroform and ether.

The school at Lyons, France, had used ether from the beginning. From this and much other evidence the speaker believed that there was a rapidly-growing feeling that the surgeon must be legally responsible for the effect of any anæsthetic he may give. The day would undoubtedly soon come when there would be a general adoption of a law similar to that of the Massachusetts Dental Society which declared that any one using chloroform to produce surgical anæsthesia is guilty of a misdemeanor.

Will not a future jury say? If ether is safe and known to be, chloroform death-dealing and known to be, this practitioner has killed this patient and is guilty of manslaughter, and there is true criminal responsibility.

Mr. ELLER thought that it was not admissible to administer anæsthetics against the subject's will for the purpose of obtaining legal evidence, and equally unjustifiable to use these agents in the army to ascertain whether a soldier was a malingerer.

Dr. LEALE had once used chloroform, but after witnessing a death from it had since used ether. In case of accident he believed that a surgeon who used chloroform would be held more responsible than one who used ether. In his opinion, a sleeping subject could be anæsthetized without awakening.

Mr. RIDDLE held that evidence obtained by the use of anæsthetics would be inadmissible in a court of law. There was no need of any statute to regulate the use of anæsthetics by physicians. Common law would justify the practice that

was justified by the skill and knowledge of physicians. When physicians were ready to say that they were certain of the facts in the case, the law would protect them.

Dr. BERMINGHAM thought the question of the possibility of administering anæsthetics to sleeping persons had not yet been satisfactorily determined. In regard to the fatality of chloroform his experience had been unfortunate. He had once administered it to a child 5 years old, and in less than a minute the child was dead. Another of his patients, a woman, had been killed equally quickly by chloroform administered by a skilled surgeon. He had never since used chloroform.

Mr. CLARK BELL quoted some further statistics in regard to the relative fatality of anæsthetics.

Mr. MILLER thought that it would have no effect in the consequences to Guiteau if President Garfield had died from the effects of anæsthetics. He considered no doctor justified in using chloroform.

Ex-Surrogate CALVIN remarked that the use of the most dangerous anæsthetic places the physician in great danger in regard to his civil and criminal liability. A physician cannot differ from the general practice of his brethren and fail; he is then liable. Since ether was safer than chloroform, the physician who used the latter placed himself in a position of dangerous personal liability. He follows his own opinion at his own risk. Evidence obtained by forcible administration of anæsthetics was inadmissible in a court of law.

Mr. BRIGGS maintained the right to obtain legal evidence by forced administration of anæsthetics. Society had the right to protect itself by any means at its command. If the right existed to examine without anæsthetics, we certainly have the right to administer anæsthetics forcibly. If this can be done in the interests of the army, why not in the interest of the public at large? Shall a woman, for instance, in a criminal trial, say that her person is sacred and that her word must be taken.

Judge HULL expressed the view that in certain incurable diseases, accompanied by great suffering, the physician would be justified in giving an anæsthetic to shorten life. It is not possible, probably, to frame a law to this effect, since it would be liable to abuse; but in such a case he would appeal to a higher law, viz.: "All things whatsoever ye would have done unto you, that do to others."

Dr. SPITZKA thought, as did many of his profession, that

Judge Hull's view was correct, both from a utilitarian and from a humane point of view.

Dr. LEO considered chloroform dangerous to young and old.

Dr. SAYRE, the younger, objected to the general denunciation of chloroform. He did not think it was dangerous; on the contrary, he thought that it was safer than ether. In his experience with chloroform he had never seen a death from it.

Dr. MORTON inquired if it was not an extraordinary argument that each chloroformist must "kill his man," so to speak, before being willing to see any danger in his preferred anæsthetic. According to this the experience of others and the science of the times had no value.

Dr. JOHNSON, in closing the discussion, remarked that the whole question of which anæsthetic should be used was settled by this fact: chloroform kills without warning, ether does not; therefore the physician is criminally responsible who uses chloroform. The physician who pursues a course of treatment no longer orthodox is in the same position as one who meditates a homicide. This is the law upon this point. Dr. Johnson moved that a committee be appointed to formulate rules to govern the administration of anæsthetics.

After a vote of thanks to Dr. Johnson for his very able and interesting paper, the meeting was adjourned.

CHICAGO MEDICAL SOCIETY.

At a regular meeting of the Chicago Medical Society, March 20, 1882, Dr. J. G. KIERNAN read a paper on "Simulation of Insanity by the Insane." He held that this question stood at the head of those which have been brought up for examination by the Guiteau trial, especially from the standpoint of an alienist. "If it be assumed," he said, "that there exists an abnormal mental condition in this criminal—a fact of which I believe, most firmly, there should be no question,—and if he be regarded as a case of primary monomania—the primäre verrücktheit of the Germans, the manie raissonante of the French,—simulation is what might have been expected." Assuming this to be the case, said the doctor, Guiteau's simulation is of rather a peculiar type. Insanity, as claimed by him, is different from the idea of insanity as held by alienists, and is simply a quasi-legal plea that, as he was inspired by the Deity to remove the President, his free will was destroyed; and, according to him, a man without a free will is, in the legal sense, insane. To use his own phrase, he is "Abraham mad, but not crank mad." This plea was fatal to a belief in his insanity, already existent in the minds of the more intelligent laity, and had a very similar effect on a large number of the profession. The doctor considered this plea of insanity a very natural one on the part of an insane lawyer, and, as the subject became, therefore, of special interest, he had undertaken to examine the cases of simulation of insanity by lunatics reported in medical literature, supplementing them by three cases coming under his own observation. These cases, while not frequent, he said, were not excessively rare.

The Section on Mental Diseases of the International Medical Congress of 1876, John P. Gray, chairman, unanimously resolved that: "It is not only not improbable for the insane to simulate insanity for any purpose in any but its gravest forms of profound

general mental derangement, but they actually do simulate acts and forms of insanity for which there exists no pathological warrant that we can discover in the real disease afflicting them."

Dr. Nichols, of the Bloomingdale asylum, New York, at the conference of experts on the Guiteau case, cited the case of a man who committed murder, as he believed, under the command of the Virgin Mary, who appeared to him in the flame of a candle. Two young lawyers were assigned as his counsel; they advised him to feign insanity, which he did under the form of dementia. The experts, Drs. Nichols and Ranney, detected both the sham and the real insanity, and had him sent to an asylum where his insanity became unmistakable.

Dr. Ray, in his discussion of the case of Frimbur, says: "The criminal classes, to whom most of these simulators belong, know as well as any one else that the plea of insanity is one of the dodges by which people now escape the punishment of their crimes, and they may not forget to act accordingly when they are insane. Frimbur, being unconscious of his real insanity, but with mind enough to understand his situation, and to remember what he had heard about insanity in connection with crime, concluded to make a show of being crazy."

Dr. Workman cites the case of an insane man who had escaped from his asylum, and killed his wife during an insane fit of jealousy. The man professed to the doctor to be completely without memory. While under trial for murder he denied having ever been under the doctor's charge, or that he knew any thing about the asylum. The doctor stated to the jury that the man was both simulating insanity and was insane. The prisoner was acquitted and sent to the criminal lunatic asylum at Kingston, Can. The doctor saw him there two years subsequently. He then fully recognized the doctor, and, in answer to a question, said that "he did not want to know the doctor" when previously examined by him. Had he been sane he would, as Dr. Workman suggests, have known that sufficient proof of his past insanity could have been produced, and he would have abstained from his clumsy simulation, or he would have acted more cleverly.

Dr. John P. Gray cites the case of a man who, two or three days before being admitted to an asylum, was met in the woods going toward his father's, carrying a gun, and he said he was "going to shoot the old man." When admitted, he said he had been out of his head for quite a while—"should think twenty-four hours."

Dr. E. C. Spitzka cites a case in which a criminal lunatic, having all the signs of degeneracy mentioned by Morel, feigned a type of insanity with religious delusion.

Similar cases were cited from Delaseauve, Laehr, Pelman, Ingels, and Stark. Dr. C. H. Hughes, who had discussed the subject most extendedly of any one in the United States, said: The insane appear at times, when they have an object to accomplish, more crazy than, and different from what, they really are. This is the sense in which we use the term simulation, and this condition is akin to that of feigning by the sane. Simulation, while it presupposes a degree of sanity, does not require that the patient should be wholly sound in mind, and it might be attempted by a convalescent patient, not thoroughly recovered, desirous of remaining longer in the hospital, or for some other cause." A case coming under his (Hughes') observation was as follows: R. S., aged 25, married, had a history of domestic difficulties, and was a victim of private dissipation. After three weeks of insanity he was admitted to the Missouri State Lunatic Asylum. This was in April, 1867. In the following November he was discharged as cured. He had been a member of a variety show before becoming insane. Soon after becoming insane he was seized with a sudden desire to preach, and securing an audience in a country town, conducted the services with such an outrageous disregard of decency and propriety that he was driven from the pulpit. At the asylum, to which he was sent soon after, he went through various insane performances, dependent in character and frequency upon the interest taken in them.

The three cases which had come under his own observation were as follows:

L. L. aged 48, has had a brother and two uncles insane. He was for a long time a pauper, and is now somewhat demented. He has, at times, hallucinations as to his hearing. He complains continually about having tar and grease in his head, and says he is insane in consequence. He says but little on these subjects except to the doctors, and, for a long time, refused to work because he was insane and had tar and grease in his head. He has found that his statement as to his insanity and having tar and grease in his head draws the attention of visitors and induces them to give him tobacco, and he takes advantage of the opportunities thus afforded, but he persistently denies that he has hallucinations. The patient's skull was unsymmetrical, and his is one of the cases hovering between präimre verrücktheit of the Ger-

mans, imbecility, and terminal dementia. The contrast between his concealment of his real insanity and the obtrusive manner in which he manifests his assumed delusion is very marked.

The second case was one of hebephrenia—the pubescent insanity of Skae, the primary dementia of some asylum reports. The patient displayed all the self-assurance found in that psychosis, but he found that a case of monomania attracted much more attention than he did, simply because that patient claimed to have written several of Shakespeare's tragedies; whereupon he claimed to have written "all of Byron, all of Shelley, and all of Milton." A simple cross-examination showed that this claim was a mere pretence, and the patient not infrequently so admitted to the physicians, but he kept up making the claim to his visitors, although he refrained from doing so to the physicians themselves.

The third case was a man who was the victim of chronic secondary mania, who plunged into the river every morning for a bath, breaking the ice if necessary. This man found that by feigning dementia he was able to secure tobacco and other little comforts, and he kept this up, relapsing into his usual condition when his end was attained.

Dr. Kiernan concluded from these cases that the insane could and did feign insanity for a purpose; that the psycosis most likely to feign insanity is the präimre verrücktheit of the Germans, the manie raisonnante of the French, the imbecility of the first grade of Ray and Nichols, the monomania of Spitzka; that the insane may feign insanity when accused of crime, thus causing a new element of error to enter into diagnosis. He called attention to the fact that the theory which considered Hamlet as an insane man feigning insanity, best explained the psychological problems of that tragedy.

Dr. E. INGALLS asked the reader of the paper whether he thought it would be best for the world if the insane were exterminated so as to prevent the production of insane children.

Dr. KIERNAN replied that some alienists, Dr. Maudsley for example, believed that in such case, many manifestations of genius would be lost to the world. There were certain facts seemingly in favor of such a view; thus, Schopenhauer, the pessimistic philosopher, sprung from a family of imbeciles.

Dr. INGALLS said he had long been of the opinion that the world would in such case lose men of genius; at the same time it must be confessed that men of the greatest genius, Shakespeare, for example, had been eminently well balanced.

Dr. GILMORE wished to know if the reader believed in emotional insanity.

Dr. KIERNAN said he did not, but he believed that there might be forms of insanity of great brevity, like the motor phenomena of *petit mal.*

Dr. VALIN expressed the opinion that medical psychiatrical science was by no means an exact one.

Dr. CLEVENGER called attention to the fact that many experts for the prosecution at the Guiteau trial had been guilty of unprofessional conduct.

Dr. PAOLI called attention to the fact that many mental phenomena of the insane of the higher races resembled the mental phenomena of the lower races.

The Society then adjourned.

Reviews and Bibliographical Notices.

Lectures on the pathological anatomy of the nervous system; diseases of the spinal cord. By J. M. CHARCOT. Translated by CORNELIUS G. COMEGYS, M.D., etc. Cincinnati, 1881, 8vo, pp. 165.

The ideas of M. Charcot, like those of every other person who has a clear idea of his subject, are expressed in language of easy comprehension. For one, therefore, who can follow him intelligently, with a sufficient knowledge of the topics considered and a fair acquaintance with the French tongue, his meaning can readily be made clear, and there is, hence, no inherent difficulty in translating his thoughts into readable English.

Dr. Comegys has entered upon his task apparently without possessing the necessary qualifications for its performance. It is quite evident that he is neither acquainted with the anatomy and physiology of the spinal cord, nor sufficiently familiar with the French language to translate with ease and accuracy.

That these opinions are not baseless will, we think, be apparent from a consideration of the following citations.

Beginning with the preface, which is not a translation, but Dr. Comegys' own language, expressing his own ideas, we find this paragraph. The italics are ours:

"The *translation* of his lectures, which I now present, formed his course for 1879–'80, and *were* reported in the *Progrès Médical* by Dr. E. Brissaud. *They* have been published in the *Lancet and Clinic* of this city, beginning in September last."

When we read this paragraph we thought it a rather remarkable circumstance that M. Charcot, a Frenchman addressing an audience mainly consisting of French students, should have used Dr. Comegys' translation of his lectures instead of his own version. And the astonishment we felt was naturally increased when we

were told that the translation *were* reported in the *Progrès Médical.* We thought for a moment that the whole medical world had been eager to get Dr. Comegys' translation, "they" having also been published in the Cincinnati *Lancet and Clinic;* but we were lost in doubt as to whether M. Charcot, Dr. Comegys, or the *Lancet and Clinic* was the original "Simon pure." Finally the idea occurred to us that what Dr. Comegys meant to say, but did not say, was that the *lectures*, of which the present volume is a translation formed M. Charcot's course, etc. So much for not having a clear idea of what one wants to say, and for not having the ability to express it in good English.

But to continue our citations, which will be altogether from the first lecture, and which are only a few of those of like character that could be made. Italics ours:

"Conformably to the programme which I have marked out, I must treat this year *on* the pathological anatomy of the nervous system," (p. 1).

"The following year while treating *on* degeneration," etc. (p. 2.)

Lectures do not treat *on* a subject but *of* it. M. Charcot in the first of these extracts uses the singular article *de*, and in the second the plural *des*, both of which Dr. Comegys has translated by *on* instead of *of.*

"Already on several occasions in this course of instruction which I began *to-day* seven years since" (p. 1).

M. Charcot says:

"Déjà à plusieurs reprises dans cet enseignement qui date aujourd' hui de sept ans."

By *aujourd' hui* M. Charcot does not mean "to-day" but *now.* He says that his course has *now* lasted seven years. Dr. Comegys makes him say, regardless of the language employed, that he began the course exactly to a day seven years ago.

"They could not be connected with the type from which they are separated clinically, *except that* pathological anatomy has served as a guiding thread" (p. 4).

In the original, the words which Dr. Comegys translates into bad English by "except that," are *parce que*, which, of course, should be rendered by "unless." The use of "except that" for "unless" is a common fault of Dr. Comegys.

"They can, in fact, with the *concours* of experimental data, furnish," etc. (p. 5).

Now, there is no such word as "concours" in the English language.

"The anatomy of the spinal cord in the normal state, slightly magnified, does not present, as you know, but, relatively, a simple structure" (p. 5).

This sentence is absolutely unintelligible. A slightly magnified anatomy of the spinal cord, but relatively a simple structure, is such a mass of incongruity as to be altogether beyond our powers of appreciation. In despair we turned to the original, and this is what we found.

"L' anatomie de la moelle èpinère, fait à l' aide de simples grossissements, ne fait reconnaitre, vous le savez, dans l' état normal q'une constitution relativement simple."

In Dr. Comegys' anxiety to be literal at the expense of accuracy and perspicuity he has entirely misapprehended this passage, as the reader will at once perceive. Put into plain and intelligible English it would read:

"The study of the normal anatomy of the spinal cord with moderate magnifying powers reveals *to* us, as you know, a comparatively simple constitution of this organ."

But Dr. Comegys scarcely ever knows when or how to get rid of the French idiom.

"The posterior fasciculi, considered in physiology as forming one whole, are, on the contrary, distinctly divided by pathological anatomy into two quite distinct parts. *In this way* the part adjoining the posterior groove, viz., the tracts of Goll, may *only* be injured" (p. 6).

Can any thing be more obscure than this extract? What is the "way" by which the tracts of Goll may "only" be injured? And what else besides injury may happen to them? Charcot says:

"C' est ainsi que la partie voisine du sillon postèrieur, a savoir, les cordons de Goll, peuvent ètre seuls lésés."

Properly translated this is very plain:

"For this reason the region adjoining the posterior groove, that is to say, the columns of Goll, may alone be the seat of a lesion."

"These cerebellar fasciculi may themselves be systematically *lesed*" (p. 7).

Shades of Webster, Worcester, and the whole host of lexicographers, "lesed" as an English word!

"Here is the topographic plan which brings together *sufficiently exact* the studies of Flechsig on this interesting subject" (p. 9).

Not even the French language permits the use of adjectives when

adverbs should be employed. Charcot's word is *exactement*, but Dr. Comegys, instead of translating it by "exactly," makes an adjective out of it and spoils his sentence.

"I perceive that I shall be obliged to refer to an epoch *where* I shall treat," etc. (p. 10).

Let us gently remind Dr. Comegys that an epoch is not a place, as he apparently thinks it is, by referring to it by the adverb "where," but a period of time which requires the adverb "when" to designate it. Charcot's word is *ou*, which, as our readers know, is translated by "when," if the sense requires it.

But this must suffice. Dr. Comegys has one great fault as a translator, in addition to those we have already specified. He seems to think that every French word must be translated into English. As a consequence he is almost always obscure and ungrammatical. The book is well printed on good paper. The wood-cuts are execrable, but so they are in the original.

Untersuchungen über Verbrecher-Gehirne. Anatomische und Anthropologische Studien von Dr. MAX FLESCH. 1 Theil, Würzburg, 1882.

Researches relative to the Brains of Criminals. By Dr. Max Flesch.

Dr. Flesch's investigations are based upon fifty-four *post-mortem* examinations made at the Anatomical Institute at Würzburg on the bodies of criminals, with special reference to the shape, size, and other characteristics of the skull, and the condition of the brain and its membranes.

The monograph is open to the objection that the crimes of which the subjects were guilty are not stated, so that we are deprived of the opportunity of ascertaining how far great or slight irregularities of the organs mentioned were related to great or slight crimes, and *vice versa*. Thus, for instance, we are informed in regard to Case 4 that the skull was "slightly unsymmetrical," and that the convolutions were "irregular," but we have no data as to the depth of criminality into which the subject was plunged. And again, of Case 22 it is stated that the skull was "unsymmetrical, slight flattening of the right frontal and vertical region," and that there was "division of the second frontal convolution on both sides," but for all we know the subject may have been guilty of the great crime of murdering his mother, or of the very trivial offence of pulling the burgomaster's nose.

Still we do get some valuable information from Dr. Flesch's

monograph. We find, for instance, that of the fifty-four bodies examined there were anomalies of the skull in twenty-eight, consisting of asymmetries hyperostoses, osteophytes, etc.

Again, in thirty-six there were diseases of the brain and its annexæ, such as hyperæmia of the dura mater, pachymeningitis, cerebral hemorrhage, adhesion of the membranes to each other and to the skull, extensive pigmentation of the gray substance, etc., etc.

We do not know that any other observer has noticed such a large proportion of cranial irregularities and intra-cranial diseases in criminals, as compared with moral and law-abiding citizens. We shall look with interest for the continuation of Dr. Flesch's researches.

Ueber die Erfolge der Nervendehnung, von Dr. Bernhard Nocht.

Under this title Dr. Nocht has presented the report of 150 cases in which nerve-stretching was performed as a means of alleviation or cure in neuralgia, facial spasm, torticollis, muscular contraction of the extremities, tetanus, epilepsy, locomotor ataxia, and other lesions of the spinal cord. Dr. Nocht's article is very interesting, as it presents a large number of cases, collected not only from the records of continental surgery, but also from those of England and America.

By far the greater number of these cases are of neuralgic origin, in which the beneficial result of nerve-stretching is so well established as to call for but little or no comment. The monograph would be of more practical value if its pages were less devoted to the enumeration of cases of this character, and had embraced to a greater extent those affections for which nerve-stretching is performed, and of which the statistics are, as yet, very incomplete. As it is, the number of cases cited under each classification, with the exception, perhaps, of those performed for tetanus, are not sufficiently numerous to warrant the conclusion whether an operation would be advisable or not. Although many of the recent operations of nerve-stretching performed in this country have not been embraced in Dr. Nocht's collection, yet the conciseness of the classification and the clear and simple manner in which the results are stated, render the contribution valuable and meritorious.

Editorial Department.

THE NEW YORK NEUROLOGICAL SOCIETY AND THE INSANE ASYLUMS.

IT really does seem as though there was a good deal of truth in the dictum, "That time at last sets all things right." We are forcibly reminded of the fact from the perusal of portions of the report of the Senate Committee on Insane Asylum Abuses.

It will be remembered that a little over two years ago the Neurological Society presented a memorial to the Legislature of this State making certain charges against the management of the lunatic asylums, and asking that an investigation might be ordered.

The memorial, which was extensively signed, was referred, through the machinations of the asylum ring—an organization as unscrupulous as any which ever disgraced this city under the worst days of "bossism,"—to the Senate Committee on Public Health. Two of the members of the committee, Messrs. Goebel and Goodwin, instituted a sham investigation, and then made a report which was almost a complete tissue of falsehoods from beginning to end. An answer was made by the Neurological Society, in which the unfair and untruthful report of Messrs. Goebel and Goodwin was properly handled, and its misstatements and partisanship thoroughly exposed. This report was widely circulated throughout the State and country generally. It not only dealt with the tools employed by the "ring" to malign the members of the Neurological Society, but it reiterated the charges which had

been previously made. In consequence of that answer the Hon. W. C. Woodin, of the Senate, deemed it his duty to demand that a real investigation should be made, and a committee consisting of himself and Messrs. Pitts and Fowler have, for nearly two years, been engaged in conducting a minute and exhaustive inquiry into the whole system of insane-asylum management as it exists in this State. A few weeks ago they submitted their report, of which, as yet, only a synopsis has been published, but we have enough to know that the charges made have been abundantly sustained, and that the New York Neurological Society is completely vindicated from the malicious and mendacious assaults of Messrs. Goebel and Goodwin and the "asylum ring" in general. Of course the "ring" is making strenuous exertions to prevent the publication of the report, but in this attempt they will probably not succeed. When it makes its appearance we shall review it in full in our pages. In the meantime, however, it is a source of gratification to us, as it doubtless is to the Neurological Society, and especially its Committee on Asylum Abuses, that a special committee of the Senate, working in the interest of the public, should have had the fairness to enter upon its labors in the true spirit of decency and truth—a feature which was entirely lacking in its predecessor, composed of those two shining political lights—Messrs. Goebel, of this city, and Goodwin, of Utica,—both of whom are, as we are happy to say, still in that seclusion to which their constituents consigned them.

We gladly give prominence to several pertinent neurological questions addressed to the medical profession, in circular form, by Dr. H. H. Kane, of this city. Dr. Kane asks:

"Have you ever seen any cases of insanity, temporary or permanent, or any deviation from the normal mental or moral state that could be traced directly to the use of a single large dose, or the continued use of opium, or any of its preparations or alkaloids?"

The same question is asked concerning chloral hydrate, bromide of potassium, and other drugs.

As Dr. Kane truly remarks: "The subject is one of so much importance, medico-legally and otherwise, and so very little is to be found upon it in works on insanity, that it merits the attention asked for it." Perhaps the most interesting field of inquiry in this direction will be found in connection with the use of the bromides. It is the fashion of the day to use these remedies in large doses (60 to 200 grains daily) during one or several days. There seems to be little doubt that a transitory form of insanity has been occasionally observed in consequence of this treatment. The case of the physician of Hartford who jumped overboard from a steamboat during an attack of insanity said to have been produced by taking several ounces of bromide of potassium, will be recollected by many. Similar cases doubtless exist, and if collected and studied authentically would serve as valuable guides, both from a therapeutic and diagnostic point of view. That the bromides may not be as harmless in large doses as is commonly held, has already been made tolerably clear by reports of fatal or well-nigh fatal results from their use. Dr. Beard relates several cases of prolonged stupor, arising quickly after large doses; and Dr. Christian Fenger reports a case of poisoning by 300 grains of bromide of potash: stupor existed for twenty-eight hours and death then ensued.

We shall await with interest the results of Dr. Kane's inquiries.

A PETITION addressed to the President and asking for a stay of proceedings in the Guiteau case, and for the appointment of a commission to examine into Guiteau's mental condition, has been extensively circulated among members of the medical profession of New York. We understand that a similar petition has been started in Boston and that both are being generally signed. In general, the grounds of the New York appeal to Executive interference are:

First. That it is the concurrent verdict of the leading expert authorities of the country that Guiteau has been insane for more than twenty years.

Secondly. That the opinion of these authorities, under right

management could have been brought before the court and would probably have radically changed the issue of the trial.

Thirdly. That the instincts and the customs of all civilized nations are opposed to the hanging of the insane.

These points are sustained in the petition by some very cogent arguments and references. Reviewing Guiteau's history, it is, for instance, probably true that during the twenty years referred to, no asylum in the world would have refused admission to Guiteau, and that in all probability none would have discharged him. And it naturally follows that as an inmate of an asylum he would not have been tried or arrested even for a murder.

It is not too late to appoint a commission of experts to examine into Guiteau's mental condition, for it can never be too late to desire to remedy an injustice. To this proposition it is replied that the public is tired of the case, does not wish to see it re-opened, and in short desires an expiatory sacrifice. Since the public largely tried the case there would be nothing remarkable in allowing the same public to now decide the issue of this last appeal to the President.

It is the old story of Demagogism versus Science. Having indulged in the humiliating spectacle of a prolonged and farcical trial of a lunatic it might perhaps be well to cap the climax and hang him.

If there is to be any hope of avoiding similar spectacles in the future it lies in the direction, as the petition suggests, of appointing commissions of experts who shall make their report *before* the trial.

It is stated on good authority that Guiteau's body has been offered, either by himself or members of his family, for dissection, to the New York Medico-Legal Society. The price demanded is $1,000. A distinguished neurologist and member of the Society has been asked to make a *post-mortem*. The daily press had already stated that the body was for sale, but the above direct proposition brings to mind, in a somewhat startling manner, the disgraceful nature of this proceeding. That the lunatic himself

should authorize it, is not unnatural; but that his family should countenance or abet the sale, is heinous. A *post-mortem* in the interest of science, to discover, if possible, an anatomical basis of insanity, is highly desirable; but it is scarcely possible to conceive of the mercenary attitude of a family that could acknowledge itself to be actuated by motives of this nature. We trust that the statement may prove to be subject to extenuating modifications.

In a book review that appeared in the last number of the Journal, Dr. E.G. Loring of this city was inadvertently confounded with Dr. Loring, a brother residing in Washington, who testified to the physical condition of Guiteau's eyes. By comparing the testimony of the one with the writings of the other, the former Dr. Loring is placed in the position of having contradicted himself. Simple mention of the facts dispels the error.

Dr. William A. Hammond has resigned the position of Professor of Diseases of the Mind and Nervous System in the University of the City of New York. His resignation is accompanied by similar resignations of all the members of the "Post-Graduate Faculty," with the exception of Dr. A. E. McDonald.

It is generally understood that these resignations are based upon an amicable difference of opinion between the Governing Faculty and the Post-Graduate Faculty, concerning the methods to be followed in promoting advanced instruction in special subjects indicated by the titles of the Chairs held by the several resigning Professors.

The result will probably be the formation of a "Post-Graduate" school, in which the teaching of Neurology and Psychiatry will hold an important position.

Drs. Seguin, Flint, and Jacobi were unanimously elected corresponding members for America of the Verein für innere Medicin of Berlin, at a meeting held on January 30, 1882; and Sir Wm. Gull and Drs. Grainger Stewart and Pavy, corresponding members for England.

College of France.—By ministerial decree, M. Brown-Séquard, Professor in the College of France, is authorized to substitute (à se faire remplacer) M. d'Arsonval. M. d'Arsonval will treat upon animal heat.

We sympathize with our valued collaborator, Dr. J. C. Shaw, Superintendent of the Insane Asylum at Flatbush, L. I., in his late unfortunate experience. A large wing of the asylum under his charge caught fire, and two unfortunate inmates lost their lives. Conflagrations at asylums have been frequent of late.

Responsibility, as a rule, has been found to rest upon the Boards of Trustees, who had failed to provide proper safeguards. In the present instance no blame rests upon Dr. Shaw's shoulders. In successive annual reports he had pointed out the danger of fire, the remedies needed, and had appealed to the Board of Trustees to provide against the very conflagration that occurred.

The loss in money is small, the victims few—almost too few to make the event interesting to Boards of Trustees of similar institutions similarly unprovided for extinguishing fires,—but this paucity of interest in the holocaustic performance was due to the absence of wind, and the energy of the superintendent and his aids, rather than to any foresight or capacity on the part of the Trustees.

The eighth annual meeting of the American Neurological Association, to be held in this city on Wednesday, June 21st, bids fair to be of unusual interest. A number of valuable papers are promised, and no pains will be spared to make the occasion an agreeable and instructive one. Contributions of essays, clinical notes, and the exhibition of gross or microscopical specimens, casts, photographs, and new instruments may be expected. We understand that only one paper has been entered in competition for the Hammond Prize of $500—offered for the best essay on the functions of the optic thalamus.

Periscope.

a.—ANATOMY OF THE NERVOUS SYSTEM.

DRESCHFELD, J.—Pathological contributions on the course of the optic-nerve fibres in the brain.—*Brain*, Jan., 1882.

Dreschfeld calls attention to the *course of the optic-nerve fibres in the brain.* He reports two cases of *post-mortem* examinations sustaining the partial decussation of the optic-nerve fibres. In the first there was total left hemianopsia in each field of vision, also diplopia ; also left hemianæsthesia, with diminution of sensibility to contact, to pain, and to temperature. *Post-mortem* revealed all the organs except the brain to be healthy. Right hemisphere only affected. Sarcoma at posterior part of internal capsule extending from its centre to optic thalamus, lenticular nucleus, and ant. corp. quad. of right side. Right optic tract was flattened and soft where it crossed the crus.

The application of these pathological conditions is given in some detail, but all important deductions may be found in most of the text-books upon this subject.

The same author reports a second case in which the patient had left hemiplegia complete, as far as the leg and arm were cencerned, the face but little affected. She had left hemianopsia in each eye, not reaching quite up to the point of fixation. The line limiting the loss of vision was almost vertical. Central vision was fairly normal, pupils equal and reacting well to light. No affection of any other cerebral nerves. Special senses normal.

Post-mortem revealed the brain externally normal, except the left lobe of the cerebellum, where there was a fresh hemorrhage on the under surface of the lobe just beneath the pia mater, forming a thin layer about two lines in thickness and an inch in circumference ; further, two spots of hemorrhage, circular in form

and half an inch in diameter, were found in the centr. ovale of right hemisphere, corresponding to the ascending frontal convolution. A little behind these, corresponding nearly to the ascending parietal convolution, was another small hemorrhage, situated entirely in the centr. ovale, encroaching neither upon the cortex nor basal ganglia. There was another small hemorrhage in the substance of the right optic thalamus at its posterior and upper extremity. The rest of the thalamus and also the corp. quad. was normal. The author incorporates two diagrams to indicate the seat of existing lesions.

BRUNTON, T. L. On the position of the motor centres in the brain, in regard to the nutritive and social functions.—*Brain*, Jan. 1882.

In his article *on the position of the motor centres in the brain, in regard to the nutritive and social functions*, Brunton writes that since the respiration of air and the acquisition of food are the fundamental acts of self-preservation, the motor centres must be arranged according to these requirements. He believes that since the act of respiration is a very simple one, its centre is, therefore, to be found in the medulla oblongata and the upper part of the spinal cord ; but adds, where an adult has learned to modify respiration by careful study, as in singing, the centre will be in the cerebrum.

The centres by which the primary acts of nutrition, deglutition, digestion, etc., are effected, are in the spinal cord and sympathetic ganglia, but the centres by which the complicated acts required in order to obtain food are controlled, are without doubt situated in the brain.

Since the movements for seeking and obtaining food are essential to the existence of the animal, we should expect to find the motor centres in the brain arranged chiefly with reference to the acquisition of food, and also that the centres would be modified in different animals according to the manner in which they obtain their food. He thinks that this is upheld when we examine the functions of the motor centres of the brain as ascertained by Ferrier.

He gives two wood-cuts, and a small table.

GARDINER-BROWN, A. The acoustic potentials of the human auricle.—*Lancet*, December 24, 1881.

In his article on *the acoustic potentials of the human auricles*, Gardiner-Brown states that in a well-formed auricle the whole free margin of the cartilage gives a beautifully graduated ascending scale of notes, on friction of the parts, forming a complete octave from the tragus in front to the posterior border of the helix behind (C, D, E, F, G, a, b, c). He gives several explanatory diagrams.

The anti-tragus forms a distinct and isolated note, E, which serves to reinforce the E of the helix. The octave of the C is also reinforced by its octave c. The notes or friction-sounds are produced by quickly passing the finger or the rubber end of a pencil over the different segments between certain sections of the free margin of the cartilage. He gives a diagram in which there are radial lines indicating the positions of the semitones, or sharps and flats of the whole notes. He observes that it is very remarkable that the notes which form the basis of all music, viz., the 1st major triad or tonic (C, E, G), are very distinctly produced by friction on the tragus, anti-tragus, and the middle of the upper border of the rim of the helix.

After noting some very interesting actions of the intrinsic muscles of the auricle he ends his paper by observing : (*a*) the external ear, or auricle, is in the first place protective ; (*b*) it aids in catching by its increased area a larger amount of the sound-waves falling on it, and conducting them to the ear, than would arrive if it were absent ; (*c*) it conducts part of these immediately to the temporal bone, and so to the nerve of hearing, and part by its ordinary funnel action ; (*d*) it gives knowledge of direction of sound especially when acting with its fellow of the opposite side ; and (*e*) by its resonant qualities it reinforces musical sounds in a manner and by the means already set forth, and so aids in no uncertain way the perception of musical sounds reaching the ear, by intensifying the higher notes and the higher harmonics, or upper partials of the lower notes of the musical scale.

AMBROSE L. RANNEY, M.D.

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b.—NORMAL HISTOLOGY OF THE NERVOUS SYSTEM.

THE BLOOD-VESSELS OF THE SPINAL CORD.—With the view of sustaining a theory recently advanced by him in the *Archiv für Psychiatrie und Nervenkrankheiten*, namely, that tabes is not a systemic disease, but is caused by an interstitial connective-tissue degeneration originating in the blood-vessels of the posterior col-

umns, Adamkiewicz[1] has made an extended examination of the distribution of the minute blood-vessels of the human spinal cord.

Most of the blood which enters the cord goes to the gray matter. All of the blood-vessels in the cord originate in two arterial systems: 1. A centrifugal system. 2. A centripetal system. 1. The centrifugal system commences in a row of small arterial trunks, 250 to 300 in number, which, springing nearly at right angles from the arteria spinalis anterior, pass to the bottom of the anterior longitudinal fissure and enter the anterior commissure. Here each one divides into two branches, which pass out horizontally into the gray matter, where they divide into tertiary branches, some of which run longitudinally and form anastomoses with branches from corresponding neighboring systems. Other tertiary branches spread out horizontally and form a capillary network in the central portion of the gray matter. 2. The centripetal system consists of vessels which come in on all sides from the pia mater and pass in converging lines into or through the white matter. One set of these vessels consists of small trunks, which supply the peripheral zone of white matter. Another set consists of larger vessels, which are distributed to the deeper portions of the white matter; while a third set of still larger trunks pass, with little branching, directly into the gray matter, where they break up into a rich capillary network, which supplies those parts not provided for by the above-described centrifugal system. Special systems are described in the posterior columns and in the anterior cornua. There is a general correspondence between the distribution of arteries and veins.

He considers, finally, that this arrangement of blood-vessels is confirmatory of his theory.

The Segmented Character of the Spinal Cord.—Starting with the conception, which is not new, of the spinal cord as made up of a series of united segments, each one of which is furnished with a pair of anterior and posterior roots, Lüderitz[2] has studied the cords of the water-snake, the rabbit, and man. The individuality of the segments he naturally finds to be more pro-

[1] Adamkiewicz: Ueber die mikroscopischen Gefässe des menschlichen Rückenmarks. *Trans. Internat. Med. Congress*, 7 sess., vol. i, p. 155.

[2] Lüderitz: Ueber die Rückenmarkssegment. Ein Beitrag zur Morphologie und Histologie des Rückenmarks. *Arch. f. Anatomie u. Entwickelungsgesch.*, 1881, p. 423.

nounced in the lower animals. In the human cord, when freed from the membranes and nerve-roots, there are no external marks of the divisions of the segments, except where the divisions of the nerve-roots are separated by spaces, and this is only in the dorsal region, where the segments are longest. Internal differences in the white matter at the middle and at the ends of the segments are evident only in the peripheral zone. In the middle of the segments the anterior and posterior cornua are slightly narrower than at the point of entrance of the roots.

While a comparison of the different parts of a segment shows but slight differences, a comparison of the segments one with another shows considerable variation. First, there is a marked difference in the length of the segments. This is dependent upon the mode of development. While originally the segments are all of about equal length, as development proceeds the growth goes on unequally, the segments in the cervical and lumbar regions lengthening more slowly than in the dorsal. As a result of this, the amount of gray matter in these regions is much less in proportion to the size of the nerve-roots which originate in these parts—is, so to say, denser in texture, than in the dorsal region, where the segments are longer.

A difference is also seen in the general shape of the large ganglion cells of the anterior cornua, which are more elongated and more loosely packed together in the region of the lower segments.

On the Preparation of Nerve Tissue for Microscopical Examination.—In a series of articles not yet completed, Dr. Bevan Lewis[1] has dealt with the pathological anatomy of cerebral lesions and given many practical suggestions as to the methods for gross examinations. In his last paper[2] he enters upon the methods of preparing brain tissue for microscopical examination, and at the outset justly lays great stress upon the necessity for most careful and intelligent technical procedure in this department of research. The necessity of studying the fresh tissues by frozen sections is emphasized, and he calls attention to the more satisfactory results in the use of the ether-freezing, than in the use of the ice- and salt-freezing microtomes, since by the use of the latter instrument spicules of ice are apt to form in the tissue.

[1] *Brain*, vol. iii, p. 314; vol. iv, pp. 82 and 351.

[2] *Idem.*, vol. iv, pp. 441–446.

Numerous instruments for freezing and for hardening tissues are described.

Passing on to the various methods of hardening, the one which he prefers may be summarized as follows: A portion of the brain, about 3 cc in bulk, is surrounded by a little cotton-wool to permit contact on all sides with the hardening agents, then immersed in a couple of ounces of alcohol, and put in a cool place for 24 hours. The alcohol, which was used for the purpose of dehydrating the tissue and facilitating its subsequent permeation by the chromic fluids, is now replaced by Müller's fluid, which is changed in 3 days, and at the end of a week replaced by a 2 % solution of potassium bichromate. This solution, at the end of the second week, is increased in strength to 4 %, and the hardening is finally finished by a solution of chromic acid, $\frac{1}{8}$ %.

The hardening under these conditions is completed in from 4 to 8 weeks. Plain practical directions are given for embedding and for microtome section-cutting. His suggestions as to the details of staining and mounting are to follow.

T. Mitchell Prudden, M.D.

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c.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

Accuracy of Sight and Touch.—Prof. H. P. Bowditch and Dr. Southard have been comparing the senses of sight and touch. The method was as follows: The experimenter was seated at a table covered with a large sheet of white paper, upon which a small movable object was placed. After various experiments the most convenient object was found to be a small brass disc about five millimetres in diameter, having in the middle of one side a small projecting point. This object was placed in different positions on paper, a short rod being used for moving it about without touching it with the hand. The experimenter then having observed its position, closed the eyes and endeavored to place the point of the pencil held in the right hand as accurately as possible upon the disc. The error, that is the distance between the disc and the pencil point, was then measured and recorded. In a second set of observations the experimenter closed the eyes and placed the disc in position with the left hand. Then withdrawing the left hand and keeping the eyes still closed, he endeavored to place the pencil point upon it as before. In a preliminary series of experiments comprising sixty

trials, in half of which the position of the object was determined by sight, and in the other half by touch, it resulted that the knowledge of position in space obtained through the sense of sight is nearly twice as accurate as that obtained through the sense of touch. They also tried indirect vision, the effect of using the same or different hands in the localization and in search, the effect of time and fixation of the head, and arrived at the following results. The most accurate spatial knowledge is obtained by direct vision. At all the intervals the average error was less when the position of the object was determined in this way than by any other method. The effect of fixing the head is to diminish the accuracy of the localization, but even under these circumstances the errors are nearly in every instance less than those met with in the other methods of experimenting. The method next in accuracy is that of localization by touch with the same hand by which the movement in search of the object is executed, the head being free to move. Next in order of accuracy of localization come the two sets of experiments with indirect vision, that performed with reflected sunlight giving results slightly inferior to those of the other set. Least accurate of all the methods employed, is that of touch with the opposite hand. Direct vision gives the best results, that of touch with the opposite hand the worst, and the other methods occupy intermediate positions. In regard to time, it was found that with the increase of the interval between the determination of position of an object and the attempt to place the hand upon it with closed eyes, the accuracy of this movement at first increases and then diminishes, the maximum of accuracy being attained after an interval of two seconds.—*Foster's Journal of Physiology*, vol. iii, Nos. 3 and 4.

THE CEREBELLUM.—Spitzka puts forth the opinion, founded on morphological data, that the cerebellum is a field where the impressions of touch and position are associated with those of time and space. Its main object is the fusion of the sensations or their co-ordination in some way for the benefit of the cerebral hemispheres. It is the informing depot to the great head-centre, the cerebrum. The cerebellum is but a by-tract for impressions conveyed by other channels, and only the finest co-ordinations of movement with regard to space and time are on anatomical grounds to be connected with the cerebellum. He confidently asserts that a fine musical ear, the sense of rhythm and time, and

the ability to perform any fine feats of equilbrium, are not possible without an intact and well-developed cerebellum.—*Jour. of Neurology and Psychiatry*, 1882.

THE CEREBELLUM.—Dr. Baginsky has made researches upon the cerebellum. It is well known from the experiments of Flourens, that cutting off layer by layer of the cerebellum causes in birds and mammals uncertain, staggering, and trembling movements; that the subjects operated on lose completely the power to move, to stand, or to fly. Baginsky's experiments were made on narcotized as well as on non-narcotized rabbits. By a longitudinal incision the skin of the occiput was divided, and the skull opened by means of a bone-forceps. Parts of the cerebellum were removed—either by the scissors or the knife. The results of his experiments were as follows: All the rabbits in which a large part of the cerebellar hemispheres were removed alone, or with a part of the vermis, show immediately after the operation notable disturbances. Weakened by the loss of blood, and conscious, they lie upon one or the other side; they cannot keep on their feet, or move from the place. Death of the animals ensued in a few days after the operation, and on *post-mortem* there was found destruction of nearly the whole cerebellum, or frequently complicated with hemorrhage into the medulla oblongata down to the medulla spinalis. Four rabbits lived a longer time, and in these only a small part of the vermis had been removed. After the removal of a small superficial part of the vermis the animal exhibited no disturbance of any kind in its movements, or in any other way from that of a normal animal. Only four animals lived longer, and they displayed, a few days after the operation, definite disturbances which were similar but of different intensity. There was trembling of the head and body, which was stronger when the animal was moved forward. In the movement of the feet they exhibited disturbances: the anterior extremity when moved is put down in a false manner; now it is the right, then the left, which is put down on the dorsum of the foot; sometimes the extremities are crossed over each other; sometimes one foot, sometimes the other foot is more extended, abducted, or adducted. Tests of sensibility gave no safe results, as rabbits react differently. These just-mentioned disturbances, at first weak, increase in intensity, till the death of the animal, between the second and fifth week

after the operation. B. arrives at the conclusion that destruction of the vermis alone, and of the anterior upper part of the vermis, only (Northnagel, to the contrary) calls out disturbances of the equilibrium. B. also made experiments upon dogs, with similar results. He also saw that these disturbances were gradually compensated for, and the question arose if this compensation took place through the cerebellum, or through other paths, perhaps the cerebrum. Under this idea Prof. Munk extirpated for him, on a dog, the sensory centre of the anterior extremity; the cerebellum had been previously operated upon. The dog exhibited the same symptoms as a normal one does whose corresponding sensory centre had been extirpated. Hence, subcortical apparatuses, and highly probably in the cerebellum itself, are contrivances which learn anew to take on the function of the extirpated part. We have in the cerebellum itself, as Munk has shown in the cerebrum, the same peculiarity about the substitution of function.—*DuBois und Reichert's Archiv.*, Sechste Heft., 1881.

THE RAPIDITY OF TRANSMISSION OF NERVE-FORCE.—René has made a large number of experiments upon the rate of transmission of nerve-force in man. In the first series of experiments he placed the pulp of the left index finger upon the two knobs of a small apparatus of DuBois, set into activity by four Leclauché elements.

The thumb of the right hand presses upon the knob of the interrupting lever of Gaiffe. The apparatus is so arranged that when the current is thrown into the induction apparatus, an electric signal, which is in communication with the Gaiffe interrupter, marks the passage of the current. When the person perceives in the left index finger the current induced, he presses immediately upon the knob of the interrupting lever, which produces a new movement of the electric signal, which returns to its first position. The registering cylinder is set in motion by a water motor of Bourdon, and generally makes two revolutions per second. A tuning-fork of two hundred and fifty double vibrations writes down the rate of movement. The time between the two acts was found to be $\frac{21.2}{100}$ of a second, representing the time necessary to excite the pulp of the index finger, the transmission of the sensation to the brain, the act of will to transform the sensation into a movement which is transmitted to the thumb of the right hand, and to move it. This time diminishes as the intensity

of the electric irritation increases. In another series of experiments he sought to eliminate the time involved in the cerebral act, and to estimate the time of an act purely reflex. Every thing was arranged as in the preceding series of experiments, but the interrupter was removed. He attached to the index finger, placed upon the two knobs of the induction apparatus, a fine metallic thread, so as to make a break in the current, when the index finger is moved from its position—an interruption of the current, which is immediately registered by the electric signal. The same index finger at the same time receives the electric shock, and excites the movement. The will has not time to interfere, the movement being absolutely reflex. The time between the two movements was $\frac{16}{100}$ to $\frac{15.6}{100}$ of a second, being the time of a reflex act. Now, by taking the difference between the duration of a voluntary act and that of a reflex act, we have the approximative duration of a cerebral act, being elementary as possible. Thus $\frac{19.2}{100} - \frac{15.6}{100}$ or $\frac{16}{100} = \frac{3.4}{100}$ of a second, as the time involved in a cerebral act.

In the third series of experiments, instead of the electric irritation of the index finger, he used irritation of the auditory nerve. The lever of the interrupter was held in the right hand, the thumb pressed upon the knob, that is to say, broke the current as soon as he perceived the sound produced by a small hammer striking on a hollow metallic cylinder, and forming at this moment a current, and thus making the pen of the electric cylinder move. The ascent of the pen indicates the production of the sound, and the descent shows the moment when the thumb presses the knob of the interrupter. This interval between the ascent and descent of the pen was found to be $\frac{17.9}{100}$ of a second. Now, by taking the difference between the number $\frac{21.2}{100}$ of the first series of experiments (the left index finger upon the knobs of the coil and the thumb pressing upon the button of the interrupter) and the number $\frac{17.9}{100}$, we obtain $\frac{3.3}{100}$ of a second, representing the time of transmission of a sensory impression upon the length (about 95 centimetres) of nerve from index finger to nerve centres. It is presumed here that the latent period of excitation of the nerves of the finger and that of the auditory nerve are the same. The time of $\frac{3.3}{100}$ of a second for 95 centimetres of length of sensory nerve would give a rate of transmission of nerve force in a sensory nerve as 28 metres per second. He also made a series of experiments at different lengths along the arm and leg, but arrived at the same rate as a mean.—*Gazette des Hôpitaux*, Nos. 35, 36, 39, 1882.

THE CEREBRAL CIRCULATION.—François-Frank has been making some experiments upon the intracranial circulation during the arrest of the heart. It is well comprehended that when the blood ceases to flow to the brain that no vacuum can exist between the walls of the skull and the brain itself. It is necessary that something should replace the arterial blood. It was not the cephalo-rachidian fluid, as was easily demonstrated by a ligature upon the spinal cord preventing its return to the brain. By the aid of registering apparatus, he demonstrated that on the side of the sinus the pressure was equal to the general cephalic pressure. During the arrest of the heart the veins swell, especially in the deep parts, and particularly in the cranial cavity. The arterial anemia is replaced by a venous congestion.—*Gazette des Hôpitaux*, No. 37, 1882.

THE ACTION OF NERVES ON THE SYMPATHIES.—Bert and Laffont have studied the action of the nerves on the lymphatics, and discovered that the mesenteric nerves exert a direct constrictive action upon the chyliferous vessels supplied by these nerves, and that the splanchnic has a dilating action upon the same vessels.—*Gazette des Hôpitaux*, No. 33, 1882.

THE ACT OF ROTATION.—Bechterew has made a series of experiments upon dogs in regard to rotation of animals on their long axis after injuries to the brain. He arrives at the conclusion that not only injury to the middle and posterior cerebellar crus, and deep injury to the medulla oblongata, produce rotation, but that lesion of the inner part of the crus cerebri in its whole course, from the thalamus to the pons, can also generate it. When the inner part of the crus cerebri is injured the rotation is about the uninjured side, whilst a lesion of the external layer of the crus cerebri causes rotation about the side of injury. The rotation about the long axis is produced through a lesion of those fibres which go from the cerebellum through the upper part of the crus cerebri to the corpora quadrigemina.—*St. Petersburger Med. Wochenschrift*, No. 6, 1882.

THE CEREBRAL CIRCULATION.—Gley has studied the influence of the intellectual act upon the cerebral circulation. He used a cardiographic tambour upon his own carotid. A philosophical

lecture, a geometric demonstration, and arithmetical operation were used to excite the activity of the brain. He observed during the intellectual work: 1. Augmentation of the number of beats of the heart, which appears to be in direct ratio to the attention. 2. Dilatation of the carotid artery and most marked dicrotism of the carotid pulse. 3. These characteristics persist after cerebral activity has ceased. These effects are neither cardiac nor respiratory, but vaso-motor changes.—*Revue des Sciences Médicales*, tome xix.

The Respiratory Centres.—Langendorff and Nitchsmann have studied the spinal centres of respiration. It has been shown long ago by several observers that centres exist in the spinal cord, which, by reflex activity, can carry on the respiratory act. They proceeded to determine if these centres are automatic as well as reflex. When the medulla oblongata is severed from the spinal cord and the flow of blood is arrested by artificial respiration, then after a short period independent respiratory movements are set up. The chances of this return of respiration are greater the younger the animal. If after section of the medulla oblongata a dose of .0005–.001 gr. of strychnia is given, then there ensue some convulsions, which in a short time are shortened and weakened by artificial respiration. After they are over, then suddenly, in the midst of the artificial respiration, violent respiratory movements ensue, but after a minute or two the breathing slows, and usually at the same time is deeper. The frequency corresponds, in general, to that of a normal animal. Not only is there rhythmic movement of the diaphragm, but coördinated respiratory movement of a distinct group of muscles, after removal of the medulla oblongata. They conclude, from these experiments, that spinal respiratory centres display automatic as well as reflex activity.—*Archiv. für Physiologie*, 1880, sechstes Heft.

A Regulating Nervous System of the Respiration.—Dr. J. C. Graham has discovered a new regulating nervous system of the respiratory centre. If, in a rabbit, after opening the abdomen (the thorax unopened), as long a piece as possible of the splanchnic is prepared (which is easiest on the left side), a section is made of it, and the central end is laid upon electrodes, then the breathing is arrested in a state of expiration, the diaphragm is in a state like in an extreme expiratory act, and the

expiratory muscles of the abdomen in the state of strongest contraction. This experiment succeeds when the two vagi and sympathetics in the neck are divided. This experiment is said to be very suitable for a demonstration at a lecture, as it never fails. After section of the medulla oblongata in its most anterior part, so that connection with the brain is cut off, still the experiment succeeds. After section of the spinal cord between 11th and 12th dorsal vertebræ the experiment still ensues. After section of the spinal cord between the 4th and 5th dorsal vertebræ then the experiment fails. These facts prove that the fibres run in the sympathetic and thus enter the spinal cord, and then ascend to the medulla oblongata. This irritation of the splanchnic succeeds when the animal is in a state of dyspnœa or apnœa. *Archiv für die gesammte Physiologie*, Band xxv, Heft. 7 and 8.

The Respiratory Centres.—Langendorff found with Longet and others that, after section in the median line of the medulla oblongata, respiratory movements of both halves of the diaphragm continue synchronously. He saw the state of affairs to alter when the vagus nerve or both are divided: the frequency and depth of the contraction of the two halves of the diaphragm were not synchronous. By division of the vagus on one side the breathing on that side was slower than upon the other. He thinks that the true centres of respiration are in the spinal cord and that the oblong medulla has the centres regulating their action. *DuBois' Archiv.*, 1881, Heft. 1 and 2.

The Inhibition of Spinal Respiratory Centres.—Langendorff has made some experiments upon irritation of the medulla oblongata. He holds that the respiratory centres are seated in the spinal cord; he tries to explain Flourens' experiment why, after injury to the medulla oblongata, or after cutting away of this part of the brain, the breathing is usually arrested. First, he takes the position that the mechanical injury to the medulla oblongata is a shock to the spinal centres lying in the neighborhood. He believes the medulla oblongata is the seat of a regulatory or inhibitory centre whose impulses go to the spinal centres of the respiratory nerves. The mechanical irritation of this apparatus or its paths, by a section or puncture, produces a lasting inhibitory effect upon the activity of the spinal centres. The existence of an inhibitory apparatus in the medulla oblongata is a

necessary conclusion, for in the central trunk of the vagus, inhibitory fibres run partly from the two laryngeal nerves, and partly from the lungs, and find their next station in the medulla. The question then arises: is one in position, through irritation of the medulla oblongata, to inhibit the respiration of an animal? He tried electrical, mechanical, and chemical irritation. The experiments were mainly made upon rabbits. He thinks that his results may be explained by the view, that in the medulla oblongata are centres whose irritation inhibit the respiration, and that it can be held that the section into the medulla not only irritates this apparatus but also exerts a shock upon the spinal respiratory centres lying in the neighborhood.—*DuBois' Archiv.*, 1881, sechste Heft.

ISAAC OTT, M.D.

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d.—MENTAL PATHOLOGY.

FOLIE À DEUX.—Moranda de Montezel, in a recent communication in the *Annales Medico-Psychologiques*, made the following division of the types of folie à deux: folie communiquée, folie imposée, and folie simultanée. The latter term is certainly not justified. There is no essential relationship between two cases of insanity arising at the same time among members of the same family, unless they exhibit the same delusions. In two cases reported recently by Dr. Whittaker (*Cincinnati Lancet & Clinic*, March 4, 1882), both husband and wife became progressive paretics under precisely the same circumstances, yet no one would think of classing these cases as cases of folie à deux, but, according to Dr. Montezel's dogma, they should be so classed. It would seem, therefore, that Dr. Montezel's term of folie simultanée unnecessarily complicates the subject. *The Chicago Medical Review*, March 25, reports the following interesting example of this psychosis, which occurred in a very striking phase recently at Andouille, France. Every member of a family of six persons at the same time became insane. Father and mother, both 64 years old; the two sons, 30 and 27; the two daughters, 28 and 24 years old, think they have been poisoned by witches, and that the Devil is in their clothes. They see him constantly and everywhere, day and night, and, as they assaulted everybody they met, it has, therefore, become necessary to put the whole family in an insane asylum. Here the delusions are obviously derived from the members of the family first becoming insane. Similar extended in-

stances are reported in the JOURNAL OF NERVOUS AND MENTAL DISEASE, October, 1880, which afford an apt explanation of the outer communication of delusions in the present case.

INTERMITTENT DELIRIUM.—Dr. D. Tagnet (*Annales Medico-Psychologiques*, March, 1882) discusses a psychosis which is by no means infrequent, and which belongs among the chronic hereditary psychoses. Many cases of recurrent mania properly belong here. There is a species of regularity in the attacks, and the general psychic features are rather melancholic than truly maniacal. As with other hereditary types physical abnormalities are by no means infrequent among these patients. The prognosis as regards a single attack is of course good, but complete recovery is out of the question.

EMOTIONAL INSANITY.—Under this head is reported, in the January number of the *Journal of Mental Science*, a well-marked case of monomania (primäre Verrücktheit, manie raisonnante). The patient displayed all the peculiar moral inadaptability to surroundings characteristic of this type of insanity. The patient displayed homicidal tendencies at times. The use of the term emotional insanity tends to rather complicate the subject and is of ill odor from a medico-legal standpoint. A similar case is given by Dr. Mongeri, who gives a medico-forensic study of the mental status of a Turk who murdered a Russian lieutenant (*Jahrbücher für Psychiatrie*, Band, iii, Heft. iii, 1882). The mental status of this individual was somewhat difficult to determine. He appears to have been a case of primäre verrucktheit with dominant religious conceptions. The peculiar Turkish training and the tendency of the race to fanaticism must render an exact judgment difficult, particularly as a European would find it difficult to eliminate preconceived ideas from his judgment.

THE NATURE OF INSANITY.—Dr. Charles Mercier (*Journal of Mental Science*, January, 1882) discusses the nature of insanity, and endorses the opinion that insanity was the failure of adjustment of the organism to its environment, expressed by Hughlings Jackson before his paper was completed. Exactly the same opinion was expressed in an article on insanity in *Gaillard's Medical Journal*, vol. ii, p. 452, in slightly different terms.

RAPTUS MANIACUS.—The type of insanity which Schwartzer has very appropriately called "transitory raving" has been shown to exist on this side of the water lately, by two cases reported in this JOURNAL for 1880, page 631. Dr. C. P. Burns (*Rocky Mountain Medical Times*, March, 1882) reports a case of this kind coming on in a patient suffering from otalgia, marked by explosive violence, and lasting but three hours. The case is not very well reported, but its salient features are so well marked as to leave no doubt that it belongs to this type of cases, whose existence has been denied for *a priori* reasons by certain alienists in obedience to legal clamor, but whose existence has been admitted by all the leading American alienists, including Ray and Rush.

HALLUCINATIONS IN PROGRESSIVE PARESIS.—Dr. W. Julius Mickle (*Journal of Mental Science*, October, 1881, January and April, 1882) discusses the subject of hallucinations in progressive paretics as related to the localization of cerebral functions. Of one hundred cases of progressive paresis Mickle found fifty-five to have hallucinations of the special senses. He is inclined to believe that sensorial disturbances play a more important part in progressive paresis than is generally believed. Hallucinations of the sense of smell seem to be relatively common. Dr. Mickle does not seem to take into account the extreme receptivity found among paretics of the delusions or hallucinations of others, and in certain instances not recorded, paretics have been known to imbibe hallucinations from chronic delusional lunatics. Of the cases reported thus far about one half have too extensive lesions for the purpose of localization of the visual and auditory centres; one third were in favor, and about one third opposed. He comes to the following conclusions respecting hallucinations in progressive paresis. First: That hallucinations and illusions are more frequent and important in progressive paresis than has been generally recognized. That, contrary to what is usually believed, the visual hallucinations occur in progressive paresis with scarcely greater absolute frequency than the auditory, but that in the general paralytic soldier the visual hallucinations bear a considerably higher ratio to the auditory than they do in other insane soldiers. That in the soldiers among chronic insane, auditory hallucinations predominate in frequency. That the hallucinations of progressive paretics are often of short duration, recurrent, variable, non-systematized, numerous, absurd, crude, at times disconnected, con-

tradictory *inter se*, and extremely pleasurable and painful. That lesions of the cortical sensory centres of the cerebrum are connected in an intimate way with the production of most of the hallucinations in progressive paresis. That in dealing with progressive paresis in reference to the doctrine of cerebral localization, use may be made of the distribution of cerebro-meningeal adhesions and the cortical changes associated therewith. That in cases of visual hallucinations in progressive paresis the angular gyrus is not affected in the marked manner one would anticipate, on the theory that it is the sole cortical visual centre; nor in cases of auditory hallucinations is the first temporo-sphenoidal, viewing it as the sole cortical centre. The morbid anatomy of progressive paresis therefore fails to support the exclusive view that these gyri are the sole centres of sight and hearing. The supramarginal convolution is affected more than the angular in those with visual hallucinations, and the adhesions are often well marked on the postero-parietal lobule. The second temporo-sphenoidal gyrus seems to suffer more than the first in the cases with auditory hallucinations taken collectively. Girma (*Thèse de Paris*, 1881) finds that hallucinations are very frequent at all stages of progressive paresis, but principally in the period of stupidity. In the early periods they are purely psychic, later on a sensory element enters into their production. They are very fleeting in the expansive types, but more persistent in the depressive types. They may lead to impulsive acts, but as might be expected, are not the point of departure for systemated delusion. Dr. Lautar (*Thèse de Paris*, 1881) calls attention to the fact that grandiose delusions are not characteristic of progressive paresis. This is almost a truism, and Dr. Lautar fails to demarcate between systematized and unsystematized delusions, and the whole article fails to show much clinical power of observation.

EPILEPSY IN ITS MEDICO-LEGAL RELATIONS.—The following case has excited considerable attention in Canada. A convict named Hayvren murdered another convict named Salter. The deceased and the prisoner were, as a rule, good friends, but the prisoner is reported by one witness to have said "that he would never go to Kingston, and that he had stabbed Salter because Salter wanted to send him to Kingston, and that Salter would never call him insulting names again." The convicts entertain a dread of being sent to the penitentiary at Kingston, but it does

not appear that there was any intention, nor had Salter any power, to send the prisoner there, nor was it shown that the prisoner was called "insulting names." The murder was committed openly in presence of a number of witnesses. Hayvren had convulsive attacks of some kind during childhood and youth. Although the patient himself had been a criminal, from his youth up, of a low grade, his family are very respectable people. The deed was committed with a knife made out of an old file, a kind of weapon very common, at least in the United States, among convicts, workhouse men, and other criminal and semi-criminal classes under confinement. It appears from the evidence that the prisoner had abundant opportunity to commit the homicide under more favorable circumstances; that "the prisoner stood perfectly still for a minute after committing the deed."

The defence was epileptic insanity, and the case presents many elements of interest. Dr. H. Howard, of Montreal, was the first medical expert called. He testified that the first thing which struck him was the prisoner's peculiar epileptic pallor. He at once saw the prisoner was an imbecile. From private friends, public and police reports, he found the man's conduct to have been very bad. He found the prisoner to have been a habitual inebriate from youth; constantly in prison, and, lastly, sentenced for five years to the penitentiary; while in the Montreal prison, previous to his removal to St. Vincent de Paul, he attempted to escape through a skylight, by means of a small cord, which broke, causing him to fall a distance of thirty feet. It was natural for the man to try and escape from prison. The insane in lunatic asylums all over the world try every day to escape, and very frequently successfully. But such means employed for such an end prove the fool. Premeditation is no more a proof of a man's sanity, than is the right and wrong test which has so long disgraced the statute-books. If the knowledge of right and wrong be the test of insanity, then one third at least of all those in asylums all over the world should be set at large; and if giving an intelligible answer to a question be a proof of sanity, then a still greater number should be discharged.

Hayvren made a poor attempt at committing suicide, showing that, like all insane persons, he was a moral coward; he wanted to die or thought he did, as when he wanted the nurse to strike him on the head. Then when the kind-hearted acting warden went to him for the knife after the homicide, he actually tried to get that officer to shoot him,—all only positive proof that, like all in-

sane persons, the man was a moral coward. The Rev. Father Knox, who obtained the knife from Hayvren, testified that when he saw the man in his cell he was a raving maniac. Psychologically there was not much to be observed. He spoke but little, and that little did not show intelligence. He said "there was something alive in his belly," and asked the doctor to cut it out. In reply to the question "Did he sleep?" he answered, "No, he could not sleep." He complained of being tired; he wished to sleep. The keepers in charge told Dr. Howard he was seen every half hour, and whenever spoken to always answered, showing that he did not sleep. Insomnia is one of the most marked symptoms of insanity. He was very nervous and excitable, picking up bits of thread and dividing every fibre. His face and body were anæmic; perspiration was pouring from every pore, cold and clammy; his pupils were dilated and sluggish in action; locomotion was normal. His pulse was a hundred and ten; temperature 93.8°; respiration thirty-six. The radial artery could be seen pulsating. The abdominal aorta was clearly visible when he stood, sat, or was in a recumbent position; this was the something alive in his bowels which he wished removed. Five days after, Dr. Howard's examination was continued. His pulse was then one hundred; temperature 92.4°; respiration thirty-six; heart sounds at base, normal; at arch of aorta, something like a bellows sound; apex of heart: first sound, strong; second, weak; the abdominal aorta, abnormal. These are frequently found in persons of an epileptic neurosis, but they may be early symptoms of aneurism. Here, however, was an abnormal state of the vascular system, caused probably by a fall from the roof of the prison; but whatever the cause, it might suffice to produce, at least, functional, if not organic, derangement of the mental organization, to account for the man's actions. When it is considered what a weak mind he has always had, it is easy to understand what havoc such a diseased vascular system might produce upon such a mental organization. Dr. Howard examined the nervous system by electricity and æsthesiometer, and found motility normal; the patient was found to be partially analgesic. This is one of the unfailing symptoms, always to be found in the intellectually insane; it can never be feigned, no more than can temperature, which is always below par in the insane, except where there is fear, which is by no means a symptom of insanity.

Judging the mental state of John Hayvren by his conduct, by his physiological symptoms, by his psychological symptoms, by

his pathological symptoms, Dr. Howard did not hesitate to declare him to be a man of unsound mental organization ; that he was intellectually and morally insane. A mere creature of impulse, and if he did kill Thomas Salter in the manner in which he is said to have done, he killed him while laboring under an insane, epileptiform, uncontrollable impulse, for which he was not responsible, and his mental aberration was due to three causes : Heredity ; to his being an inebriate from his youth up ; and third, it had been aggravated by his fall from the roof of the jail previous to his having committed the crime of which he is accused.

The use of instruments, though here justifiable, it must be confessed, looks something like clap-trap. Many of these statements must strike the alienist reader as being too positive, and some of them as being even slightly contradictory or fanciful. For example, the fact that the prisoner attempted to escape from the prison by such imperfect means is not inconsistent with sanity. Many desperate criminals are known to have attempted escape by similarly imperfect means. The evidence given by the witness that the prisoner said he premeditated the murder is, as Dr. Howard claimed, no evidence that the murder was not committed during an epileptic state, but at the same time it is a very suspicious circumstance where the burden of proof certainly lies on the insanity theory. As Dr. Howard claims, an epileptic may premeditate a homicide, and yet carry out that homicide at a time and under circumstances which could not fail to show the homicide was then unintentional, and the direct outcome of an epileptic explosion.

Dr. Howard's statement that all insane persons are moral cowards is certainly not to be proven. Had he said many epileptics, he would have been nearer the truth. The statement about analgesia being always a symptom of intellectual insanity, is demonstrably erroneous. The statement that the man was an imbecile, and the assignment of the amount of intelligence Dr. Howard does to the prisoner, are, however, not necessarily incompatible. Dr. Howard, like Dr. Nichols and others of the more scientific members of the Asylum Association, holds that imbecility is a result of teratological defect ; insanity, a result of pathological defect ; they therefore classify the primary monomania of the Germans with the imbeciles as imbecility of the first grade, both being equally insane in the sense of the law.

Dr. Howard may have positive reasons for saying that in his opinion the temperature of the chronic insane is always below

par ; this has not yet been established. That in certain cases it is, cannot be denied, and this is undeniably the case with epileptics and paretics. Among certain of the insane and certain neurotic subjects the temperature may fall very low. Lowenhardt[1] reports two cases of insanity in which the temperature was at various times 87.5° F., 89.6° F., and 90.5° F. ; these were cases of maniacal excitement. Mendenhall[2] cites a case of dementia in which the temperature was 90.5° F. Zenker[3] has studied nine cases of insanity where the bodily heat was found to sink easily ; it fell in three cases as low as 90.6° F., and in one instance as low as 87.06° F. Phenomena of this kind, from what is now known of the action of the nervous system on temperature, are nothing more than might be expected. It may therefore be admitted that a patient having a temperature below 96°, not in collapse, must be assumed suffering from some neurosis, presumably of a psychical kind.

Some things are to be noticed in his evidence in favor of the theory of the prisoner's epilepsy. First : The peculiar pallor observed by Dr. Howard. Second : The existence of neurotic symptoms, low temperature, and analgesia. Third : The convulsive attacks during childhood and youth. Fourth : The patient's standing still after the attack ; and Fifth : His violence coming on after the comparatively calm manner in which the crime was executed. The prisoner's statement that his aneurism was something alive which needed cutting out, was not necessarily a delusion. In a man of his intelligence, the supposition that it might be a parasite, was a not unnatural one, and the belief that it needed cutting out was fully in accordance with many popular ideas on surgery.

Dr. F. W. Campbell testified that he had made an examination of the prisoner, and that he considered him an insane man. He agreed in main with Dr. Howard.

Dr. Edmond Robillard testified that he was the Government Inspector of Insanity at the Montreal Jail ; he examined the prisoner on the 17th, 19th, 20th, 21st, 22d, and 23d September ; prisoner was nervous and uncomfortable, and reluctant to converse ; however, he said he did not suffer from headache ; during the two or three first visits his pulse was agitated and he was in prespiration ; at the end of each examination his pulse would fall

[1] *Allgemeine Zeitschrift fuer Psychiatrie*, 1868.

[2] *Medical Record*, June 4, 1881.

[3] *Journal of Mental Science*, October, 1877.

to seventy or seventy-two, and the perspiration would all cease, as if the fright was over ; at each visit told witness he was all right, except that he had something in the abdomen which pained him ; the muscular system was that of a strong man. He discovered the dilatation of the aorta ; prisoner's respiration was eighteen or nineteen, and was natural ; after being with the prisoner for some time he did not deem it necessary to further test it, as it was normal. All the perspiration had been caused by fright at the sight of a stranger ; on being asked why he killed Salter, he always answered "I do not know," and could not be brought to speak on this question very much ; at another examination he was asked if he knew Salter was dead, and he answered he did not know.

Dr. Robillard came to the conclusion that he was a very wicked man with greatly perverted morals, and would do any thing to obtain his object. He did not see any symptoms of epilepsy ; prisoner could distinguish right from wrong. Dr. Robillard was of opinion that half of the epileptics become insane ; uncontrollable impulses are very rarely met with in imbeciles or idiots ; an epileptic does not remember what he does during one of those uncontrollable impulses. He believed prisoner was perfectly conscious of his act, but that immediately after, he became greatly excited, and this fact moved his dormant impulses ; and that the prisoner was neither an imbecile nor an idiot, but that the muddle in which he passed the greater part of his life made of him a most depraved character ; Dr. Robillard would not have sent him to the lunatic asylum as insane after his examination.

Dr. Pominville testified he had seen the prisoner almost daily in the penitentiary ; but had not noticed any mental derangement ; the prisoner was *taciturn and morose*, but that was not extraordinary ; *he was debased morally and mentally*, like most of the convicts, the results of vice ; he knew right from wrong, and was responsible for his acts ; he was cool and collected after the murder, and seemed to be looking in a looking-glass at the slight wound that he had inflicted on his throat. On cross-examination he stated he had not made a special study of mental science ; had paid attention to ordinary diseases. He had not followed the progress of psychiatry, and *did not wish to pronounce an opinion on what was termed "uncontrollable impulse," but did not believe any such thing occurred in the prisoner's case.*

He, in answer to a question by the Court, said *that he thought that at the time of the homicide prisoner was sane, and knew right from wrong, although at the very moment the act was committed he might*

not have thought of either ; both before and after the deed he thought he was perfectly sane.

Dr. Vallée testified that after hearing all the evidence, he was of opinion that the prisoner was not insane at the moment he committed the deed, and was perfectly able to distinguish between right and wrong. A man whose temperature is at ninety-five and two thirds must be suffering greatly ; at Beauport Asylum the epileptic maniacs are considered the most dangerous ; in cases of epileptic fits the impulses are momentary ; the acts are automatic, violent, and without motive ; an epileptic man never remembers the acts he has committed ; imbeciles are subject to these uncontrollable impulses. No matter how marked the depression of temperature, of itself it does not constitute a proof of insanity. Dr. Howard arrived at the conclusion that the prisoner struck the blow while under a fit of epileptic mania ; and, consequently, could not be held responsible for his act. Admitting this hypothesis, the fit must have been epileptic dizziness or veiled epilepsy. Now, the unsettled state of the mind, the obtuseness of ideas, the confusion of memory, are the essential characteristics of such attack ; nothing analogous can be detected in Hayvren ; on the contrary, every thing indicates most clearly that his crime was designed beforehand. He chose his victim, fixed his hour, and, after striking down Salter, explained his reason for so doing : "You 'll never call me C——S—— again."

Dr. William Gardner next testified : There were no facts in the evidence to warrant the opinion that the prisoner was an epileptic maniac or imbecile, but he was certainly stupid, and of a low order of intelligence ; from the evidence he has heard he would not have made such a diagnosis as Dr. Howard's, but had he done so would consider the prisoner a fit subject for an insane asylum ; he himself would not have sent him to a lunatic asylum ; witness is of the opinion that prisoner can distinguish between right and wrong ; it is possible to be partially insane or monomaniac ; insomnia is not a sign of insanity. He was of opinion that all the isolated symptoms combined would not produce insanity. In all his experience and reading never knew of a case where the temperature was so low, except in cases where death was impending.

Dr. Charles Cameron next testified. He had practised for eight years, five of which he had passed in the Montreal General Hospital ; is Professor of Medical Jurisprudence at Bishop's College. He had heard the evidence of Dr. Howard, and was of

opinion that the prisoner was not insane; and had heard nothing to prove that the prisoner was incapable of distinguishing right from wrong on the 29th of June last. On cross-examination, said that he agreed with Dr. Gardner on the subject of low temperature; the lowest temperature on record is 92.2°. "A man must be the measure of himself; his mind must be the standard of comparison by which to determine his sanity or insanity, responsibility or irresponsibility. The only safe way in such cases is to compare the individual with his former self."

Such was the evidence given in the case. The statements of Dr. Vallée respecting the unsettled state of mind, obtuseness of ideas, confusion of memory, are true as regards many of the epileptic psychoses, but they are wanting just where they are needed, in many of the psychic equivalents of an epileptic attack. As an element of differential diagnosis their value is but a very, very relative one. Dr. Robillard's statement that impulses are rare with imbeciles, using the latter term either in the sense of Dr. Howard or the ordinary sense, is not in accordance with the views held by alienists. His testimony that the prisoner was nervous and disinclined to converse, and was so frightened that his pulse and perspiration were affected, disposes of the theory that the prisoner was a hardened criminal, who would commit a crime in a reckless, brutal manner. No reckless, hardened criminal would act in such a manner, and no sane criminal of any other type would have committed such a desperate crime for such a more than dubious motive. What Dr. Robillard means by saying "the prisoner was perfectly conscious of his act, but became immediately excited, and that roused his dormant impulses," can not well be determined, but it is obvious Dr. Robillard was endeavoring to explain some psychic phenomena of the prisoner to his own satisfaction. There is here, then, first a crime performed with great calmness, then great excitement, and then very great stupidity, but it may well be asked, does not this correspond ideally with certain epileptic psychic phenomena? The meaning of the paragraph, "The muddle in which the prisoner passed the greater part of his life, made of him a most depraved character," is very obscure; perhaps it alludes to the prisoner's intoxication.

According to the statement of Dr. Pominville, the prisoner was cool and collected after the murder, but was taciturn and morose naturally, and was debased morally and mentally, whatever that may mean. He evidently did not believe that the prisoner pre-

meditated the act, or he would not have said that the prisoner at the time of the act never thought of wrong or right. If he did not weigh the consequences of the act, it was not premeditated, and by this evidence the theory that the act was more than impulsive receives a severe shock. It must be remembered in weighing the value of the statement that "Dr. Pominville never saw any evidence of mental derangement in the prisoner," that in Canada, as in the United States, politics determine appointment to medical positions in jails; and that, as a rule, mental derangement is not first noticed by the jail physicians, but by the keeper, who naturally requires tremendous evidence to make him believe that a convict ill, physically or mentally, is not feigning. Hayvren, however, was placed in the infirmary soon after his attempt at escape. While there he, as testified by Dr. Howard, asked the infirmary nurse to strike him on the head, and made many other strange requests to this man, who said he at first thought he was joking, but finally concluded that the man was mad. I have known prisoners to make prison-keepers believe them insane, but there always has been some evidence then as to the existence of epilepsy in these cases.

Dr. Gardner appears from his testimony to consider the man of a low order of intelligence but not an imbecile, although even from the standpoint of a low order of intelligence he is very stupid. How this differs from imbecility, I must confess I cannot determine. Dr. Gardner's reading respecting temperatures did not embrace the *Journal of Mental Science*, nor the *Zeitschrift für Psychiatrie*, nor the *Medical Record*, or he would not have made the statement that death must be impending if such a temperature existed. The same remark will apply to Dr. Cameron's evidence. As to Dr. Cameron's statement that a man must be the measure of himself, etc., a little reflection will show that while this is true in a very limited sense, considered as an absolute rule it is a failure. The primary monomaniacs are always monomaniacs, and the imbeciles are always imbeciles. The attempt to compare them with their former selves is an absurdity. This idea of change of character being an absolute rule is an enormous hindrance to progress, and has caused not a little injustice in forensic psychiatry. Dr. Cameron, in his editorial comments, seems to have forgotten that there is such a thing as an epileptic countenance and a pallor peculiar to epileptics, and that a sound and scientific diagnosis of epilepsy might be made on this evidence, although the patient was never seen in a "fit."

Taking into consideration that this patient presented an epileptic pallor, that he had a convulsive disorder during childhood and youth, that the alleged motive was baseless, that immediately after the crime he was at first cool and collected, standing perfectly still for a minute, and then, markedly and violently excited, so that an intelligent observer (the Catholic clergyman) claimed that the man was maniacal, and the subsequent stupidity, the presumption that the crime was the offspring of an epileptic psychosis, expressed in the *Chicago Medical Review*, February 1, and *Journal of Mental Science*, January, 1882, seems the most probable one, but it must be admitted that the case is a difficult one. The prisoner was found guilty and executed.

The brain presented the following features, according to Dr. Osler, *Canadian Medical and Surgical Journal:* The Sylvian fissure was united with the first frontal gyrus; there was a junction of the interparietal with the parieto-occipital and first temporal fissures; an extension of the calcarine fissure into the scissura hippocampi; a union of the collateral and calcarine sulci; and there was a fusion of the first frontal gyrus, so that there appeared to be four frontal convolutions arising from the ascending frontal or anterior central gyrus. The results of this examination have but little value from an anthropological standpoint, and none at all from the standpoint of the alienist.

Acute Mania and Mendel's Hypomania.—Witkowski (*Archiv für Psychiatrie und Nervenheilkunde*, xii, 1) discusses acute mania, under which title he includes only a psychosis characterized by profuse conceptions, exaggerated ideas, marked motor excitement, and changes in temper. This description, it will be obvious, belongs not to acute mania properly so-called, but to the hypomania of Mendel (Die. Manie, Berlin, 1881), or the so-called subacute mania of asylum reports. That there have been many diverse types included in acute mania there is no doubt, and Mendel and Witkowski's clinical demarcations are very well timed. Witkowski's term is, however, not well chosen.

Mental Status of Idiots and Defective Children.—Dr. Huchard (*Archives de Neurologie*, March and April, 1882) discusses the mental condition of these and speaks of their tendency to duplicity and simulation. He alludes to the power which fixed ideas have over this class of persons, producing,

according to Esquirol, a species of catalepsy of the intelligence; while there is nothing new in this *résumé* it brings together many scattered fact which are of interest.

Sexual Perversion and Brain Abnormalities.—Dr. Sterz discusses a case of sexual perversion (*Jahrbücher für Psychiatrie*, Band iii, Heft iii, 1882), and comes to the conclusion that this condition is one of the psychical degenerative ones, and that it is attended by abnormalities in brain development, and is generally accompanied by mental weakness, and in many cases abnormalities of the skull, eyes, and at times the sexual organs. These patients are also at times liable to markedly imperative conceptions.

Insanity of Seduced and Deserted Women.—Dr. E. E. Mackintosh (*Edinburgh Medical Journal*, April, 1882) discusses various mental phenomena presented by seduced, betrayed, and deserted women, under circumstances when they believe the secret of their pregnancy, hitherto undiscovered, is about to be laid bare. Dr. Ray ("Mental Pathology," page 286) has cited with approval the opinion of Dr. William Hunter, that young unmarried women guilty of killing their new-born offspring are so distracted by conflicting feelings, sharpened to morbid acuteness by the great physiological movement of parturition, as to be hardly responsible for their acts. Dr. Mackintosh deals with both the psychical and physical conditions intermingled and interoperating under such circumstances; the patient showing evidence of puerperal fever when in danger of being discovered, and this passing away when such danger disappears. He lays great stress on the importance of having sympathizing nurses and surroundings in such cases.

Iodoform Insanity.—Schede (*Centralblatt. für Chirurgie*, No 3, 1882) has noticed that the use of iodoform has been attended by marked psychical symptoms. One type which is very noticeable among children is marked by dulness of the special senses, vomiting, and spasms of single groups of muscles. In adults Schede has on two occasions seen general mental confusion produced by the external use of iodoform. In the case of a neuropathic female, the external use of iodoform was followed by sudden, general mental confusion, loss of personal identity, loud

singing, and violence. Schede has had under observation cases of melancholia attonita, also two cases of melancholia with frenzy, and three cases of simple melancholia, all arising from the use of iodoform. Iodoform really belongs to the alcohol group, and that it should at times produce such symptoms is scarcely surprising. What Schede means by loss of personal identity is not clear; perhaps the patient manifested an unsystematized delusion that she had been changed in some mysterious way.

Letters of the Insane.—A gentleman discharged from the Barnwood Lunatic Asylum, Gloucester, England (*British Medical Journal*, March 25, 1882), has complained that his letters written in the asylum and while insane were sent to his friends, and he thus has been permitted to make a fool of himself in public. The case illustrates one great difficulty with which asylum officials have to contend, for if the superintendent detain the letters, he is berated, or looked upon with suspicion for so doing, while if he send the letter, results much the same as those above mentioned follow.

Insane Physicians.—The Lamson case is likely to bring up a discussion of the subject of insane physicians practising. It is now claimed for Dr. Lamson that he is insane, though the facts alleged scarcely justify too positive conclusions on this head. His insanity, it is said, chiefly manifests itself in the prescription of enormous doses of aconitine. That the insanity of a physician might take this direction is shown by a case (*Chicago Medical Review*, April 15, 1882) which occurred in Vienna. A physician became the victim of progressive paresis, and in consequence of some paretic notions, prescribed for all his patients enormous doses of corrosive sublimate. An intelligent apothecary suspected the physician's insanity, and the latter was in consequence sent to an asylum; and a similar case has been reported from Philadelphia. In the Lamson case a like condition of things may exist, but of it but little evidence has been thus far furnished.

Insanity and Divorce.—A recent English decision is of some interest in this connection. On the night of the marriage the wife (*Medical and Surgical Reporter*, February 4, 1882) refused to allow it to be consummated. She was subsequently found on examination by several alienists to be a melancholiac, and mentally

unfit to enter into a marriage contract. The court decided the marriage was null. In this case there was but one view to be taken; but about the abstract justice of the law of Wisconsin lately repealed, which made chronic insanity a ground for divorce, there may be some question, since from a humanitarian standpoint it seems hard to make chronic illness a ground for divorce. There are, however, many individual cases in which the non-existence of this law works hardship for individuals. The *British Medical Journal* in a recent issue takes similar grounds, but seems to be a little awry on terminology as it speaks of folie circulaire as dementia.

INSANITY FROM LEAD.—Dr. J. F. Goodheart (*British Medical Journal*, April, 1882) recently reported four cases of insanity from lead poisoning, and thought that the sequence of events in lead poisoning was as follows: Introduction of lead; vascular tension; arterial spasm, followed by convulsions or mania, leading to permanently impaired condition of the cortical substance by reason of permanent spasm of the cerebral arteries, and thus to progressive paresis. His views are in full accord with those of Savage (*Journal of Mental Science*) and Kiernan (JOURNAL OF NERVOUS AND MENTAL DISEASE, volume viii, page 460). Meyer discusses (*Thèse de Paris*, 1881) the types of progressive paresis produced by lead. He has found that the disease usually occurs between forty and fifty; that in its early stages the patient presents hallucinations of sight and extreme terror, which somewhat resemble delirium tremens. The second period is one of depression mentally, during which the early physical symptoms of progressive paresis make their appearance. The last period terminates with the usual motor and psychical symptoms of progressive paresis. Meyer is inclined to believe that the patient is cured, but his intelligence is permanently impaired. He is inclined to believe that this type of progressive paresis differs from the ordinary type and can be demarcated. From my own experience elsewhere reported (JOURNAL OF NERVOUS AND MENTAL DISEASE, volume viii, page 454), I am inclined to doubt the favorable prognosis, and the possibility of clinical demarcation, and this opinion is strengthened by the prudent addendum of Dr. Meyer that the patient's intelligence remains impaired.

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J. G. KIERNAN.

e.—GENERAL PATHOLOGY OF THE NERVOUS SYSTEM.

EPILEPTIFORM CONVULSIONS FROM CEREBRAL DISEASE.—J. Hughlings Jackson. The simplest convulsions are those described by Bravais in 1824. They are here spoken of as epileptiform seizures to distinguish them from epilepsy proper. The study of these seizures has entered into the scientific stage principally consequent on Hitzig and Ferrier's physiological researches, and the clinical researches of Charcot and other physicians. The seizures alluded to begin in the arm or face, or leg; each is believed to depend on an excessive liberation of energy (excessive nervous discharge) by cells of some particular part of the cortex, within the so-called motor region of the cerebrum.

1. *Starting-points.*—In all cases the spasms begin unilaterally. *a.* Hand, usually index finger, or thumb, or both. *b.* Face, usually near mouth, or in the tongue, or in both. *c.* Foot, usually great toe.

2. *Ranges* are very numerous. We may arbitrarily make three ranges. *a.* Mono-spasm (arm, face, leg; clinically analogous to Charcot's monoplegias from cortical destructive lesion). *b.* Hemi-spasm. 1. Of the face, arm, and leg, with turning of the head to the side convulsed, clinically analogous to a degree of cerebral hemiplegia, described by Vulpian and Prevost, in which the head and eyes turn from the side paralyzed. In this range there is usually some spasm of the bilaterally acting muscles of both sides. Part of the evidence verifying Broadbent's well-known hypothesis as to differences in the representation of the unilaterally acting muscles in the two sides of the cerebrum. *c.* The other side of the body or part of it may be convulsed. This has been explained variously. 1. On the facts of Wallerian wasting "descending" into the same side (anterior column), and into the opposite side (lateral column), of the cord. 2. By Broadbent's hypothesis. 3. By the opposite cerebral hemisphere becoming engaged.

3. *March of spasm.*—When limited to an arm, the spasm may go down that limb; but usually it goes up. If in hemi-spasm the spasm begins in the hand, it goes up to the arm and down to the leg; if it begins in the foot it goes up the leg, and, with many exceptions, down the arm.

There are few observations on the spreading of spasm (when the convulsion has become bilateral) on the opposite side. Questions as to spreading of spasm on "opposite," in relation to starting-point on first side.

We have further to note that the spasm spreads in compound order: this is most easily seen in the face. First, spasm of muscles whose movements are largely unilateral in action on one side of the face. Next there is a compound effect of greater spasm of them, with added spasm of the bilaterally acting muscles of both sides. (Further evidence of Broadbent's hypothesis.)

4. *Suddenness of onset, rapidity of spreading, and duration of seizures.*—The author thinks that the more suddenly the spasm starts and the more rapidly it begins to spread, the greater the range and the shorter the seizure (*vice versa* for deliberately, etc., beginning fits). Inference that the cortical liberation of energy in different cases varies not only in quantity liberated, but in rate of its liberation—the more rapid liberations overcoming greater resistances.

5. *Post-paroxysmal condition* (*paralysis*). — Admitting many complications and difficulties, ordinary temporary paralysis after convulsion, beginning in a patient who before a seizure had no obvious paralysis, is spoken of. The paralysis is, in the author's experience, always of the parts first and most convulsed. It varies in degree from such as mere inability to pick up a pin to absolute powerlessness of the hand and arm. It varies greatly in range, from paralysis of the hand to hemiplegia, with (J. Mickle) lateral deviation of the eyes, and probably to greater ranges still. There is, for an example, this sequence: *a.* A man is seemingly well. *b.* His leg is convulsed strongly and the arm slightly for about ten minutes. *c.* The leg is much paralyzed for a few hours. *d.* He is seemingly well again. When a cortical lesion is found we have to note whether any paralysis there had been was after a convulsion or not.

Various hypotheses as to the nature of post-epileptiform paralysis: *a.* Congestion induced by asphyxia in the paroxysm. But there is no asphyxia in some local convulsions leaving complete local paralysis. *b.* Extravasation of blood. There is in the cases just adverted to nothing to cause extravasation. *c.* Todd and Alexander Robertson suppose that after the excessively active processes from cortex to muscles which the convulsion implies, there is corresponding exhaustion of the parts engaged, or of some of them—internal capsule, fibres of the cord, anterior horns, nerves, muscles. This hypothesis, the author thinks, is most in accord with the facts. The objection that there is no relation of proportionality between the severity of the seizure and the subsequent paralysis, is considered.

The author refers to conditions of the deep "reflexes" after such seizures. He first alludes to Westphal's observations on them after epileptic seizures, and to some more recently made on such cases by Dr. Beevor. He points out the difficulties as to the state of the reflexes in post-epileptiform paralysis, and hence the as-yet doubtful bearing of his observation on the various hypotheses stated. The state of the "reflexes" should be noted instantly after the paroxysm, and at various times up to recovery. If the "reflexes" are exaggerated on the side temporarily paralyzed, there is the difficulty that they may be more or less so permanently from permanent changes induced in the cord by *destructive* disease of the cortex; for exaggerated knee-jerk and foot-clonus may be found on the side subject to convulsion several weeks after a fit, even when there is no obvious paralysis of the leg.

6. *Post-epileptiform aphasia.*—Partial temporary aphasia is found in some cases after fits beginning in the right cheek; often, however, after there is what is called ataxy of articulation. After fits beginning in the hand the partial temporary aphasia is often a misuse of words, or a reduction to well-organized propositions, such as "I don't know," "very well." There may be some temporary right-sided paralysis along with the temporary aphasia. Inability to put out the tongue when told may exist in these, as in other cases of aphasia, when that organ moves well in all automatic operations. Todd and Robertson's hypothesis, the author thinks, explains best the temporary aphasia (the negative element only, of course). Further, he thinks that it best accounts for the negative physical condition during loss of consciousness after seizures of epilepsy proper, whether there be the positive condition of mania, or other actions as well, for which positive condition it indirectly accounts ("loss of control," Anstie, Dickson).

7. *On affection of consciousness.*—Usually unaffected in limited convulsion of a limb, side of face, or even of one side of the body. Roughly speaking, consciousness usually ceases when the eyes and head begin to turn to the side first convulsed. The more sudden and rapid the spasm, the less is the range attained before consciousness is lost. The severest epileptiform seizures differ from the severe seizures of epilepsy proper as to affection of consciousness, in that, in the former, consciousness ceases late in the paroxysm, in the latter, the first thing, or very early.

8. *Locality of lesion* (anatomical diagnosis).—When disease is discovered *post-mortem* to the epileptiform seizure it is usually in the so-called motor region. Cases referred to.

9. *Physiology of lesion.*—When the fits always of the same style recur, although often in different degrees or ranges, the inference is that there is a persistence of change in some cells in one locality, such that they attain high instability, and occasionally discharge excessively.

10. *Pathology of the lesion.*—The question in pathology is "How does the hyperphysiological condition of instability result?" In some cases the author has not discovered, has no doubt overlooked, a local lesion; in many cases there is tumor. Clinically there is in some cases a condition for embolism; in some there is disease of one ear, evidenced by discharge, and of the side opposite that on which the convulsion begins. In some cases the seizure sets in, in same part on the side opposite to the side of the head injured—there being in a few of these cases a local depression of the skull.

11. *Treatment.*—Partially empirical (bromide, etc.), ligature, and treatment of syphilis. Question of trephining in certain cases.—*Abstr. Internat. Congr.*, 1881, p. 76.

Pathology of Basal Brain Tumor, with Demonstration of a very Rare Case.—Dr. F. Müller, Graz. Conclusions: 1. Basal interruption of conductivity of the trigeminus, as well as destruction of the Gasserian ganglion, are not necessarily followed by morbid changes in the nutrition of the eye. 2. Absolute paralysis of the first branch of the trigeminus may exist—at least for many weeks, without trophic changes on the part of the eye being produced, notwithstanding the want of any artificial means of protection. 3. In spite of basal interruption of the conductivity of the facialis, the Faradic excitability of the neuro-muscular apparatus may remain normal for some time—the particular case for four weeks (at the most there occurs in some branches a very small quantitative diminution of excitability). The non-existence of reaction of degeneration during the first four weeks of facial paralysis proves nothing as to the formation of a basal tumor. 4. In complete paralysis of all the oculo-motor branches which innervate the outer muscles of the eyeballs, and in simultaneous complete amaurosis from purely basal causes, there may exist normal pupillary reflex to light and shade. 5. This particular case showed the simultaneous existence of *eleven alternating forms of paralysis*, among them an alternating sensory paralysis of the trigeminus and of the extremities, inclusive of trunk. 6. The

motor hemiplegia entailed by the destruction of one half of the pons is persistent, while the sensory paralysis is only of a *transitory* nature.

7. *One* intact half of the pons is sufficient for the conduction of the entire sensibility of all the extremities, and of the trunk.

8. Destruction of the middle crus cerebelli produced in my case involuntary *manége* movements, and a falling toward the opposite side.—*Abstr. International Med. Congress*, 1881, p. 89.

Localization of Disease in the Brain and Spinal Cord so far as Pathognomonic and Diagnostic.—C. E. Brown-Séquard. The author states in a preliminary paper: "Under this title it is my purpose to ask the Section to discuss the following questions: 1. Are there parts of the brain and of the spinal cord which, being diseased, give rise to symptoms which no other parts can produce? 2. What is the diagnostic value of certain symptoms to show the seat of disease in the brain or spinal cord? 3. What gains have we made in recent diagnosis by the recent researches on localization of disease in the cerebro-spinal centre? As regards the first of these questions, I will try to show that although there is no symptom which alone possesses an absolute pathognomonic value concerning the seat of the disease, there are, however, morbid manifestations, the co-existence of which, establish almost certainly, and sometimes even certainly, that special parts are diseased. As regards the second question, it will lead me to speak of the connection: 1st, of aphasia with disease of the third frontal convolution, the island of Reil, and the occipital lobe on the left or on the right side; 2d, of the Jacksonian convulsions with some cerebral convolutions; 3d, of brachial, crural, facial paralysis and of other kinds of monoplegia with lesions of certain convolutions; 4th, of cerebral semi-anæsthesia with disease of the optic thalamus or of the posterior part of the internal capsule; 5th, of hemi-chorea with disease of the corpus striatum or of the anterior part of the internal capsule; 6th, of titubation with disease of the cerebellum and of some parts of the bone of the brain; 7th, of diabetes with disease of the floor of the fourth ventricle; 8th, of labio-glosso-laryngeal paralysis with certain groups of bulbar nerve cell; 9th, of some symptoms of labio-locomotor ataxia with disease of certain parts, and of other of the symptoms of that affection with disease of other parts, of the posterior columns of the spinal cord; 10th, of paranæs-

thesia with disease of the central parts of the lumbo-dorsal enlargement of the spinal cord; 11th, of progressive muscular atrophy with atrophy of the nerve cells of the anterior gray cornua of the spinal cord; 12th, of the essential infantile paralyses with small *foci* of inflammation of the part of the gray matter just named; 13th, of intermittent paraplegia with ischæmia of the dorso-lumbar enlargements of the spinal cord. As regards the third question, I shall show that we have recently made considerable advances, although much less than is generally believed.—*Abstr. International Med. Congress*, 1881, p. 71.

On Percussion of the Skull in the Diagnosis of the Brain.—Dr. Alex. Robertson, Glasgow. Although attention was directed by the writer in 1877 to the value of percussion of the skull in the localization of disease on the surface of the brain, and Dr. Ferrier (*Brain*, 1879) has also insisted on its importance, the subject may still be considered comparatively new to the profession. The paper first deals with objections against the practicability of transmitting the degree of force employed in tapping the skull with the finger to the surface of the brain. Duret's experimental researches on cerebral traumatism show that in blows on the head a "cône de dépression" is formed, which passes deeply in the line of the thrust to the base of the skull; the slight force of percussion will act in a similar way, though it may scarcely extend beyond the cortical substance. A somewhat analogous instance of the irritation of a morbid part into conscious sensibility is sometimes supplied by disease of the lungs, in percussion over a cavity or softened caseous matter near the surface of the lung. Clinical experience is one apparently conclusive on the question. Cases of Jacksonian epilepsy and monoplegias are referred to, when the symptoms pointed to the motor regions of the convolutions as the seat of the disease, and in which percussion of the skull gave very distinctly deep-seated pain in that part of the head, and *nowhere else*. The two kinds of symptoms—the disturbance of function and the developed pain—lend each other mutual support in the localization of the disease. When the convulsive movements are general, the pain brought out by percussion at some other part of the head, probably indicates the centre from which the morbid action spreads to the motor convolutions. In some cases corroboration of the diagnosis is derived from the diagnosis of former blows, and also from the beneficial effect of

treatment over the painful region: another objection is, that the brain substance is wholly insensitive, and the membranes are only slightly sensitive. In reply, it is pointed out that the dura mater and the pia mater, like other fibrous membranes, when in a state of disease and subject to tension, may give rise to sever pain. The pain in the cases founded on is not induced by mere rubbing or gentle pressure, but by *percussion.* It is therefore inferred that the disease is not in the bone, unless it be in the inner table of the skull; and if it is situated in this part, it is of great importance to elicit the fact, as morbid action there usually involves the outer, and often the inner, membrane and brain itself. However, disease of the bone in adults in most cases is syphilitic, and the pain, as a rule, is such as to stand in no need of artificial development to manifest its existence. Then follow brief notes of six cases under the writer's care. In some of these great benefit was derived from repeated counter-irritation over the seat of developed pain. It is stated that several cases support the prevailing views respecting the localization of motor function in the cortical substance. The mode of practising percussion of the skull is described. The physician should be careful to make the taps of the finger as nearly as possible of equal force, except in the temporal region where they should be lighter. It is well to percuss one's own head previously, to ascertain the character of the tap which can be borne without discomfort. It is advised to avoid, either by remark or otherwise, directing the patients' attention to any particular part of the head, particularly if they be of an impressionable or hysterical disposition. It is not claimed that this means of diagnosis will be of very wide application. It probably will not be of service if the morbid action be diffused, as in ordinary cases of insanity. It is chiefly of use when the disease is limited in extent, and particularly if it is attended by gross products, such as inflammatory lymph, producing local tension or tumors of the surface, or in the membranes. In injuries of the head, it may occasionally be of service. Thus, in a somewhat doubtful case of fracture of the skull the writer has seen it assist in marking out the line of the fracture. In disease of the inner table of the skull, when the pain of the head is wide-spread, it may help to localize the lesion. Wherever, therefore, there is the least ground, judging from the general symptoms, for suspecting that disease may exist superficially within the skull, percussion of the head should not be omitted; it may yield most valuable information on which important local treatment may be based.—*Abstr. Internat. Med. Congress*, 1881, p. 85.

Perforating Ulcer of the Foot as Connected with Progressive Locomotor Ataxy.—Prof. Ball, Paris. Rep. by Dr. Thibierge. 1. Perforating ulcer of the foot is in such cases the consequence of the spinal disease, as in "joint disease," which has been brought before the public by Charcot and myself. 2. The local disease is more especially connected with certain symptoms of locomotor ataxy, such as shooting pains, absence of the tendon reflex, and other trophical lesions. 3. The perforating ulcer may be cured while the symptoms of locomotor ataxy follow their progressive course.—*Abstr. Internat. Med. Congress*, 1881, p. 97.

Rumpf on the Action of Lymph on the Nerve Centres. (*Pflüger's Arch.*, xxvi, p. 415).—Rumpf maintains the correctness of his observations that the axis-cylinder of nerve is dissolved by lymph after passing through a preliminary stage of swelling. The swelling of nerve stump under the influence of lymph is at first of the nerve proper, and only later consists in an inflammatory hypertrophy of the connective tissue. The author was led to examine the analogous event as regards fibres and cells of the brain and cord. The results on frogs are very striking; the skull having been opened, a portion of brain isolated, and the wound reclosed, Rumpf found, forty-eight hours later, that nothing remained of the isolated portion of brain but a small quantity of connective tissue. The spinal cord having been laid bare, transected above and below, and isolated from all nerves, Rumpf found, at the end of twenty-four hours, that all the nerve elements had begun to swell, this being still more marked at the end of forty-eight hours, after which the cord became amorphous and rich in nuclei, and (five or six days) disappeared, leaving nothing but a little connective tissue. This absorption does not ensue upon section of the cord without section of its nerves, nor when the cord and intervertebral nerves having been cut, the cauda equina is left intact. Nor is it produced if, in addition, all sensory roots of the cauda are divided; whereas if its motor roots are alone divided, absorption follows, though not so rapidly or completely. He obtained similar results with hardly any interference with the circulation. These observations indicate a centripetal trophic influence, partly via sensory channels, but chiefly via motor channels, and confirm the views of Kühn and of the author (1860), that from end plate to centre there exists a constant excitatory and trophic influence. The author also experimented

on the brains of pigeons and found, as in the case of frogs, swelling; absorption was, however, usually accompanied by suppuration.

The author concludes that, to the maintenance of centres, their union with efferent channels is necessary, and that, failing this union, the organ degenerates, and is absorbed by action of the lymph; also that the union alone is sufficient to preserve the otherwise isolated cord, and that even partial union suffices by vicarious action to maintain the ventricle of the whole organ. This retrograde influence is the antithesis of tonus, and Rumpf therefore terms it "retrotonus." Thus, as laid down by Sigmund Mayer, the nerve fibre with its two end organs, central and peripheral, constitutes a trophic as well as functional unit (A. Waller, in *Brain*, Jan., 1882, p. 571).

THE PATHOLOGICAL HISTOLOGY OF THE SPINAL CORD.—S. G. Webber (Report, Med. & Surg. Report, of City Hosp., Boston, 3d S., 1881). The author presents a summary of the normal histology of the spinal cord, following which is a consideration of the pathology of the different histological elements, and a description of the pathological histology in different forms of myelitis. A summary of the latter is as follows:

1. *Acute interstitial myelitis*, with swelling of the fibres, nuclei, and cells of the neuroglia, with destruction of nerve fibres and nerve cells, leading to softening.

2. *Acute parenchymatous myelitis*, where the nerve fibres in the white substance are primarily or chiefly affected, myeline and axis-cylinders both disappearing, but the interstitial tissue remaining, seemingly not much changed; also cases in which the nerve cells are chiefly affected, especially those of the anterior cornua, the nuclei and cells of the neuroglia being almost entirely exempt from change, as in infantile paralysis and allied affections.

3. *Chronic interstitial myelitis*, affecting the neuroglia, fibres, nuclei, and cells in both white and gray substance, the nerve fibres and cells being affected only secondarily, as in sclerosis.

4. *Chronic parenchymatous myelitis*—in the white columns only, locomotor ataxia—or lesion of the posterior columns (and secondary ascending and descending degeneration possibly), is as yet well known; lateral sclerosis probably belongs to this variety. In the gray substance the cells are affected as in progressive muscular atrophy. There is as much reason to thus subdivide myelitis as there is to divide nephritis into the interstitial and parenchymatous forms.

Cerebral Tumor Involving the Nerves of the Special Senses.—Dr. Lucian Howe, Buffalo. A male, æt. 27, had been troubled with frontal headaches for a year, about which time failure of vision began. On examination, the fundus of the right eye exhibited an illy-defined outline of the optic disc, enlarged and tortuous vessels often lost from sight when traced from their starting-point, being covered by œdematous and swollen retinal tissue. The left eye presented similar changes, though with less involvement of the nerves. Right vision sufficient to count fingers at five feet, and read No. 14 of Jaeger's test-types. Left vision for distance, one fifth of the normal; for near objects, no worse than the right. Hearing normal; general health good. No history of syphilis. On the 14th day after his first visit right vision had become reduced to mere perception of light, and later was lost entirely. On the 32d day left vision had sunk to less than one twentieth of the normal. On the 37th day he could only count fingers at four feet, and before the end of the third month, like its fellow, was totally blind. Hearing then began to be affected, on which side first being undetermined. Before the end of the sixth month he was completely deaf. The sense of smell was likewise impaired, and aqua ammonia held beneath the patient's nose produced no irritating or disagreeable effect. Finally, taste was evidently lost. The sense of touch alone remained with which to communicate. Speech gradually became incoherent; he lost flesh and strength, and finally died after lingering nine months. On *post-mortem* examination a fibro-sarcoma was discovered, the size and shape of an eye, well defined and involving the inferior portion of the right anterior lobe; the underlying dura was adherent about the cribriform plate, and considerable hyperæmia existed as far back as the anterior part of the pons.

The writer states: "It is difficult to understand how this nerve (Auchtung) on both sides could have its function entirely destroyed, while the motor oculi patheticus and trigeminus, the abducens, the portio dura, and the glosso-pharyngeal were apparently in perfect condition. Not the least sign of paralysis about the muscles of the eye or elsewhere, nor any diminished acuteness of sensation could be perceived during life, and after death these nerves appeared also to be in a healthy condition."—*Buffalo Med. and Surg. Jour.*, Feb., 1882.

The Dangers of Nerve-stretching.—Under the above

title, Dr. Julius Althaus, in referring to the dangers of the operation of nerve-stretching in locomotor ataxia, says: "It may, therefore, not be out of place to mention that at least five fatal cases have already been recorded—one by Socin, another by Langenbuch, who originated the operation; a third by Billroth and Weiss, a fourth by Berger, and a fifth by Benedict. In most of these cases the cause of death appears to have been undue violence used in stretching, whereby the medulla oblongata would appear to have received a shock. Thus, in Benedict's case, severe vomiting and isingultus, together with complete paralysis of the bowels and bladder, supervened after the operation; dyspnœa and cyanosis eventually set in, and the patient died comatose on the ninth day.—*Brit. Med. Jour.*, Jan. 7, 1882, p. 11.

W. R. BIRDSALL, M.D.

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f.—THERAPEUTICS OF THE NERVOUS SYSTEM.

ARTIFICIAL CURARE.—*Prog. Méd.*, March 4, 1882. M. Rabeteau has found a compound with physical, chemical, and physiological properties exactly like those of curare. The compound is called the iodide of méthyl triethyl stibonium, the formula of which is

$$\left.\begin{matrix} C\ H_3 \\ C_2H_5 \\ C_2H_5 \\ C_2H_5 \end{matrix}\right\} Sb\ I.$$

Among the physiological effects are none attributable to the antimony in the compound.

NERVE-STRETCHING.—*Prog. Médical*, March 11, 25, and April 15, 1882. Review by Duret and Bonnaire.

Idiopathic sciatica.—Eleven cases treated; nine successful.

Symptomatic sciatica (diseases of the spinal cord).—Eight cases treated. In one, apparent cure; in five, marked alleviation of symptoms; and in two no change resulted.

Trigeminal neuralgia.—Different branches were stretched in twelve cases. Complete relief occurred in nine; partial in one; and no relief in two cases.

Intercostal neuralgia.—One case treated, with no relief.

Idiopathic neuralgias of different nerves.—Five operations (four on the brachial plexus), with two complete and three partial recoveries.

Traumatic peripheral neuralgias.—Eleven cases operated on, of which eight recovered completely, two partially, and one not at all improved.

Spasmodic facial tic.—Six cases ; all successful.

Torticollis.—Six cases ; two failures.

Contraction of extremities.—Three cases ; one failure ; two cases improved.

Epilepsy.—Three cases ; recovery in one ; amelioration in one, and failure in one.

Paralysis.—One case, in which recovery supervened.

Tetanus.—Twenty-one cases, with nine recoveries and twelve deaths.

Locomotor ataxia.—Ten cases ; one case relieved once, and on reappearance of pain was subjected to another operation and killed with chloroform ; one death from thrombosis of popliteal vein ; two complete failures ; and in six cases amelioration of the symptoms.

Lepra anæsthetica.—Three cases ; rupture of the nerve in one, but good results in all. (?)

The Lancet, Jan. 28, 1882. Mr. Davidson records three sciaticas cured and one relieved by nerve-stretching, while a facia spasm was improved by stretching the infra-orbital nerve.

Prog. Médical, April 15, 1882. M. Pamard stretched the optic nerves affected with an atrophy, probably specific. The patient suffered with almost complete loss of vision, violent orbital pains, and vertigo. The left optic nerve broke in stretching. The orbital neuralgia ceased, a less severe pain appeared in the occiput, and the vertigo stopped. The patient died with ill-defined symptoms, and no autopsy was allowed.

Traumatic Tetanus Cured by Morphia and Nitrite of Amyl.—*The Lancet*, March 25, 1882. Dr. Dunlop narrates a severe case of tetanus following a wound of the forehead which was not relieved by Calabar bean, but which yielded to moderate morphia narcotism and nitrite of amyl for the attacks.

Treatment of Whooping-cough.—*The Practitioner*, March,

1882, from *Jahrb. f. Kinderk.*, B. 16. O. Heubner, as a result of the experimental trial of many drugs, decides that salicylic acid and chloral relieve the paroxysm ; belladonna and quinine shorten the disease.

PILOCARPINE IN LOCOMOTOR ATAXIA.—*L'Encéphale*, 25 June, 1881. Dr. Oscar Jennings, in three cases mentioned, found pilocarpine, given hypodermically in sufficient doses to cause free diaphoresis and ptyalism, promptly relieved attacks of pain and gastric crises.

THE ART OF VARYING THE EFFECTS OF HASHISH.—*L'Encéphale*, 15 Sept., 1881. M. Jules Giraud, in an article on cannabis Indica, which is more or less of a psychological study, makes some statements of interest to the therapeutist. Speaking of the profound physiological effects of the drug, he says alcohol develops the narcotic effect of the drug and destroys the hallucinations by sleep ; coffee or tea causes the patient to reassert his personality, while opium tends to cause sleep, which cannabis sometimes fails to do.

THE USE OF ATROPINE AS A SEDATIVE.—*Jour. Ment. Science*, April, 1882. J. R. Gasquet has used atropia as a substitute for hyoscyamia in the treatment of three cases of chronic insanity which had before been treated by hyoscyamia. The treatment lasted in two cases three months, and two months in the other. He concludes atropine is much the weaker sedative, as the patients are less subdued and helpless, and in a much more natural and healthy condition than when treated by hyoscyamia. The effects of atropia are much more transient. Very often the pupils are not dilated, but generally the throat is very dry before the sedative dose is reached. He commences with .0012 by the mouth two or three times a day, and in one case gave .006 twice a day.

SECTION OF THE SPINAL ACCESSORY NERVE FOR WRY NECK.—*Prog. Médical*, Feb. 4, 1882. M. Tillaux cut the spinal accessory in a case of torticollis supposed to be due to spasm of the sternal fasciculus of the sterno-mastoid muscle, and in which section of the same fasciculus afforded no relief. The operation was followed by no disturbances of phonation and by a partial relief of the torticollis, inasmuch as after section the patient could

by a voluntary effort overcome the spasm, a thing before impossible. M. Tillaux refused to stretch the nerve for fear of injuring the medulla.

TREATMENT OF WRITER'S CRAMP.—*Prog. Méd.*, April 1, 1882 (Review). Dr. Aug. Schott's treatment consists of gymnastics and massage. Passive movements of the fingers, hand, and forearm in all directions; similar active movements resisted by the manipulator, and pretty active rubbing and massage of both muscles and nerves affected.

Paris Médical, Dec. 10, 1882 (*Med. and Surg. Rep.*, Feb. 18, 1882). Dr. Vigouroux reports a case cured by punctated cauterization of the extensor region of the forearm in seven sittings.

CURARE IN HYDROPHOBIA.—*Berl. klin Wochen.*, Jan. 23, 1882 (*N. Y. Med. Rec.*, April 15, 1882). Penzoldt gave a boy of eleven, with hydrophobia, 0.435 grms. of curare in twenty-six hours. The drug was given hypodermically, and its potency was shown by the fact that 0.02 of the same preparation quickly killed a dog of 6.5 kilos. The onset of paresis of the respiratory muscles caused the medication to be suspended and death supervened, no curative power having been manifested by the drug.

A SIMPLE GALVANIC ELEMENT FOR THE TREATMENT OF CONSTIPATION.—The *Med. and Surg. Reporter*, Feb. 25, 1882. Dr. R. D. Blackwood recommends a silver spatula held in the mouth and a zinc suppository inserted into the rectum, connected by a flexible conductor, as a remedy in constipation. He asserts the current strength developed when so used is equal to two millivebers, and is such that if properly applied about the closed eye it will cause a visible flash. Muscular contractions invade the whole intestinal tract, and in from five to fifteen minutes, in many cases, natural defecation takes place.

R. W. AMIDON, M.D.

BOOKS AND PAMPHLETS RECEIVED.

Contributions to the Physiology and Pathology of the Nervous System. Part IV. From the Private Physiological Laboratory of Isaac Ott, M.D., Easton, Pa.

L' Hérédité Psychologique, par Th. Ribot, Directeur de la Revue Philosophique. Deuxième Édition. Pp. 422. Paris: Librairie Germer Baillière et Cie. 1882.

Physiologie des Muscles et des Nerfs Leçons professées à la Faculté de Médecine en 1881, par Charles Richet, Agrégé à la Faculté de Médecine de Paris, etc., etc. Pp. 924. Paris: Librairie Germer Bailliere et Cie., 1882.

The Diseases of the Spinal Cord. By Byrom Bramwell, M.D., F.R.C.P. (Edin.). Edinburgh: Maclachlan & Stewart, 1882.

The Applied Anatomy of the Nervous System, etc., etc. By Ambrose L. Ranney, A.M., M.D. Pp. 500. New York: D. Appleton & Co., 1882.

Suicide: An Essay on Comparative Moral Statistics. By Henry Morselli, M.D. New York: D. Appleton & Co. 1882.

Ueber die Erfolge der Nervendehnung. Von Dr. Bernard Nocht, pract. Arzt. Berlin, 1882. Verlag von August Hirschwald.

Ueber die primären chronischen Erkrankungen des willkürlichen Bewegungsapparates. Von Dr. Paul Julius Möbius in Leipzig. Verlag von Georg Böhme.

The Brain and its Functions. By J. Luys, Physician to the Hospice de la Salpêtrière. New York: D. Appleton & Co., 1882.

Myth and Science. An Essay. By Tito Vignoli. New York: D. Appleton & Co., 1882.

The Case of Guiteau: A Psychological Study. By George M. Beard. Reprinted from the JOURNAL OF NERVOUS AND MENTAL DISEASE, January, 1882.

Anæsthesia and Non-Anæsthesia in the extraction of Cataract. By Hasket Derby, M.D. Cambridge: Riverside Press, 1882.

The Effect of Genital Irritation in the Production of Nervous Disorders. By Landon Carter Gray, M.D. Reprinted from *Annals of Anatomy & Surgery*, Jan. and Feb., 1882, Brooklyn, N. Y.

Lectures on Medical Jurisprudence, Delivered before the Medical Department of the University of Vermont. By E. J. Phelps. Burlington, 1881.

The Pathology of Shock. By. C. C. Seabrook, M.D., of Dauphin County. Extracted from Transactions of the Medical Society of the State of Pennsylvania for 1881.

Beitrag zur Lehre von den Lämungen im Bereiche des Plexus brachialis. Von Dr. Martin Bernhardt, Docenten zu Berlin.

Ueber Lähmungen der Hand und Finger in Folge von polizeilicher Fesserlung. Von Dr. Martin Bernhardt, Docenten zu Berlin.

Primary Epithelioma of the Tonsil. By D. Bryson Delavan, M.D. Reprint from the *New York Medical Journal*, April, 1882.

Nine Cases of Tumor of the Nasal Septum, Anteriorly. By D. Bryson Delavan, M.D. Reprint from the *Archives of Laryngology*, April, 1882.

Notes on Physiological Optics. III and IV. By W. LeConte Stevens.

The Mental Status of Guiteau. By Walter Channing, M.D., Boston. Reprint from the *Boston Medical & Surgical Journal* of March 30, 1882.

The Treatment of the Insane. By Charles F. Folsom, M.D. Reprinted from the *Boston Medical and Surgical Journal.* Cambridge: Printed at the Riverside Press, 1881.

The Responsibility of Guiteau. By Charles F. Folsom, M.D. Reprint from the *American Law Review* for February, 1882.

Moral (Affective) Insanity. A Plea for its Retention in Medical Nomenclature. By C. H. Hughes, M.D., St. Louis, Mo.

"Rande" (Charles C. Scott). A Medico-Legal Record. By one of the expert witnesses. Reprint from the *Alienist and Neurologist.* St. Louis, April, 1882.

Preliminary Observations on the Pathology of Sea-Sickness. By J. A. Irwin, M.A., Cantab.; M.D., Dub. Reprinted from *The Lancet*, Nov. 25, 1881.

Thirtheenth Annual Report of the New York Physicians' Mutual Aid Association. Nov., 1881.

Report on Conference of Members of the State Charities Aid Association of Dec., 1880. New York, November, 1881.

Observations on Hemiplegia, etc. By A. D. Rockwell, M.D. Reprinted from the *N. Y. Med. Rec.*, April 29, 1882.

Medical Induction Coils. Reprint of paper read before the New York State Medical Society, Feb. 1, 1881. By Lucius E. Felton, M.D., Potsdam, N. Y.

Labor of Children in Reform Schools: Arguments before Senate Committee, March 22, 1882.

Report of the Trustees and Superintendent of the Butler Hospital for the Insane, 1882.

Infant Feeding and Infant Foods. Anniversary address deliv-

ered before the New York State Medical Society, Feb. 8, 1882. By Abraham Jacobi, M.D., President of the Society. Reprinted from the *Medical News*, Philadelphia, 1882.

Proposed Reforms in the Coroner's Office. By Clark Bell, Esq. New York, 1881.

Fourteenth Annual Report of the Inspector of Prisons and Public Charities for the Province of Ontario, for the year ending 1881. Toronto, 1882.

Transactions of the Medical Society of the State of Pennsylvania, 32d Annual Session, 1882.

Annual Report of the Board of Health of the State of Louisiana, for the year 1881. New Orleans, 1882.

The Chronic Insane under County Care. Report on their condition in certain counties exempted by the State Board of Charities from the operation of the Willard Asylum Act. Transmitted to the Legislature of New York, Jan. 1882.

THE FOLLOWING FOREIGN PERIODICALS HAVE BEEN RECEIVED SINCE OUR LAST ISSUE.

Allgemeine Zeitschrift fuer Psychiatrie und Psychisch-Gerichtl. Medicin.
Annales Médico-Psychologiques.
Archives de Neurologie.
Archives de Physiologie Normale et Pathologique.
Archiv fuer Anatomie und Physiologie.
Archiv fuer die Gesammte Physiologie der Menschen und Thiere.
Archiv fuer Path. Anatomie, Physiologie, und fuer Klin. Medicin.
Archiv f. Psychiatrie u. Nervenkrankheiten.
Archivio Italiano per le Malattie Nervose.
Brain.
British Medical Journal.
Bulletin Générale de Thérapeutique.
Centralblatt f. d. Med. Wissenschaften.
Centralblatt f. d. Nervenheilk., Psychiatrie, etc.
Cronica Med. Quirurg. de la Habana.
Deutsche Medicinische Wochenschrift.
Deutsche Archiv f. Geschichte der Medicin.
Dublin Journal of Medical Science.
Edinburgh Medical Journal.
Gazetta degli Ospitali.
Gazetta del Frenocomio di Reggio.
Gazetta Medica di Roma.
Gazette des Hôpitaux.
Gazette Médicale de Strasbourg.

Hospitals-Tidende.
Hygeia.
Jahrbücher für Psychiatrie.
Journal de Médecine de Bordeaux.
Journal de Médecine et de Chirurgie Pratiques.
Journal of Mental Science.
Journal of Physiology.
La France Médicale.
Le Progrès Médical.
Lo Sperimentale.
L' Union Médicale.
Medizinal-Zeitung.
Mind.
Neurologisches Centralblatt.
Nordiskt Medicinskt Arkiv.
Norsk Magazin for Lagensvidenskabens.
Practitioner.
Revue de Médecine.
Rivista Clinica di Bologna.
Rivista Sperimentale di Freniatria e di Medicina Legale.
Schmidt's Jahrbücher der In- und Ausländischen Gesammten Medicin.
St. Petersburger Med. Wochenschrift.
Upsala Lakareforenings Forhandlinger.

THE FOLLOWING DOMESTIC EXCHANGES HAVE BEEN RECEIVED.

Alienist and Neurologist.
American Journal of Insanity.
American Journal of Medical Sciences.
American Journal of Neurology and Psychiatry.
American Journal of Obstetrics.
American Journal of Pharmacy.
American Medical Journal.
American Practitioner.
Annals of Anatomy and Surgery.
Archives of Comp. Med. and Surgery.
Archives of Dermatology.
Archives of Medicine.
Atlanta Medical and Surgical Journal.
Boston Medical and Surgical Journal.
Buffalo Medical Journal.
Bulletin National Board of Health.
Canadian Journal of Medical Sciences.
Canada Medical and Surgical Journal.
Canada Medical Record.
Chicago Medical Journal and Examiner.

Chicago Medical Review.
Chicago Medical Times.
Cincinnati Lancet and Clinic.
Clinical News.
College and Clinical Record.
Country Practitioner.
Detroit Clinic.
Detroit Lancet.
Dial.
Gaillard's Medical Journal.
Independent Practitioner.
Index Medicus.
Indiana Medical Reporter.
Journal of Inebriety.
Maryland Medical Journal.
Medical and Surgical Reporter.
Medical Annals.
Medical Brief.
Medical Herald.
Medical News and Abstract.
Medical Record.
Michigan Medical News.
Monthly Review.
Nashville Journal of Medicine.
New England Medical Monthly.
New Orleans Medical and Surgical Journal.
New Remedies.
New York Medical Journal.
Northwestern Lancet.
Pacific Medical and Surgical Journal.
Philadelphia Medical Times.
Physician and Bulletin of the Medico-Legal Society.
Physician and Surgeon.
Proceedings of the Medical Society of the County of Kings.
Quarterly Epitome of Braithwaite's Retrospect.
Quarterly Journal of Inebriety.
Rocky Mountain Medical Review.
Sanitarian.
Science.
Southern Clinic.
Southern Practitioner.
Specialist and Intelligencer.
St. Joseph Medical and Surgical Reporter.
St. Louis Clinical Record.
St. Louis Courier of Medicine.
St. Louis Medical and Surgical Journal.
Therapeutic Gazette.
Toledo Medical and Surgical Journal.
Veterinary Gazette.
Virginia Medical Monthly.
Walsh's Retrospect.

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ON RESTRAINT AND SECLUSION IN AMERICAN INSTITUTIONS FOR THE INSANE.

By H. M. BANNISTER and H. N. MOYER.

THE literature of the discussion of restraint and non-restraint is already voluminous, and has very lately been enriched by the addition of noteworthy articles in the periodical medical press. Our excuse for adding the present paper to what has been already written, is, that it is, in this country at least, still a living question, whether in the therapeutics of insanity restraint is or is not a valuable if not an essential part, and whether or not it is used here to an extent, allowing its occasional necessity or admissibility, altogether greater than the needs of the public or the welfare of the insane would demand. The practicability of almost absolute non-restraint does not demonstrate that such a course is altogether preferable, nor does the possible value of restraint carry with it the proof that it cannot be and never is abused.

It is our object in the present paper to discuss some of these questions with special reference to the practice in American asylums and hospitals for the insane. It would be desirable, were it possible to do so, to study the usage here

on its own merits apart from the practice elsewhere, and thus avoid what might appear to some to be disadvantageous comparisons. Some notice and comparison, however, of the different systems of treatment are unavoidable in any article treating of the general question of restraint in the management of the insane. One can only endeavor to state facts and draw conclusions without prejudice, and to avoid any unnecessary polemics, so that no charge can lie of personal feeling or sentimentalism.

In order to have a fair basis on which to discuss the merits or demerits of the American practice in regard to restraint, etc., it was thought best by us to obtain as full reports as possible of the particulars needed from as many fairly representative public institutions as possible. Dr. H. B. Wilbur, in a recent able paper,[1] has given returns from some twenty-five hospitals and asylums, which show rather formidable figures of restraint, seclusion, and sedative medication in this country. His statistics are not, however, quite as full as seemed to us desirable, the scope and purpose of his article being different from what we here propose. We wished to learn not only the number of occasions of restraint and seclusion, but their duration, the causes that occasioned them, and the methods employed, together with the average numbers taking sedatives, either as sleeping doses at night or for the purpose of calming excitement for the time being without special reference to the general and ultimate therapeutics of the mental disorder,—the so-called "chemical restraint," which sometimes may serve as a substitute for mechanical restraint. We also desired to find out how many were kept constantly secluded or restrained, the number occupying cribs or covered beds at night, and all these particulars separately for both departments, male and female, together with the daily average number of patients

[1] On "Chemical Restraint," *Arch. of Med.*, Dec., 1881.

in both, so as to be able to estimate the proportion or percentage of patients under restraint. Still other particulars would have been desirable, but there were obvious objections to asking for too much, and the above were all the queries to which we could reasonably expect full and uniform answers from any number of institutions. In fact, the number of superintendents and assistant physicians to whom we are indebted for kindly keeping the records and returning them to us far exceeds our first expectations.

In order to insure a uniform report, we concluded to ask for it for a definite period ahead, and not to trust to possible back records in which the deficiencies could only be supplied by memory or not at all. Such report might be open to the charge that it did not represent the regular average of restraint and seclusion, but rather that of a selected period in which possibly the utmost had been done to diminish the amount in view of its being reported. This, however, is less of an objection than might be supposed, for if non-restraint is in the direction of reform, any possible influence this plan might have in diminishing the amount would be a step gained. On the other hand, it cannot be expected that any superintendent with conscientious convictions of the value of restraint and seclusion would, to any extent, change his practice in that in which he honestly believes he is right. In any aspect the objection does not appear to us to have sufficient weight to counterbalance the manifest advantage of a uniform and well-understood plan of report, wanting which, mistakes and injustice are almost certain.

We sent out our circulars and blank forms for the records in January of the present year, asking that they be kept for the succeeding month of February. We have received returns from some twenty of the fifty institutions to which they were sent. This number, though apparently

small, is, as has been stated, more than was anticipated, and is, we think, together with other data at our command, sufficient to afford a basis for discussion. The institutions are all fairly representative ones, and are distributed, in all sections of the country, in some thirteen different states. The summary of the results of the inquiry is given in the accompanying tables.

Before commencing with the discussion of the statistics embodied in the table here presented, some general and special explanations should be made. It was our desire to obtain as uniform and complete reports as possible, but it was more than we could reasonably expect that they should all be absolutely uniform and complete. Several of the institutions here reporting give, as will be readily seen by a glance at the table, only a portion of the particulars requested. In one or two of them the answers were much more complete and full in regard to one or the other of the two departments, male and female, and this affects somewhat the statistics as here combined. Again, others have united the causes of seclusion to those of restraint, so that there appears to be a discrepancy in the figures, which, however, when once explained, does not materially affect their value.

As regards particular institutions the following facts should be stated here:

In No. 3, mittens are not reported as restraint, but are used to a slight extent. If reported, as in some of the other institutions, they would slightly increase the figures of restraint.

No. 5 suffers to a very marked extent the evils of overcrowding and insufficient and incomplete accommodations, and has no properly constructed "back wards" on the female side.

The same is the case with No. 10.

					Restraint.																					Seclusion.						
												Reasons for Restraint.							Form of Restraint.													
																								Crib.								
Number of institution.	Daily average number of inmates during the month.	Average daily number taking sedatives as "Chemical restraint."		Average number taking sleeping doses at night.	Average daily number restrained.	Whole number of instances of restraint.	Total number of hours in which restraint was used.	Average number of hours in each instance of restraint.	Number of individuals restrained.	Number of individuals in constant res't.	Percentage of restraint on whole number of patients. Daily average.	Destruction.	Discipline.	Surgical.	Masturbation.	Violence to self.	Violence to others.	Maniacal excitement.	Wristlets or muff.	Camisole.	Restrained to seat.	Restrained to bed.	Mittens.	Night.	Day.	Average daily number secluded.	Whole number of instances of seclusion.	Average number of hours in each instance of seclusion.	Total number of hours of seclusion.	Number of individuals secluded.	Num'r of individuals in constant seclus'n.	Percentage of seclusion in whole number of patients. (Daily average.)
1	459	—	—	3.8	5.	139	2550	18.3	9	2	1.09	35	—	28	—	—	76	—	28	85	29	1	—	—	—	3.7	105	7.9	832	6	1	0.82
2	944	—	—	14.3	25.6	718	—	—	33	2	2.7	112	5	20	56	69	387	66	284	375	3	32	18	—	—	13.5	375	—	—	17	3	1.43
3	878	—	—	—	1.3	36	219	3.	5	—	0.14	—	—	—	—	4	32	—	5	—	30	1	—	—	—	0.14	7	1.9	137	5	—	0.02
4	666	—	0.35	1.4	0.8	24	296	12.3	3	—	0.12	—	—	4	—	—	20	—	—	17	4	—	—	—	—	0.32	9	7.2	65	3	—	0.05
5	540	—	0.78	60.5	11.1	312	4339	13.9	35	1	2.05	194	—	4	—	25	27	62	206	27	78	73	—	—	—	7.3	206	7.8	1621	27	—	1.35
6	643	2.4	0.17	21.8	7.	196	2235	11.4	24	—	1.08	69	—	25	2	2	70	25	105	47	13	18	—	13	—	1.57	44	6.5	288	6	—	0.24
7	825	—	.1	2 3	—	—	—	—	—	—	0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.	28	10.7	300	5	—	0.12
8	470	0.82	4.	5.67	13.2	370	6349	17.1	33	4	2.8	88	—	82	16	—	172	45	204	69	34	36	23	28	—	1.25	35	10.1	355	11	—	0.27
9	387	—	2.42	12.5	0.035	1	5	—	—	—	0.1	—	—	1	—	—	—	—	—	1	—	—	—	—	—	1.6	45	9.9	446	6	—	0.41
10	303	—	—	1.96	2.56	72	648	9.	3	—	0.84	28	—	—	—	28	—	16	—	—	—	—	—	72	—	0.78	22	1.4	31	7	—	0.25
11	436	—	—	1.28	5.9	166	1629	9.8	11	—	1.35	73	—	—	—	59	211	59	—	166	9	—	—	—	—	12.17	341	9.9	3380	20	2	2.80
12	465	7.	9.	6.	28.	—	1484	1.9	—	—	6.14	—	—	—	—	—	—	—	—	—	—	—	—	336	—	4.75	133	1.	133	—	—	1.02
13	420	1.5	5.	7.6	0.92	26	300	11.5	2	—	0.21	—	—	—	—	—	—	26	—	23	—	—	—	3	—	0.28	8	12.	96	3	—	0.07
14	203	—	1.8	5.2	1.5	42	837	19.9	4	1	0.73	42	—	—	—	—	—	—	39	—	—	3	—	—	—	3.	85	14.4	1225	7	1	1.47
15	659	16.4	0.3	—	12.78	358	5712	15.9	19	4	1.92	151	70	—	—	—	11	14	93	133	33	56	21	140	26	5.25	147	13.71	2016	16	1	0.79
16	287	—	—	—	15.1	423	—	—	6	—	5.24	185	—	—	56	112	69	—	99	169	—	—	159	—	—	0.64	—	—	—	2	—	0.22
17	1075	—	—	—	35.	1008	—	—	—	—	3.34	—	—	—	—	—	—	—	—	—	—	—	—	252	—	—	—	—	—	—	—	—
18	530	—	2.	6.	2.39	67	—	—	43	—	0.45	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.85	24	—	—	17	—	0.16
19	756	—	—	13.3	1.39	11	113	10.3	5	—	0.05	—	—	—	—	1	—	10	1	—	—	—	—	10	—	6.7	187	9.9	1866	28	—	0.88
20	527	—	3.42	21.2	8.39	235	2242	9.5	21	1	1.59	99	—	4	31	30	64	7	135	90	8	—	—	—	—	6.28	176	11.6	2055	15	3	1.19

In the one instance of restraint reported at No. 9, it was ordered by the assistant physician and, in the opinion of the superintendent, by an "error of judgment," it not being really needed.

In No. 10, the only form of restraint used during the month was the crib bed at night.

In No. 11, the restraint and seclusion were, with only a few exceptions, used in the female department.

The report from No. 12 was made up for the month of January instead of February.

The superintendent of No. 14 writes that the total of hours of restraint and seclusion is somewhat in excess, as a number of short intermissions of from half an hour to an hour are not noted in the daily ward reports.

In No. 15, the sleeping doses at night are evidently included in the "chemical restraint" returns instead of being reported separately.

Nos. 17 and 18 were not reported on the blanks furnished by us, but our columns were filled from other reliable figures supplied us by the authorities of these hospitals.

In No. 20, the crib bed is not reported as restraint, though we believe it is used. The restraint reported was, in a great majority of cases, applied only at night.

Several of the physicians that have reported the use of "chemical restraint" in the hospitals under their charge also send explanatory notes stating that the term is hardly applicable, as it is impossible for them to separate entirely the use of sedatives to control excitement from the legitimate therapeutics of insanity. As one of them states it, "the primary object of the exhibition of this class of remedies is physiological and curative; the secondary, or that of restraint, being only incidental." There is considerable force in this view, and we do not attach the same value to the returns in these columns as to the others in the table.

Moreover, it must be remembered, that medicine and other therapeutic measures have a legitimate use as palliatives when there is absolutely no hope of any curative effect. Thus we give bromides to certain insane epileptics to modify merely the manifestations of the disease, which is itself past curing, and this in the strict sense of the term might be called chemical restraint. If all such instances were included under this head, there is little doubt but that "chemical restraint" might have been reported from every hospital on our list.

After allowance is made for all the possible incompleteness and lack of uniformity of the table, it is still sufficiently suggestive and affords ample opportunity for discussion. The first point it suggests to the examiner is that there is a wide range of practice in hospitals on this side of the Atlantic as regards the use of restraint, seclusion, and sedative medication. If we even go to the extent of throwing out all the figures of "chemical restraint," as not sufficiently separated from the ordinary therapeutic treatment and night sedatives to be altogether reliable, we find the percentage of patients nightly taking sleeping draughts ranges in the different institutions from nothing up to over eleven per cent. of the population; that the average daily percentage of patients restrained rises in the same manner to over six per cent.; and that of seclusion to nearly three per cent. of the whole number of patients. The average percentage of restraint, according to these figures, would be about one and a half, and this cannot, in our opinion, be taken as too high an estimate of the actual average percentage in the asylums of this country. Our list includes several institutions that are practically "non-restraint" and exceptional in that respect, and any figures derived from this table, including these institutions, must be affected by this fact. We have reason to believe that the institutions that

did not report to us would show fully as high a ratio of restraint as the majority of those from which we heard, and that while the percentages of Nos. 12, 16, and 17 are almost certainly above the average, those of Nos. 3, 4, 7, 9, and 19 are more than as much below it. It is very possible, indeed highly probable, that there are some asylums in this country that would show higher figures of restraint than any from which we have had returns. Such a condition of affairs as described by Dr. Woodside, in a recent paper,[1] though we have no idea where it exists, would indicate something worse than any thing that has come under our observation or within the range of our knowledge.

It is worthy of note here that only one English asylum appears in the latest (thirty-fifth) report of the Commissioners in Lunacy with figures of restraint at all approaching the American average. This is the Cheshire asylum at Macclesfield, where, within a period of ten months, fifteen women were restrained at various times by mittens or camisole for a total of five thousand and seventy-seven hours. This institution is, however, rather favorably mentioned by the Commissioners in spite of its restraint record, and probably contains some unusually unmanageable and desperate cases.

Under "reasons for restraint" we have endeavored to group, under a few comprehensive heads, the principal causes for which mechanical restraint might reasonably be supposed to be applied. By far the greater part of that reported to us is stated to be for the prevention of violence to others and the destruction of property. Next come, in equal frequency, as causes for restraint, violence to self and maniacal excitement, then surgical reasons and masturbation, and lastly, in a very small proportion of cases, and from only two of the twenty hospitals, "discipline" is mentioned. Special data, which would enable us to estimate

[1] *New York Med. Record.*, March 4, 1882.

the propriety of restraint for some of these reasons, are very largely wanting. American hospital reports do not, as a rule, report casualties except as causes of death, hence we are unable to compare the results of restraint and non-restraint in them as regards this point by actual statistics, and the same may be said in regard to destruction of property. It is certain, however, that such serious casualties as homicides are not less frequent in this country, where restraint is largely used to avoid them, than in Great Britain, where it is hardly employed at all. No case of homicide by one patient of another is reported for 1880 by the English Commissioners in Lunacy, while a very short search through less than half of the whole number of American asylum reports for as nearly as possible the same period revealed three cases: one at Worcester, Mass.; one at Middletown, Ct.; and the other at Ward's Island. Several of the reports examined did not state the causes of death, and we cannot, therefore, be absolutely certain that this is the total of such accidents happening in these institutions alone, saying nothing of the possibility of other cases having occurred in asylums whose reports were not immediately accessible. If the same proportion exists between homicides and minor casualties on both sides of the Atlantic, it is not a favorable showing for the effectiveness of restraint as a preventive of these accidents.

American hospital reports are equally silent as regards statistics of destruction of property. The only way in which it can figure in them is in the *per capita* cost, and here, owing to methods of keeping accounts, etc., it is not likely to make much of an appearance. In the institutions represented in our table, the *per capita* cost is, as a rule, in direct proportion to the percentage of restraint, it being highest in No. 12 and least in No. 18. Of course, this is not conclusive evidence of any thing, since the *per capita* cost varies

according to population, and numerous other elements enter into its calculation, but the coincidence is perhaps worthy of record.

The cases of restraint reported as due to maniacal excitement might, perhaps, have been as well partly credited to some one of the other reasons, for simple excitement without injury to self or others is rarer than would here appear. Even the restlessness which keeps a patient out of bed pounding the door or walking the floor, might, without any special strain of the term, be classed as violence to self. Without this element of danger existing to some extent and in some way, simple excitement is no justification for restraint, and even exhausting excitement would, in our opinion, be better treated, where it is possible, by medication, etc. (which would not be strictly "chemical restraint"), than by mechanical appliances, which can at best only embarrass some of its outward manifestations.

"Violence to self," includes all suicidal attempts and tendencies as well as the minor injuries and mutilations that some of the insane are so liable to produce upon themselves. There are no records published of the latter, but the statistics of successful attempts at suicide afford some means of comparison. Dr. Wilbur, in the article already referred to, has shown very well what the English practice is in regard to restraint, and has made some comparisons between the ratios of suicides there and here in the year 1875. It appeared to us desirable to repeat his comparisons for the latest year for which we have the statistics, for both England and the United States, viz., 1880, so as to bring the figures down to the most recent possible date. Dr. Wilbur found that in 1875 suicides were four times as frequent in America as in England. We find in the report of the Commissioners in Lunacy for 1880, that twenty suicides occurred amongst the insane population under their

advisory supervision. Twelve of these occurred amongst the patients of public asylums, containing a daily average population of 40,737. Only eight of these twelve were, however, in actual residence, the remaining four occurring while the patients were absent on trial with friends, though still on the books of the institutions. Now, taking up the reports of thirty-three (33) American asylums, all at our command, that reported the causes of death for the same period as the English report, or for the fiscal year ending, and included mostly, in the year 1880,[1] and containing altogether a daily average population for the year of a little over 17,000, we find twenty cases of suicide reported, all presumably in actual residence. According to this, the ratio of suicides in American asylums is about one in 850, as against one in 500 in 1875, certainly a marked improvement. But during the same period we find that the ratio in England has decreased from one in about 2,000 to one in 3,333, or if we admit only cases which occurred while in actual residence, so as to equalize the conditions in the two countries, it is reduced to one in 5,000. In the first case the difference between the two is about the same as that reported by Dr. Wilbur in 1875, in the second case it is increased to nearly five to one in favor of England. If all the statistics of suicides occurring in all public asylums in the United States could have been obtained by us, it would probably not materially affect this proportion for the better. It cannot be claimed by the most ardent advocate of the practice, that this disproportion is altogether due to the system of non-restraint prevalent in England; the significance of the fact is that the English disuse of mechanical restraints is not necessarily accompanied by the evil which is one of the most frequent reasons for their employment in this country.

[1] We leave out here two or three that report suicides during the biennial period of 1879 and 1880, some of which may have occurred in the latter year, but in which the years are not specified.

The comparative immunity of English asylums from deaths by suicide is probably due, in large part, to improved structural arrangements, and to night watching of suicidal patients in collective dormitories, a practice general there, but hardly introduced as yet into this country. If it is at all due to non-restraint, it must be indirectly so, by reason of the increased watchfulness and care that ought to accompany even a partial disuse of restraint.

In the United States the arrangements of hospitals or asylums are nearly all alike in their general plan, and no special reasons exist why suicides should not occur in one more than in another, so far as their structure and organization is concerned. A comparison, therefore, between American institutions that differ in their practice in this respect, if such were possible, would show perhaps still better the respective values of restraint and non-restraint with the watchfulness it requires, for the prevention of suicides. We can only offer the following facts, and any one can form his own estimate of their significance. We do not ourselves consider them altogether conclusive.

Amongst the thirty-three institutions for which we have the statistics of suicides for 1880, there is one which we understand was then conducted on non-restraint principles, and four others in which restraint was avowedly kept at the lowest possible figure, though not professedly non-restraint in their practice. The total daily average population of the five institutions for the year was 3,343, amongst whom occurred three suicides, or one in 1,114. In ten others of these thirty-three, restraint was either extensively practised, to our personal knowledge, or was so strongly defended by the superintendents in their reports and elsewhere, that we can reasonably assume that it was extensively employed. The total daily average population of these ten hospitals was 5,933, and they reported eight suicides, or one

in about 741. We have no certain knowledge as to the practice in the remaining eighteen institutions, but have reason to believe that restraint was more or less extensively practised in them all, with perhaps one exception, which we have heard is, at present, practically non-restraint, though the change in practice has taken place within the last two years. But in case this asylum were added to the five, it would not materially affect the proportion, for there would then be four suicides to a little over 4,400 daily average population.

If the five asylums with their 3,343 population and three suicides be subtracted from the whole number, we have remaining twenty-eight, with an average daily population of 14,003, and seventeen suicides, or one in 824.

To make a later comparison, we have thus far obtained the mortality statistics for the year 1881 from twenty-one American asylums, with a total average daily population of 10,638. Seven of these institutions,[1] as we are informed, use professedly little restraint or none at all, and contained a daily average of 4,388 patients, amongst whom occurred three suicides, or one to 1,097. The remaining fourteen institutions use, we believe, the average amount of restraint in American hospitals, and contain a total daily average of 5,870, amongst whom we find reported nine suicides, or one in 652.2, a still more remarkable disproportion. Seven of the nine suicides occurred in asylums which we are positive employed a fair amount of restraint, and the other two in hospitals, in regard to which we have no personal knowledge, but in which, we are informed, restraint is considerably used.

The above results were altogether unexpected; it was not anticipated that so striking a difference would be shown when the investigation of the reports was begun. While the partial records of only two years cannot be considered as absolutely establishing any thing, these figures are very

[1] Willard, N. Y.; Athens, O.; Catonsville, Md.; Harrisburg, Pa.; Middletown, Conn.; Norristown, Pa.; and Kankakee, Ill.

strongly suggestive that, in American asylums, either restraints are a poor prophylactic against suicide, or that remarkable good-fortune has occurred during these two years to those asylums that used them least.

More space has been given to this subject of suicides than would otherwise have been the case, for the reason that it is the only one that affords any opportunity for a statistical comparison. The other heads under "reasons for restraint" can be disposed of more briefly. Restraint may possibly be useful in some cases of masturbation, when hard physical labor cannot be employed, and something could be said in favor of its value as discipline, though, as remarked, only two of the twenty institutions reported it. In our opinion this could be correctly assigned as a reason in many cases credited to other causes. When a patient indulges in some sudden impulsive, destructive, or violent performance, restraint is often applied, though the act that called for it is done and is not likely to be immediately repeated. In some hysterical and impulsive or mischievous patients, who lack a sufficient stimulus to self-control, it may sometimes serve a useful purpose. We have twice seen a single application of the camisole permanently check destructive tendencies, and in one case a measure in principle very similar to restraint appeared to be the starting-point of a rapid recovery in a case of insanity of two years' duration. It need hardly be said, that to have any value whatever in this way restraint should be very rarely used, and should then be employed only under the immediate direction of the physician, as a part of the most carefully considered individual treatment.

Not very much need be said in regard to forms of restraint. Of those reported, the camisole, or strait-jacket, and the wristlets and muff appear to be about equally in favor, each having been used about twelve hundred times. The latter is probably the most efficient as restraint in vio-

lent cases, but in patients who struggle much the best padded wristlets will chafe the wrists, and may even, as we have observed, seriously interfere with the circulation of the hands. The camisole has not this disadvantage, but, when drawn sufficiently tight to be secure, it often seriously embarrasses respiration, and in an excited feeble patient with rapid pulse and breathing, this is a matter to be seriously considered. All patients are not similarly affected, but many are, and one of the writers, when experimenting with the camisole, experienced himself the most marked and painful embarrassment of respiration when attempting violent exercise with the sleeves drawn sufficiently tight to act as efficient restraint.

Restrained to seat and bed scarcely require any comment; they are each reported 220 times. Then follow mittens, which are reported but from four institutions, and which do not appear to be much used in this country. Why, is not apparent, as they are the least objectionable form of restraint in the table, and for many, perhaps a majority, of the instances in which the camisole or muff is employed they would be equally useful. This is especially the case with destructive cases and many suicidal ones; at the same time they give almost complete bodily freedom to the patient.

The last form of restraint to be mentioned is the crib, which we find in use in eight of the institutions for a total of 854 nights, and in one for 26 days. There is much difference of opinion in regard to this appliance: some superintendents hardly call it restraint and use it extensively; and others consider it as damaging, or at least useless, and reject it altogether. There is no question but that it can be dispensed with in many cases for which it is commonly used, and the contracted coffin-like structures sometimes met with, with their heavy slats or bars, have, at best, a

bad appearance. They afford also an opportunity, for a violent patient shut up in them to injure himself against the sides or top, and for this class of cases they seem to us a very objectionable form of restraint. Whatever real value the covered crib in its less objectionable forms may have, must be in its moral effect on restless but not violent patients, who will not otherwise lie in bed; and against this is the disadvantage that it is very conducive to dirty habits.

With the idea that it might throw still further light on the practice in regard to restraint in American institutions for the insane, a careful examination was made of the by-laws and regulations of twenty-nine asylums, including two Canadian ones. In the by-laws of twenty-five of these we find restraint mentioned, and in those of four it is not. In all cases the rule governing restraint is placed under the head of attendants' duties. In five of the twenty-five the attendants are allowed to apply the restraining apparatus and afterward report it to the officers. In one hospital, restraint is ordered never to be used except by order of a superior, of what rank is not stated. In two others the supervisor is the lowest official who can apply it independently. In three others it is to be applied only under direction of an officer, under which head are included the steward and matron, and, in one of the three, the engineer, as well as the physicians. In fourteen it is to be used only by order of the physicians, and in five of these only by authority of the superintendent or his representative in case of his absence. In only one institution of which we have the by-laws, is it specified in them that restraining apparatus is to be kept away from the wards and out of reach of the attendants. In the later editions, however, of the by-laws of two or three of the institutions included in the twenty-five, there occurs no mention of the subject of restraint.

The restrictions upon the use of restraint in all these cases where it is mentioned, indicate that the possibility of its abuse is contemplated. Institutions are, however, seldom better in their practice than the standard set up in their rules, and it is not hard to see how, in cases where restraint is kept in the wards and attendants are allowed any discretion in its use, there is almost a certainty of its abuse. Our own experience has confirmed us in this view: in a large county hospital in which one of the writers had a rather extended residence, and where restraint apparatus was kept on the wards under the control of the attendants, he is satisfied that it was often employed without judgment and uselessly. In another institution visited by one of the writers, the attendants were permitted to apply restraint, and record the form and number of hours in a book kept on the ward for the purpose, which was shown to the physician on his morning round. This has some resemblance to the practice of hanging a criminal and afterward giving him a trial.

In the rules of five institutions the following passage occurs. After stating that the use of restraining apparatus is productive of many and serious evils, the by-laws go on to say that "it is, in most cases, much better for one or two attendants to sit by a patient for some hours than to put on any restraining apparatus, though the latter may ultimately be necessary and even beneficial." This is, we believe, the only recommendation of this form of restraint to be found in these by-laws.

Seclusion was defined in our circular as "the separation from others and locking up of a violent or mischievous patient against his or her will." It will be seen from the table that on the whole it is less popular than restraint, only five of the institutions reporting a greater percentage of seclusion than of restraint. Four of these five report

less than one per cent. of either restraint or seclusion; the remaining one shows 1.35% of restraint and 2.80% of seclusion. Out of nineteen institutions reporting both restraint and seclusion, nine have less than one per cent. of restraint, and their average of seclusion is 0.38%. The remaining ten use more than one per cent. of restraint, and have an average of 1.01% of seclusion. This would indicate, so far as it goes, that seclusion follows the same rules as restraint, that where one is frequent, the other is also.

If we had defined seclusion as broadly as is done by some English asylum authorities, notably those of Broadmoor, so as to include cases where the patient stayed voluntarily in his room, the figures would have been vastly increased. It did not seem to us, however, necessary or correct to do so, for unless there are good reasons to the contrary, any forced association of patients against their will, in cases where it could be avoided, appears as little humane as the reverse. Of course it cannot be denied that in many, perhaps in a majority of cases, there are or may be excellent reasons against a patient's voluntary seclusion in his room as a usual practice, but there are also many cases in which an occasional retirement from the other patients is not only not harmful but beneficial. There are, however, some precautions necessary with this kind of seclusion; we have seen an epileptic, who stayed much of the time in his room at his own desire, found asphyxiated in a fit, of which the attendants on the other side of his closed door had no intimation whatever.

The English Commissioners' report for 1880 shows that there is vastly less seclusion in England than in this country, the special minutes of inspection of sixty-two public asylums, with a population of about 40,000, showing only 3,240 instances of seclusion in them for a period averaging, in the whole number, over a year; whereas nineteen American

institutions containing less than eleven thousand patients, had in a single month 1,977 instances, or more than half what all the English asylums had in a whole year. In other words, seclusion according to this ratio would appear to be some twenty-eight or twenty-nine times as frequent on this side of the Atlantic as it is in England.

Space does not permit us to carry out fully the comparison of the statistics of restraint in the two sexes, as was our intention when we sent out our circulars and blanks, but some general data can be given. There were reported to us 1,655 occasions of the employment of restraint with males, lasting altogether 11,848¼ hours. The number of individuals reported as restrained was 79, of whom 12 were kept constantly in restraint, each day counting as one occasion; 79 males were also secluded, 6 of them constantly, on 847 occasions of altogether 6,622 hours.

Ninety-three females were reported as restrained for a total of 2,023 occasions and 13,984¼ hours, three of them being kept constantly restrained. Ninety females were secluded on 885 occasions for 6,240¾ hours, two of them in constant seclusion. These figures, though of course incomplete even for the institutions in our table, indicate that what is the common impression is correct,—that insane women are more irritable and mischievous but less dangerous or violent than male patients, and that while, as a class, they seem to undergo restraint or seclusion more frequently, there are not so many of them that are so troublesome or dangerous as to be allowed no liberty at all.

In the foregoing pages we have confined ourselves mainly to the statement of facts in regard to the use of mechanical restraint in American asylums. Much more might have been said from the data in our possession, and we might have commented much more extensively on some of the facts stated or the points suggested. It did not appear,

however, necessary to enter at any length into the discussion of facts which would, in large part, suggest their own interpretation to any one. It will be only fair, nevertheless, to state plainly our own opinions, which we believe are supported by the foregoing facts. In doing so we wish not to be understood as implying in our own opinion as to the non-advisability of restraint, that the treatment in those hospitals where restraint is generally and extensively used is not prompted by a humane spirit, for we know that, in some of them at least, the contrary is very notably the case. Our disbelief in the value of any extensive use of restraint is based on the study of the results of treatment in English and American asylums, and some practical experience with both a relatively large amount and a minimum of restraint in the hospitals with which we have been connected. We have seen the gradual disuse of restraint accompanied by a great improvement in the conduct of the patients, less disorder, fewer assaults, and altogether less difficulty in the general management of the wards than had previously been the case. This we attributed to the increased watchfulness made necessary, and the absence of the feeling of false security encouraged, by the use of restraints, and also, in part, to the removal of a cause of irritation to the patients themselves. It cannot be denied that a certain number of patients, and these sometimes the most troublesome ones, feel very acutely a sort of humiliation in being subjected to mechanical restraint. To very many others—and the two classes will comprise the great majority of those to whom it is applied—its use is excessively irksome and is constantly resented. To both classes it is a source of irritation, and however advantageous its immediate effects may seem to be, in the long run they are very liable to be more or less injurious. A small proportion of cases may perhaps be indifferent to whether they are restrained or not, and only

rarely is a patient met with who feels himself that restraint is beneficial and asks for its application. We have met with a few such cases,—in one of these there was a strong suspicion that the restraint was asked for simply to assist in carrying out a self-conscious hysterical imposture.[1]

There is still another reason why, in our opinion, restraint is objectionable, or, rather, is only desirable in a minimum degree. Mechanical restraint is, at best, only a coarse method of reaching the end desired—that of controlling the insane,—and any extensive reliance upon it is liable to preclude, to a corresponding extent, the employment of other and better methods; in short, it is a substitution of force for skill. This we have found to be the case; as the restraint apparatus was less used the attendants became more skilful, and showed more tact and aptness in the management of the patients, and finally came themselves to the opinion that it was of comparatively little use.

All these points have been stated before us by others, but we reiterate them here as proven by our own experience. We are not prepared to say that restraint is not sometimes necessary, or to abandon it entirely, for it is probable that there are cases in which it is a valuable adjunct in treatment which we are not certain can be replaced by any thing else. Its value in many of these cases, however, is largely dependent on its infrequency. The same we believe to be true, to a still greater extent, with seclusion, which, used for very short periods, is exceedingly useful with some patients. Both restraint and seclusion, however, should be exclusively under the control of the physicians,

[1] It is a question whether some of these cases are restraint in the true sense of the word. One of the superintendents reporting to us gave an account of a patient who for sixteen years had worn handcuffs for his own pleasure, and had never during that time voluntarily stepped over the threshold of his room. Supposing, as we must, that in this case every reasonable means had been employed to break the patient from this notion and it was actually necessary to his happiness to be allowed to carry out his whim, it would have been inhumanity to prevent him, and would probably have required restraint in some one of its objectionable forms to accomplish it.

and should be employed only as a part of a very carefully studied individual treatment.[1]

In conclusion, we may say that our inquiry shows, what was well known already, that the average of restraint and seclusion is high in American institutions for the insane, and in some of them excessively so. It also shows, however, that practical non-restraint is possible with our methods of asylum construction and our insane population, and it also indicates, as far as it goes, that restraint has less value for some of the more important ends for which it is employed than might have been supposed. The reasonable inference from these facts is, that restraint is too largely employed in the United States, and that in this respect our management of the insane is behind that of other countries, especially Great Britain. It would be much more satisfactory if this were not the case, and it is only partial consolation to believe, as we must if we accept as true the opening chapters of Conolly's book, that this reform in Great Britain was the reaction from a much worse state of affairs than it is likely has ever existed in the public asylums of this country, and that in some other matters we are abreast, if not actually in advance, of any thing that can be shown elsewhere in the management of the insane.

[1] This occasional value and even necessity of restraint is recognized by some of the best English asylum authorities, and to this fact is perhaps due some of the slight amounts of restraint and seclusion shown in their reports, aside from that employed for purely surgical reasons. A study of the reports of the English Commissioners in Lunacy, however, suggests a doubt whether, in the competition to make a good appearance in the inspectors' minutes, the reasonable limits of non-restraint are not passed by some of these institutions. When a large asylum, containing hundreds of patients, reports no instance of either seclusion or restraint in over a year, it occurs to us to ask what, for example, is done with certain cases in which, at times, an excessive irritability is the most prominent symptom, and for which, considering it from a purely medical point of view, we have found short periods of seclusion most beneficial as well as agreeable to the patient, even if it is at first involuntary. It is undeniable that it can be dispensed with in these cases, but it is questionable whether this is not, in the end, at the expense of the individual patient's welfare.

THE PATH OF THE VASO-MOTOR, SUDORIFIC, AND SENSORY NERVES IN THE SPINAL CORD.

By ISAAC OTT, M.D.

AFTER a hemisection of the spinal cord the previously narrow capillaries dilate, which proves that vaso-motor nerves exist in that side of the cord. Heretofore dilatation of the capillaries and increase of temperature were the main proofs in regard to the path of the vaso-motor nerves. Ludwig and Nicolaides have tried a somewhat new procedure, by stimulating with induction currents the nerves going to the place of partial paralysis of the vaso-motor nerves, which had been produced by a hemisection of the spinal cord. On rabbits under curare, with artificial respiration kept up, they cut the cervical cord at the second cervical vertebra and placed platinum electrodes on the transverse section of the cord and closed the wound. Then in the lower part of the dorsal region, by means of a protecting knife, a hemisection was made of the spinal cord. To observe the capillaries they chose a place where the vaso-motor nerves exclusively arise below the second section, that is, the kidneys. They can be easily bared on both sides without disturbance of the circulation, and can be brought into view by a section through the skin and fascia of the back. Their carmine color shines so long as the blood runs into them, and they become of a gray-red

color when the supply is cut off. Their nerves emerge from the spinal cord on a line between the dorsal and lumbar region. If the spinal cord is divided completely between the 11th and 12th dorsal vertebræ, irritation of the cervical section of the spinal cord will not change the color of the kidneys in the least degree. However, they pale in color when the section is between the 1st and 2nd lumbar vertebræ, and the cervical cord is irritated. During the irritation the kidney of the sound side lost its redness first and simultaneously over its whole surface, whilst the other kidney on the side of section began to pale later, here and there, in spots. Whilst they proved this to be true of the blood-vessels of the kidney they did not succeed in proving it in regard to other bilateral vaso-motor innervation. They tried hemisection of the spinal cord, and irritated a sensory nerve, and noted the rise of blood pressure. They found that the same nerve after the hemisection became more irritable than it was before the section; the nerve on the side of section is meant. They found that after hemisection the arterial tension was depressed not at all, or very little. Their results were not sufficiently (as they state) marked to prove the bilateral vaso-motor innervation for one half of the cord in regard to other districts. In another place I have studied the location of the centres of the vaso-dilator nerves for other organs, the posterior pulps of the cat by the heat-test, and found that they are located between the 10th dorsal and the 1st lumbar vertebræ. The pulps were also noted to have rhythmical changes in their color every thirty seconds, especially during the heat-test. These experiments reminded me that the unpigmented soles of the cat's feet would be a valuable point from which to determine if the law about the vaso-motor innervation of the kidney would hold good in regard to the skin of the pulps.

Method.—My experiments were made on cats with unpigmented pulps of the posterior extremities. They were chloroformed, bound down, curarized, artificial respiration kept up by a water motor, the cord bared in the dorsal region, nearly on a line with the posterior edges of the scapulæ, and a hemisection made with the protecting knife of Woroschiloff. It was then bared in the cervical region, under the second cervical vertebra, and a complete section was made. After curarization the posterior extremities were loosened that the circulation in them would not be disturbed by the ligatures. Then, when the feet were quite vascular, the cord was irritated by means of electrodes in the cervical region, and the paleness of both feet noted. It soon came on after the irritation. It must be remembered that the pulps of the cat normally have a rhythmic movement of the walls of the blood-vessels, which must not be confounded with that taking place through the irritation, which causes much greater paleness. In some cases, after frequent irritation, the vaso-dilator nerves come into play, the feet becoming more vascular than normal. In several cases, after the test, the cord was completely divided three millimetres below the hemisection, and the cervical cord irritated to see if there was any spreading of the current. In these experiments the sweat secretion was noted to take place on both sides after the hemisection. Hence the conclusion was reached, that after a hemisection of the spinal cord the vaso-motor changes and the sudorific functions of the posterior extremities can be called into activity through the opposite half of the cord. That these changes could not have taken place through the abdominal sympathetics having vaso-motor and sudorific fibres, is proven by the fact that section just below the hemisection completely arrested these changes which previously took place. Also, the fibres in the abdominal sympathetics leave the cord lower

down than the hemisection, which was usually about the seventh dorsal vertebra, or higher up. To decide the path of the sensory nerves, I employed the test of blood pressure, which, so far, has only been used to determine the path of the sensory nerves in rabbits. It is highly important that all these tests should be tried on several different kinds of animals, in order to decide if there is unity throughout the animal kingdom in regard to the path of the sensory nerves. Mïescher and Nawrocki have shown in the rabbit that they run exclusively in the lateral columns.

Method.—Cats were chloroformed, bound down, curarized, artificial respiration set up. Then the cord was bared high up, about the seventh dorsal vertebra, a section of it made with a protecting knife, and the wound closed. The carotid was prepared and also the sciatics. The arterial tension was noted before and after the section of the cord, and the sciatics irritated, and the rise noted. When both lateral columns were divided, then no irritation was able to elicit any rise in arterial tension. When, however, the whole cord was divided except a lateral column, then irritation of the sciatics sent the blood pressure up. If the gray matter was nearly wholly destroyed, then the rise of pressure occurred as well as before. These experiments left no doubt but that the vaso-motor fibres in the cat run in the lateral columns, as they do in the rabbit.

After a hemisection, irritation of the sciatic on the same side exhibited a rise of pressure nearly equal to that from irritation of the sciatic on the sound side. These experiments left no doubt but that sensory nerves decussate in the spinal cord. All these facts lead to the conclusion that:

1. The sensory fibres decussate in part in the spinal cord. This has been denied in the case of the cat.[1]

2. That the vaso-motor fibres also do.

[1] Carpenter's Physiology, note, page 629, eighth edition.

3. That the sudorific here as elsewhere closely follow the vaso-motor and cross over.

4. That the vaso-motor fibres run in the lateral columns of the spinal cord.

Appended are experiments upon which the preceding statements are based.

Exp. 1.—Yellow cat, section of cord below 2d cervical vertebra, hemisection at the 6th dorsal vertebra, curarized: irritation of cervical cord caused paleness and sweating in both posterior extremities; complete section of the cord just below the hemisection prevented both. On the side of hemisection the paleness and sweating came on later than on the opposite side after an irritation.

Exp. 2.—Cat, curarized, hemisection of spinal cord at the 5th dorsal vertebra: irritation of the cervical cord caused paleness; prolonged irritation caused vaso-dilators to be set into activity.

Exp. 3.—Cat, curarized, hemisection at the 5th dorsal vertebra: irritation of the cervical cord caused sweating and paleness of the feet.

Exp. 4.—Cat, curarized, hemisection at the 7th dorsal vertebra: irritation of cut cervical cord caused paleness of the posterior extremities, but finally irritation caused congestion of the pulps.

Exp. 5.—Cat, curarized, hemisection at the 8th dorsal vertebra: irritation of the cut cervical cord caused paleness of both posterior extremities.

Exp. 6.	Distance between coils.	Time of irritation, in seconds.	Pulse before irritation.	Pulse after irritation.	Pressure before irritation.	Pressure after irritation.	Rise of pressure.	Time in which the pressure rose, in seconds.
Cat, curarized, all cut except the antero-lat. col. of one side, and that also considerably divided. Sciatic irritated before section; knife inserted	0	5	3	3	174	300+	+120	7
Irritation of sciatic where lat. col. is intact, section at 7th dorsal vertebra	0	10	4	3.6	148	160	12	5
Irritation of sciatic on side of section	0	11	3.6	3	154	160	6	6
Exp. 7.								
Cat, curarized, knife in median line, sciatic irritated, hemisection of the cord at the 6th dorsal vert. Sciatic irritated before hemisection.	0	10	3	3.3	190	280+	+90	10
Sciatic on side of hemisection irritated	0	6.5	3	3.6	170	240	70	8
Sciatic of sound side irritated	0	9	3.1	3	140	200	60	15
Exp. 8.								
Cat, curarized, every thing cut except left lat. column at 12th dorsal. Sciatic irritated before section knife inserted	0	10	4.5	4	168	240+	72+	9
Right sciatic irritated	0	6	4	4	144	150	6	4
Left sciatic irritated	0	9	4	4.5	130	132	2	10
Exp. 9.								
Cat, curarized, two knives inserted, section at 6th dorsal vertebra of both antero-lat. columns. Sciatic irritated before section	4	11	3.5	3	164	230	66	5
Right sciatic irritated	4	10	4	3	158	158	0	0
Left sciatic irritated	4	15	3	3	115	115	0	0

ON THE SO-CALLED FAMILY OR HEREDITARY FORM OF LOCOMOTOR ATAXIA.*

By WILLIAM A. HAMMOND, M. D.,

PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL; SURGEON-GENERAL U. S. ARMY (RETIRED LIST); PRESIDENT OF THE AMERICAN NEUROLOGICAL ASSOCIATION, ETC.

TWENTY years ago, when doubt existed relative to the seat and nature of the lesion constituting the disease now generally known as locomotor ataxia, Friedreich,[1] of Heidelberg, published an elaborate essay, of which the title, "On degenerative atrophy of the posterior columns of the spinal cord," indicated the view which he entertained of its morbid anatomy.

The monograph was based upon six cases, and of these three died before the publication of the paper, and were submitted to very thorough *post-mortem* examination.

The first and second cases were brother and sister; the third, fourth, and fifth cases were sisters, and the sixth case was brother to these. The six cases were therefore comprised in two families. As they have been referred to by almost every writer on the subject since Friedreich, as constituting a peculiar form of locomotor ataxia, I think it desirable to give a few details of their symptoms, and of the results of the *post-mortem* examinations, before proceeding

* Read before the American Neurological Association, June 23, 1882.

[1] Ueber degenerative Atrophie der spinalen Hinterstränge. *Virchow's Archiv*, B. xxvi, pp. 391 and 433; and B. xxvii, p. 1.

to the description of my own cases. I do this with the less hesitation, for the reason that all writers on the subject, so far as my knowledge extends, have accepted, without question, Friedreich's view of their character, while no one has thought it worth while to study them in the light of our present knowledge.

CASE I.—Andreas Lotsch, 33 years of age, was attacked with gradually increasing weakness of the lower extremities, so that walking became difficult. At the end of a year the paralysis was so well marked that the patient was unable to stand. During his twenty-sixth year the arms, first the right and then the left, became similarly affected, and a year later the speech began to be difficult and indistinct. There were no headache, vertigo, or pains, or other disturbances of sensibility in the limbs. The mind remained unaffected. Sleep, digestion, respiration, etc., were natural. For several years, however, erections had not occurred.

When the patient came under Friedreich's observation he was not able to stand, and had been in this condition for fourteen years. There was no atrophy of any of the muscles. The speech was so indistinct that he could hardly be understood. The sensibility of the skin in all parts of the body was not diminished in the slightest degree, the patient being able to feel the least prick of a pin, or the gentlest brush of a feather. He could, with the eyes closed, readily determine the differences in the weights of bodies, the position of his limbs, and their distance from each other. The electric contractility of the muscles was markedly diminished. The hearing, smell, taste, and sight were unimpaired. The pupils were equal, and reacted readily to light; the mental faculties were unaffected. Appetite and urinary and intestinal functions perfect.

At the end of 1859 gastric symptoms and convulsive movements of the extremities occurred. The weakness increased, the brain became involved, and on the 8th of January, 1860, the patient died in a state of deep stupor.

The *post-mortem* examination showed the existence of intense hyperæmia of the dura mater, the pia mater, and the white substance of the brain. The membranes of the cord were also congested. The cerebro-spinal fluid was increased in quantity. The

white substance of the cord appeared to be softened throughout its entire thickness, but the gray matter presented no obvious abnormal condition.

Microscopically, it is stated that the nerve fibres of the posterior columns were atrophied, and that in the place of the nerve elements there was a deposit of minute fibres, together with a minutely nucleated mass of granular substance and many corpora amylacea. The lateral and anterior columns were normal, as were also the gray substance, "there being no pathological change discovered by microscopical examination." The posterior roots of the nerves were atrophied, while the anterior roots, neither macroscopically nor microscopically, exhibited any deviation from the normal standard.

Now it requires very little consideration of this case to satisfy us that it was not one of locomotor ataxia. It scarcely presents a single symptom of that disease. As to the microscopical examination, it is almost valueless, owing to the imperfection of the methods for preparation then employed, not only by Friedreich, but all other observers, and which were such as to absolutely prevent the detection of the morbid conditions characteristic of the several spinal-cord diseases.

CASE 2.—Charlotte Lotsch, a sister of the previously described patient, had suffered from chlorosis from her fourteenth to her seventeenth year; during her eighteenth year she was first affected with a well-marked and permanent weakness, first in the left, and subsequently in the right lower extremity, of so severe a form, that it was with the utmost difficulty she could attend to her household duties. At night she had pains in her limbs. Up to this period the upper extremities and the speech were unaffected. At about her twenty-sixth year the upper extremities began to show weakness, and the speech to become indistinct. In July, 1858, in her thirty-first year, the disease having then lasted thirteen years, she came under Friedreich's care.

At this time her body was well nourished. She could not, however, walk, and standing, though possible, was attended with much difficulty, "because of the weakness in her knees." As she

lay in the bed she could stretch and extend her legs with ease, and was able to direct the movements of the arms and hands to the performance of actions not requiring much strength. Continued movements were, however, difficult. If, for instance, she attempted to pick up a needle, the inco-ordination of the muscles was at once perceived, and it was only after repeated trials that she succeeded. Her speech was indistinct, but she could still be understood. Fibrillary contractions were noticed in the tongue. The cutaneous sensibility was absolutely normal. Electric excitability of the muscles was intact. Senses undisturbed, as was also the intellect. The pupils were equal, and responded well to light. Sleep, appetite, excretion of urine normal. Bowels somewhat constipated.

A year afterward she had a sudden attack of hemiplegia, affecting the right arm and leg, and a sensation of numbness in these parts.

Subsequently the symptoms all seemed to come to a standstill, and the patient was living at the time of the report of the case.

No one, I think, at the present day would consider this a case of locomotor ataxia.

Case 3.—Justine Süss was healthy till her sixteenth year, when she experienced in her left leg a sense of weariness and weakness, which subsequently affected the right leg also. At the same time she suffered from tearing and darting pains in both lower extremities, which, when she appeared at the hospital, were only occasionally felt. About the twentieth year the right arm, and then the left arm, became weak, while the paralysis of the lower extremities had greatly increased. During the years 1857 and 1858, she had pains in the ends of the fingers, especially those of the right hand. Contractions of the legs and arms also ensued, to such an extent that, while lying down, the legs were often forcibly drawn up against the abdomen. The speech also became stammering and indistinct. There were frequent attacks of headache and vertigo.

On entering the hospital under Friedreich's care she was found to be well nourished, muscles well developed, appetite good, bowels somewhat constipated, urine natural, sleep generally good, though liable to be disturbed by the pains in the left lower extremity; mind good; nystagmus in both eyes. Pupils normal. Speech bad. Standing without support was impossible. Examina-

tion of the skin with the electrical brush showed the sensibility to be undiminished. She could also readily perceive the slightest prick with a needle or touch with the finger. Testing with the æsthesiometer gave normal results so far as the upper extremities, the front of the chest, and the face were concerned, but her answers as regarded the abdomen, the back, and the lower extremities, were so contradictory as to lead to the belief that a certain amount of numbness existed in these parts. Three months after her admission she died with a complication of head and abdominal symptoms.

A very minute *post-mortem* examination was made, the details of which I omit, except so far as regards the spinal cord. Here it is stated that there was inflammation of the membranes and degeneration of the posterior columns, the appearances being similar to those observed in Case 1. Nothing is said of the anterior or lateral columns, or of the gray substance.

There is nothing in this case to show that it was one of locomotor ataxia. The pains complained of as being sometimes present in the upper and lower extremities were doubtless due to the implication of the lateral columns in the morbid process.

CASE 4.—Salome Süss, younger sister of the foregoing patient, was affected in her fourteenth year with lateral curvature of the spine and palpitation of the heart. At about her sixteenth or seventeenth year she suffered from weakness of both lower extremities, with rending pains. The paralysis of the lower limbs increased, and by her twentieth year had reached the upper extremities, but without pain. At her twenty-sixth year the speech began to be difficult. Cramps, mainly in the peroneal muscles, appeared. Excretion of urine and fæces normal.

When first seen by Friedreich, the speech was bad; the arms could be moved tolerably well, but without precision. Buttoning the clothes, picking up a needle, etc., were no longer possible. The pressure of the hands was slight; while lying in bed the patient could move the legs in all directions, but was unable to walk or stand alone; when in a sitting posture "she fell together," as it were. Sensibility of the muscles and electric contractility normal. The cutaneous sensibility in all parts of the body, as shown by the æsthesiometer, was perfect, and the least touch was at

once felt. Senses good. The pupils were moderately large, and reacted well to light, but when the eyes were directed to a distant object the right pupil was larger than the left.

Soon after entering the hospital, head and abdominal symptoms were developed, and in the course of a couple of weeks she died.

The membranes of the cord showed evidences of inflammation. The posterior columns were found to be atrophied. The anterior and lateral columns were normal. Microscopically, the results were similar to those previously obtained, except that the lateral columns were also involved. The anterior columns were normal. The gray substance is not mentioned.

CASE 5.—Lisette Süss, eldest sister, being thirty-six years old, was healthy till her fifteenth year, when she began to experience continuous weakness and fatigue in both lower extremities, which gradually extended to the upper extremities also. "Growing pains in the bones," as she expressed it, were often felt. The weakness, little by little, advanced, and eventually the speech became involved.

When Friedreich first saw her she was confined to her bed, being unable either to walk or stand, and had suffered with her disease about twenty years. She could move her legs in all directions while lying down, but they doubled up under her as soon as she attempted to stand. The speech was so bad that she could hardly be understood, and in attempting to articulate long words she was obliged to break off and begin again more than once. There was no paralysis or other trouble with the tongue, so far as its appearance went. The cutaneous and muscular sensibility were normal. Mind unimpaired. Pupils of medium size, equal, and of normal reaction to light. When attempting to sit up she "went together." From an early period of her disease the patient had exhibited a tendency to nervous attacks of a hysterical character. These were evidently hystero-epileptic, as she was convulsed, uttered cries, and threw herself about the bed. After one of these seizures she would complain of neuralgic pains in the lower extremities. She was living at the time of the report.

This case does not differ essentially from the last two. I fail to discover any evidence of locomotor ataxia.

CASE 6.—Friedrich Süss, twenty-four years old, brother of the three patients whose cases have just been cited. As a child, was healthy ; during his fifteenth year suffered from a weakness of the

left leg, which, about a year and a half or two years subsequently, appeared in the corresponding arm. Soon afterward the right leg and right arm were similarly involved, so that when he was seventeen years old he could not use any of his limbs with their ordinary strength; during his eighteenth year the speech became difficult. For about a year he had experienced slight formication in the left arm.

When seen by Friedreich he could walk without assistance but with difficulty and insecurely. He could give a pretty strong grasp with the hand, and the action of individual muscles was good but when movements requiring a certain degree of co-ordination and delicacy were attempted trouble was experienced. For instance, the picking up of a needle was only accomplished after repeated trials. The speech was bad, the patient being understood with difficulty. Examination with the æsthesiometer showed the tactile sensibility to be normal in all parts of the body. Mind unaffected. Pupils were of moderate size, equal, and reacted normally. No derangement of the functions of the bladder or rectum. Sleep good. Three years afterward the disease was found to have made considerable progress, but no new symptoms had been developed. Standing and walking with the eyes shut, or in the dark, were difficult, but individual muscles contracted well through the influence of the will. The sensibility of the skin, the electric contractility of the muscles, the smell, taste, sight, and hearing were unimpaired. No changes in the pupils. Mind good; no headache, but at times slight vertigo.

As I have already said, no neurologist of the present day, after a full consideration of these cases, would regard them as instances of locomotor ataxia. That they have been so regarded by competent authorities[1] can only be explained upon the hypothesis that they have not been thoroughly studied, and that one writer has accepted the statements of another without referring to the original source.

Thus we find that in every case the first symptom ob-

[1] Among others, ERB, art. "Tabes Dorsalis," *Ziemssen's Handbuch*, elften Band, p. 194. LEYDEN, art. "Die Sclerose der hintern Rückenmarksstränge," *Clinic der Rückensmarks.-Krankheiten*, p. 324 *et seq.* ROSENTHAL, *Klinik der Nervenkrankheiten*, p. 363. ROSS, "A Treatise on the Diseases of the Nervous System," pt. ii, p. 235. BRAMWELL, "The Diseases of the Spinal Cord," p. 222.

served was weakness of the lower extremities, and that this gradually extended so as to involve the upper extremities. Here was, therefore, a true paralysis.

We find also that in no single case, at any period of its course, was there the slightest loss of cutaneous or muscular sensibility.

In no case was there any derangement of the excretion of urine.

Without going any further I have no hesitation in saying that a case exhibiting these phenomena cannot be one of locomotor ataxia.

In addition, when the lancinating pains are not invariably met with—in fact, being very rare, when there is no swaying of the body on closure of the eyes, when the inevitable result is that the morbid process extends upward, that the speech becomes affected, that the pupils are always equal, not contracted, and reacting perfectly to light, I think we have an *ensemble* of symptoms which are absolutely incompatible with the idea of primary degeneration in any part of the posterior columns of the cord.

In a subsequent paper Friedreich[1] again alludes to the cases I have cited, and brings forward three others presenting similar features, and occuring in three sisters. And, again,[2] he gives the details of the *post-mortem* examination of one of the patients who had died of typhus. The principal features revealed were the facts that the posterior columns of the cord (the columns of Burdach and the columns of Goll) were in a state of sclerosis, and that the like condition existed in the medulla oblongata.

A case of a woman is detailed by Carre,[3] in whom all the prominent symptoms met with by Friedreich were present,

[1] Ueber Ataxie mit besonderer Berücksichterung der hereditaren Formen." *Virchow's Archiv*, B. 68, 1876, p. 145.

[2] *Virchow's Archiv*, B. 70, 1877, p. 140.

[3] "Nouvelles Recherches sur l'Ataxie locomotrice progressive," Paris, 1865, pp. 65 and 248.

and of whom it is stated that eight members (seven of whom were brothers and sisters) of the patient's family were similarly affected. She could walk equally well with the eyes closed as with them open, and did not have to look at her feet while walking.

With these introductory remarks, I come to the consideration of the instances similar to those reported by Friedreich, which have come under my own observation.

CASE 1.—J. T., aged 9, was brought to me by his father, April 22, 1866. When four years old it was observed that he often fell even when walking or running on a level surface. In a year, about, he was unable to stand without support, and in the course of another year, his arms were noticed to be similarly affected. His speech which had been good up to this time, now became drawling and hesitating. No very rapid advance took place for about two years, and then the legs began to get still weaker, so that when he attempted to stand they doubled up under him. Soon after this he was brought to me.

On examination, I found paralysis more or less complete of all four limbs. They were smaller than was natural, but there was no atrophic degeneration. When lying down, the legs could be extended, flexed, abducted, and adducted. Tickling the soles of the feet at once produced involuntary withdrawing of these members. The sensibility of the skin was unimpaired. The prick of a pin was felt at once, and the sensation was invariably referred to the right place. There was no paralysis of the bladder or of its sphincter. With the eyes closed, the patient could put the index finger of either hand on any part of the body that might be designated. The speech was so indistinct that he could be understood with difficulty. The pupils were large, equal, and of normal reaction. All the special senses were intact. Mind good.

CASE 2.—H. T., aged 11, brother of the preceding patient, was brought at the same time. About six months previously the legs became gradually weak. At present there is no other noticeable symptoms. Can stand with the eyes shut and walk as well with them closed as open. Feels great weakness, so that after walking a hundred yards or so, is obliged to sit down. Gait staggering, but not at all resembling that of locomotor ataxia.

These patients were still living in 1876. The first was

unable to stand or even to sit. The second could still stand alone, but could not walk without assistance. In the second the progress of the disease has been much less rapid than in the first, though the arms were markedly affected, and the speech was indistinct. No hereditary tendency is known to exist in the family.

Case 3.—M. B., male, aged 10, was sent to me by Dr. Hubbard, of Bridgeport, May 11, 1872. When about six years of age he began to stumble and fall, and to complain of fatigue after very slight exertion in walking. The weakness in the lower extremities gradually extended to the arms, and also to the muscles which support the back and head. After two years the speech became affected, so that it was drawling, hesitating, and indistinct.

When he came under my notice he was unable to walk without assistance, though he could still stand alone. His attitude was that of an old man, the body being bent forward. In sitting, after a few minutes he "fell together," his body bending forward and the head settling down on the chest. It was impossible for him to feed himself, the muscles of the upper extremities being too weak to enable him to handle a knife and fork or to convey food to his mouth. There was also, at times, choking from difficulty of swallowing. The speech was so bad that no one but his mother could understand him. He had at no time suffered pain, and he was uniformly good-tempered and cheerful. The cutaneous and muscular sensibility were entirely normal, and the body was well nourished. The pupils were equal, rather large than otherwise, and reacting perfectly to light. There were no head symptoms, but the mind had evidently suffered from arrest of development. The functions of the bowels and bladder were undisturbed. The general health was good. There were frequent attacks of vertigo.

In walking he was obliged to use a cane or to hold some one's hand. Could walk as well with the eyes shut as when open, and there was no swaying of the body when the eyes were closed. The gait was not that of an ataxic, but rather of one suffering from simple motor paralysis.

This patient remained under my observation almost up to the time of his death, at the age of fourteen. I did not see him, however, when that event took place, but have

been informed by his mother and by Dr. Hubbard that for the last four months of his life he was confined to bed, and that he suffered greatly from muscular spasms and contractions, the legs being frequently drawn up against the chest and held there forcibly for several hours at a time. At these periods there were severe pains in the head, spine, and in the limbs.

CASE 4.—C. B., brother of the preceding patient, and two years younger, was in good health till he attained his eighth year. He then began to complain of weakness in the legs, and in the course of a year was unable to walk without assistance. The arms during that period became similarly affected, and the case went on with symptoms nearly identical with those of his brother, till he died at the age of fifteen. At no time till shortly before his death were there any pains, and the cutaneous sensibility remained unimpaired through the whole course of the disease, as did also the functions of the bladder and bowels. The father and mother of these boys are of excellent constitutions, and there is no hereditary tendency to any affection of the nervous system, so far as can be ascertained. There was one other child who was accidentally drowned while an infant.

CASE 5.—E. M., thirty years old, came under my care when sixteen years of age, and has been seen by me at intervals since that time. The disease began when he was three years old, with weakness affecting first the right lower extremity, and gradually extending to the left. In the course of three or four years the upper extremities became affected in a similar manner, and at about the same time it was observed that the speech was beginning to be indistinct and drawling.

When I first saw this patient he could walk without assistance, though his gait was staggering. He could stand with the eyes shut, but his body swayed a little. His cutaneous sensibility was perfect, as were also all his other special senses. Mind clear; pupils equal, somewhat dilated, and reacting normally. No well-marked nystagmus, though occasionally, as I was told, there were slight twitchings of the eyeballs. No head symptoms except vertigo; bladder normal; bowels at times constipated. When lying down he could move the legs in all directions, though with greatly diminished force. When standing and supporting himself with his hands he could place either foot with precision and deliberateness on any spot

indicated. He could also direct the hands with exactness, but the grasp of the right on the dynamometer was only 60°, and of the left 45°. Had trouble in buttoning or unbuttoning his clothes, but more, I was satisfied, from muscular weakness than from incoördination. Has never had pains of any kind. At the present time the patient though worse is not greatly so. His mind is clear; there is slight difficulty in pronouncing words, and he often forgets them; has pains in the back of his head and neck, though in no other part of the body. Special senses all good, except his eyesight, which is bad at night, and after looking steadily at an object for a short time it appears blurred. Nystagmus. His muscular power is greatly impaired, though the electric contractility of all his muscles is good. Staggers when he walks. In moving about the room holds on to objects, and in the street uses a cane. Cannot stand with the eyes shut. If he falls it is always backward. Bladder and bowels normal. Tendon reflexes all abolished. Sometimes has involuntary twitchings of the hands. Is gradually but very slowly getting worse.

CASE 6.—H. M., brother of the preceding patient, is at the present time twenty-six years old. At seven years of age weakness of both lower extremities was observed. This patient was never under my professional care. Though I have recently subjected him to thorough examination, I cannot find any essential points of difference between his symptoms and those of his brother, except that they are not so pronounced. He can still walk without support, and co-ordinates tolerably well, better with the legs than with the arms. Has never had pains of a decided character, though sometimes, as he says, he "aches all over." Is deaf in left ear, from measles. Patellar tendon reflex abolished. Thinks he is getting better.

There is no hereditary tendency in these men to any neurosis, so far as can be ascertained. The father is a strong, well-made man, engaged in a large manufacturing business.

The following cases were reported to me by Dr. E. G. Coleman, of Hollywood, Arkansas.

CASE 7.—G. R. was attacked with paralysis of a general character about the period of the first dentition, which increased to the time of his death at five years of age. He could neither walk nor use his arms, and his speech was affected. His limbs retained their rotundity to the end. Sensibility always good; no pains.

CASE 8.—L. R., brother. Paralysis was first observed when he was six months old, and gradually increased. Case similar in all respects to the preceding. Died when three years old.

CASE 9.—W. R., brother. Impairment of motion was observed at an early period. Arms and legs retained their plumpness till death, which took place at three years of age. Speech affected.

A daughter remains perfectly healthy.

The following cases are reported to me by Dr. W. C. Warren, of Holly Springs, Mississippi.

CASE 10.—Girl now nineteen years of age. Disease began, when about nine years old, with weakness in legs, and a tottering and unsteady gait. Symptoms worse in the morning on rising from bed. Gradually they grew worse, until at last she was unable to walk a step. Then the upper extremities began to be affected so that she could scarcely extend the arm to shake hands with any one. Total want of co-ordination now exists in upper extremities, and the mind is getting weaker. Difficulty of articulation has been present for a year. No pain anywhere except, of late, below the knees. When sitting with the feet pendent and not touching the floor, the toes drop far below the heels. When lying in bed she assumes the form of a hoop, the knees being drawn up to the chin and the spine curved forward.

CASE 11.—At about six years of age her young brother began to exhibit symptoms of a similar character, and for four years has continued to walk with more and more difficulty. No pains.

CASE 12.—About a year or fifteen months since, a brother has become diseased in a similar manner. No pains.

All these children were healthy up to the time of the appearance of the paralysis. Their grandmother has been paraplegic for twenty years. No other nervous affection in any member of the family. All three of these children, the doctor states, are restless at night, frequently crying out, and starting from their sleep. Both the boys can walk with the eyes closed, and their minds are still good, and speech is as yet unimpaired.

I have already given some of the reasons which prevent

me regarding the cases reported by Friedreich and Carre as being instances of locomotor ataxia. Those which I have brought forward were similar in all essential details, and are, I think, to be embraced in the same category. To state the matter more fully:

We have here a total of twenty-two cases of almost identical morbid physiognomy—the disease beginning with weakness in the lower extremities, and then gradually advancing upward with nearly complete freedom from pains, and in none of which were there the peculiar sharp, lancinating, electric-like pains met with in locomotor ataxia.

In all the cases the pupils, where any mention is made of their condition, were equal and of normal size and reaction.

In locomotor ataxia it is the rarest phenomenon to find the pupils unaffected when the lesion is situated in the upper region of the cord. I cannot recall, in the whole range of my experience, a single case of the kind in question in which there was not some aberration from their normal state or functions.

In all these cases the speech was involved in a peculiar manner.

In locomotor ataxia speech-derangement is exceedingly rare. I have never seen a case in which it existed.

In no one of these cases was there the slightest loss of cutaneous sensibility.

I believe locomotor ataxia to be impossible without anæsthesia at some time or other of its course. In no case was there any derangement of the functions of the bladder.

Only one case of the advanced disease in which such symptoms were absent has ever come under my observation.[1] In locomotor ataxia there is almost invariably impairment of the contractile power of the bladder, or of its sphincter, or of both.

[1] "Clinical Lectures on Diseases of the Nervous System," New York, 1874, p. 141.

In no case was the feeling of constriction around the body experienced.

As is well known this is a common symptom of locomotor ataxia.

In all the cases there was a gradual advance of the disease upward, so far at least as the symptoms were concerned. Such a uniform progression toward a common end is not witnessed in locomotor ataxia.

The gait of the persons affected who came under my observation was altogether different from that of ataxics. Instead of the feet being put down with a jerk and in two distinct movements, they were moved exactly like those of a drunken man when he attempts to walk.

The fact of there having been well-marked incoördination in several of the cases is not in itself, in the slightest degree, pathognomonic of locomotor ataxia; it being well known that incoördination is met with not only in other spinal affections, but in certain diseases of the brain. Finally, locomotor ataxia is very rare with children, whereas all the cases described began in persons in an adult age.

For these reasons I cannot consider the cases in question to be instances of locomotor ataxia or sclerosis of the columns of Burdach. Doubtless, in some of them these columns were involved to some extent, but it was in all such clearly a secondary phenomenon.

Friedreich lays considerable stress upon the alleged tendency of the disease to affect the female sex from the fact that of his nine cases all were women but two. On the other hand, all six of my cases were in males; the three reported by Dr. Coleman were also males, as were likewise two of the three reported by Dr. Warren. Of the twelve American cases, therefore, eleven occurred in males, and of the whole twenty-two cases referred to in this memoir, thirteen were males and nine were females.

In the absence of sufficient *post-mortem* evidence I hesitate to assign a locality to the lesion which constitutes the pathological entity of the cases to which I have referred. I am inclined to think, however, that its primary seat is the medulla-oblongata. I base this opinion, mainly, on a careful consideration of the symptoms, though it will be remembered that in one of Friedreich's cases this organ was found to be the seat of extensive and evidently slowly advancing disease. At the same time I am disposed to think that the cerebellum is also involved in the morbid process, the vertigo exhibited by many of the patients, the nystagmus so constant a feature, the character of the gait being that of a drunken man, and differing entirely from that of ataxia, the pain in the back of the head which existed with several of the patients all point to the presence of cerebellar disease. That the spinal cord is also implicated is beyond question, but the lesion is certainly not limited to the posterior columns, which are not even its chief seat. Indeed, the whole thickness of the cord including the membranes is certainly involved.

If it be objected that in accordance with the observations of Türck, secondary degenerations ascend in the posterior columns and descend in the antero-lateral, I have to cite the experiments of Westphal,[1] which establish the fact that the morbid process extends in the cord in both directions, and along the course of the antero-lateral and posterior columns. Westphal's researches on this point have been amply confirmed by Vulpian,[2] who had at first doubted his conclusions.

I think, therefore, that the affection under notice must be regarded as a distinct form of disease, probably originating in the cerebellum and medulla-oblongata and gradually extending to the spiral cord, which latter is therefore its secondary seat.

[1] *Virhow's Archiv* B. xlviii, p. 516, and *Archiv für Psychiatrie*. B. ii.
[2] *Archives de Physiologie*, t. iii, p. 4.

THE TERMINATIONS OF THE NERVES IN THE TESTICLE.

By H. G. BEYER, M.D., M.R.C.S.,
PASSED ASSISTANT SURGEON U. S. NAVY.

THE nerves of the testicle and their terminations not having received their deserved attention from histologists has prompted me to make a series of experiments which, it is hoped, may throw more light on this interesting subject.

This want of success is probably due mainly to two causes: first, the imperfectness and uncertainty of the existing methods employed in tracing out the finer ramifications of nerves by staining agents in any situation, and second, the quite peculiar difficulty with which these methods are applied to an organ such as the testicle.

Hence the only observations on the terminations of the nerves within the seminiferous tubules of the testicle at present on record are those of Letzerich[1] (at least to my knowledge).

Inasmuch as the result of my own investigation leads me to differ very much from the views held by this observer, I will briefly mention the principal points of his experiments.

L. uses either fresh seminiferous tubules or such as have been in a solution of very dilute chromic acid ($\frac{1}{25}$ per cent.)

[1] *Virchow's Archive*, Bd. 42.

for the period of twenty-four hours; then he teases them out carefully with needles, and examines them with the microscope. Under favorable circumstances, he finds that the nerves approach the membrana propria, perforate the same, and finally terminate in granular masses or knobs between the latter membrane and the first layer of cells.

Although I have given his experiments a very careful consideration and a most extended repetition, using the testicles of various animals, and have availed myself of the rules laid down by him in preparing them for microscopic examination, I must say that circumstances never favored me in finding the structures pictured in the plates accompanying his article. In this I have been no less unfortunate than Von La Valette St. George,[1] who, likewise, was not able to satisfy himself as to the correctness of L.'s observations.

Methods.—The methods of investigation followed out in my researches require a brief notice. The testicles used were those of the dog, cat, calf, mouse, rat, rooster, and man. Both teasing and section cutting were practised; the former method, however, I found after a while quite superfluous, and finally confined myself to section cutting only. The tissues from which the material for study was collected were both fresh and hardened; the latter was done by alcohol, or chromic acid, or picric acid. The staining agents which I found of most advantage were chloride of gold, osmic acid and picro-carmine, and eosin with log-wood.

For the study of the nerve fibres outside of the seminiferous tubules, and their plexuses around the tubules, arising from the larger nerve-bundles which pass along the small arterioles, osmic acid and picro-carmine have in my hands given good results. I can also recommend eosin with log-wood, for the same purpose, as deserving a trial. The action of osmic acid brings out a sharply defined outline in the

[1] Stricker's "Hand-book of Histology."

anatomical structure of the non-medullated nerve fibres by surrounding each fibre with a dark border strongly refracting the light, the body of the nerve taking on a faintly pinkish hue. This dark border seems to point to the existence of a very fine and delicate membrane surrounding non-medullated nerve fibres. The nature of this membrane has points in common with the sheath of Swann, which surrounds medullated nerve fibres.

The chloride of gold method is still the only available one for bringing out the ultimate nerve terminations, the so-called axis-fibrillæ. The original unmodified method devised by Jul. Cohnheim, has been found to give excellent results. Some of the most beautiful and, at the same time, convincing specimens in my possession are sections of the testicles of a young rat, which were hardened in chromic acid and then stained with chloride of gold in strict accordance with the rules layed down by Cohnheim.

A circumstance in connection with the method perhaps worth mentioning, is that specimens prepared as described above will certainly show improvement during the first twelve months. Some which were mounted a year ago in glycerine and laid aside exhibited very fine markings of axis-fibrillæ, which they had not done formerly.

It was certainly a step in advance when Löwitt introduced his formic acid method, by which we are enabled to allow the reduction of gold to take place in a darkened bottle. This plan, in some cases, gives better and much more uniform results, and reduces the metallic precipitate so often found on the surface of sections to a minimum, but the destruction of the epithelia which is entailed is not in all cases desirable.

Ranvier's lemon-juice and formic acid process, as recommended by Stirling,[1] may also be tried with good success.

[1] "Handbook of Histology."

In hardening, staining, and preparing tissues generally, I have preferred to cut up the testicles into sections of from 2–3 millimetres in thickness, and, instead of the embedding methods, have found it much more convenient to use the freezing microtome for fine sections. In so doing, shrinkage, and the introduction of foreign material which must more or less alter either chemically or physically all organic matter, are avoided.

Of course, it often happens that when one prepares and stains thick sections, and afterward cuts them into thin microscopic ones, all specimens are not equally or thoroughly stained throughout, which is a disadvantage, but by a little practice the process can be regulated so as to obviate this difficulty to a great extent; in this way much larger and thinner sections can be obtained.

Being obliged to use high powers for the recognition of the ultimate termination of the axis-fibrillæ, the thinnest sections were chosen and mounted in glycerine to which one third of its volume of distilled water had been added.

Specimens stained with osmic acid and picro-carmine (more especially when the latter stain predominates) can be advantageously treated after the plan proposed by Prof. Neumann,[1] of Kœnigsberg, by temporarily mounting in glycerine mixed with muriatic acid in the proportion of 200 parts of the former to one of the latter, and carefully watching until the orange-red coloration has been reduced to the nucleus, then washing out thoroughly in distilled water. Great care, however, must be taken in this procedure in removing all the acid before permanently mounting in pure glycerine. One of the objections to picro-carmine has been that it does not bring out the nuclei as well as some other staining agents; the plan of this observer is well calculated, more particularly in pure picro-carmine specimens, to meet this objection and becomes, therefore, of value.

[1] *Waldeyer's Archiv.*, Bd. 18, 1880, p. 130.

The Spermatic Plexus of Nerves:—All anatomists agree that the nerves of the testicle are derived from the sympathetic. As long ago as 1834, Joseph Swan[1] gave a very good representation of the spermatic plexus of nerves. According to Robert B. Todd,[2] the nerves of the testicle are derived chiefly from the renal plexus, but partly also from the sup. mesenteric and aortic plexuses. These nerves then descend in company with the spermatic artery to the cord, where, being joined by branches from the hypogastric plexus which pass along the vas deferens, they form together the spermatic plexus. The branches of this plexus are intermingled with the vessels of the cord, and ultimately terminate within the substance of the testis. A few twigs may also be traced to the coverings of the gland.

Sappey[3] recognizes two sources of nerve supply, namely: one from the plexus accompanying the spermatic artery, which, he says, alone penetrates into the substance of the testis; and the other from the plexus surrounding the vas deferens which, according to his view, terminates in the epididymis.

In regard to the nerves running within the structure of the testis, I can corroborate the views above detailed: namely, that none but non-medullated nerve fibres are found, and I can add that their characteristic arrangement is in the shape of plexuses (see fig. 1). These when found in the neighborhood of the larger arterioles are, of course, large in proportion. As they pass on, always accompanying the blood-vessels, they, by division and frequent branching, become more numerous and very much smaller, until finally, after having reached the capillaries, they are extremely thin and transparent, and almost escape the observer's eye in the fresh and unstained specimen. In

[1] "A Demonstration of the Nerves of the Human Body," London, plate v.
[2] "Cyclop. of Anat and Phys.," vol. iv, pt. 2, p. 982.
[3] "Anatomie Descript.," tome 4, p. 614.

successful sections, however, they can still be seen as retaining the plexiform arrangement. When found in the proximity of a seminiferous tubule, they are generally situated between a capillary and the basement membrane. As they penetrate this membrane, the nerve fibres, still including several axis-cylinders, break up into their ultimate fibrillæ, at first pass along between the several layers of endothelia of which the basement membrane is composed,[1] and, after having emerged from its inner wall, they, as it were, line its interior with a plexus composed of the ultimate axis-fibrillæ, being only interrupted by variously shaped bodies, most of which present a pyramidal shape. This plexus, thus lining the inner surface of a seminiferous tubule, is best observed in the testicles of animals in which the membrana propria is very thin and composed of but one layer of endothelia, such as the mouse and rat. From this plexus, best seen in gold preparations, viz., longitudinal sections which have lost most of their epithelium, so as to expose the inner surface of the seminiferous tubule (see fig. 2), the axis-fibrillæ pass upward at acute angles with the surface in a direction toward the centre or lumen of the tubule, and between the epithelia superimposed upon the basement membrane or membrana propria; the fibrillæ anastomose in every direction, and hold, so to say, the epthelia in a mesh-work. This may be called the terminal or intratubular plexus, in contradistinction to the plexus surrounding the outer wall of a seminiferous tubule, which is called the extratubular plexus.

The cement substance between the epithelia is the place of the ultimate termination of the axis fibrillæ in the testicle. I have never seen a nerve fibre penetrate into the interior of an epithelium, althought it might seem so when one of them crosses an epithelium and is interrupted in its

[1] Berichte über die Verhandlungen der Kœniglich Sächsischen Gesellschaft der Wissenschaften zu Leipzig, 1873.

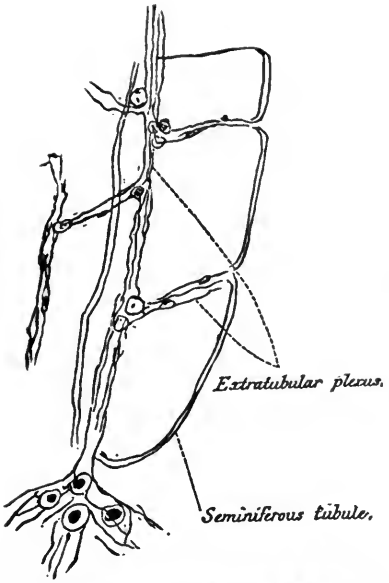

FIG. 1.—Testicle of dog, showing arrangement of extra-tubular plexus of nerve fibres. Gold preparation × 400.

FIG. 3.—Testicle of dog, showing terminal plexus running in cement substance between epithelia, in which traces of intra-epithelial reticulum may be seen. Gold preparation × 1000.

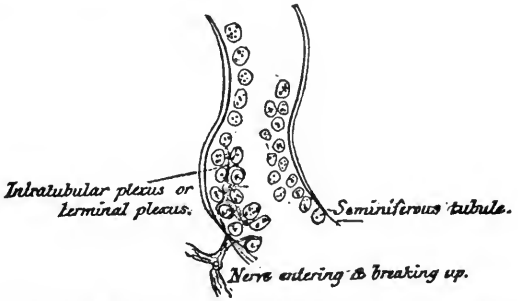

FIG. 2.—Testicle of rat, exhibiting terminal plexus. Gold preparation × 400.

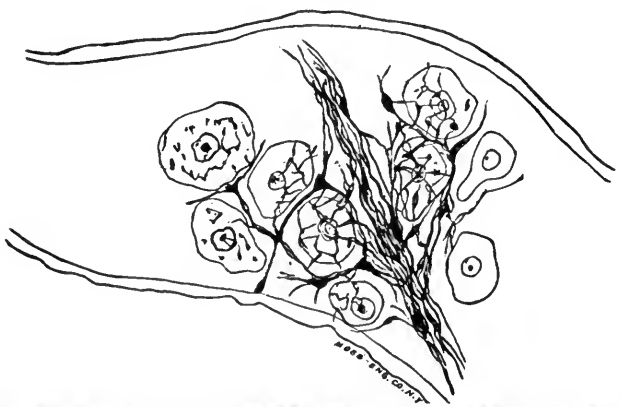

FIG. 4.—Testicle of rat. Nerve fibre passing along the floor of a seminiferous tubule and breaking up into the ultimate fibrillar plexus. Gold preparation × 1000.

course. The plexus, then, is the ultimate termination of the sympathetic in the testicle.

A satisfactory explanation for this termination of nerves in the testicle is offered by the discovery of Dr. Carl Heitzmann of the existence of the intra-epithelial network of living matter within all plastids including epithelia, a discovery which has been corroborated by careful observers, such as E. Klein and others, and has become generally recognized as a matter of no doubt. The only question at present agitating the minds of some investigators is that of the biological importance which this reticulum implies.

According to the researches of Dr. Carl Heitzmann, the reticulum within the epithelia, as well as the thorns or prickles traversing the cement substance between them, the two being in direct connection with one another, are the living or contractile matter proper. The ultimate axis-fibrillæ having been traced traversing the cement substance between the epithelia and being connected with the filaments crossing it, we are at once in a position to understand in what manner the function of the epithelia within the seminiferous tubules, viz., the production of spermatozoa, is directly controlled by the sympathetic nervous system.

U. S. Naval Hospital,
Brooklyn, N. Y., May, 1882.

A CASE WITH TUMORS IN THE FOURTH VENTRICLE OF THE BRAIN, UNACCOMPANIED BY SPECIAL NERVOUS SYMPTOMS.

By H. D. SCHMIDT, M.D.,

PATHOLOGIST TO THE CHARITY HOSPITAL OF NEW ORLEANS.

THE special interest which the following case presents will be found in the presence of two tumors, very unequal in size, but symmetrically seated in the fourth ventricle of the brain, and unaccompanied by special nervous symptoms.

The patient, a negro, 30 years of age, who had been affected with secondary syphilis, was admitted to the hospital in the latter part of January, 1882, laboring, at that time, under an attack of croupous pneumonia, dating from the 31st of January. When admitted, the upper and middle lobes of his right lung were found to be hepatized; there was a sound of dulness over the area of the heart, unaccompanied by any murmur. His mind was apparently dull, not being able to answer the questions put to him in a satisfactory manner, a condition which, however, soon disappeared, to be followed by perfect clearness of the intellect, remaining until death. From the time of his admittance the temperature of his body gradually rose to 104° until January 28th, when it commenced to fall, reaching its normal standard on January 29th, and leaving the pulse at 100 beats per minute. On January 31st, the temperature commenced to rise again, reaching 102° on February 4th, and ranging from this time until near death between 101° and 103°.

As the remaining phenomena observed in this case are such as generally accompany fatal cases of pneumonia, and appear not to

have stood in any direct relation with the tumors found in the fourth ventricle, I shall pass them over, stating merely that on February 14th the temperature commenced again to decline, reaching 97° on the morning of February 15th. The body of the patient was then covered with cold perspiration, the respiration hurried, the pulse weak and rapid, but the mind still clear. Death occurred suddenly about noon. There were no special symptoms of nervous origin, such as vertigo, vomiting, headache, paralysis, etc., observed in this case during the course of the disease.

The condition of the organs, as revealed by the autopsy, was that generally met with in fatal cases of croupous pneumonia, accompanied by pericarditis. Thus, the upper and middle lobes of the right lung were found in a state of gray hepatization, the left lung œdematous, and the pericardium filled with nearly a pint of purulent liquid. In the fourth ventricle of the brain the above-mentioned tumors were discovered accidentally; the brain itself presented no other changes indicating disease, but appeared perfectly normal.

The larger one of the tumors, measuring 25 mm. in length, 13 mm. in breadth, and 10 mm. in thickness, was attached to a ribbon-like, lamellar pedicle, 7 mm. broad, which, in a vertical

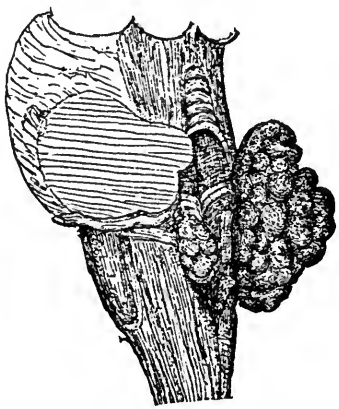

FIG. I.

direction, arose from the posterior surface of the right restiform body, forming a part of the sinus rhomboideus, or fourth ventricle (fig. 1). The tumor was lobulated, as the drawing shows, and presented the color of the brain. The lamella, or pedicle, was,

as the subsequent microscopical examination showed, formed by the so-called ponticulus (Henle), and by a portion of the stratum zonale adjoining the latter toward the median line of the ventricle. The smaller tumor, measuring 8 mm. in length, and 3 mm. in thickness, arose, almost opposite, from the same place on the left restiform body; it had no pedicle, but was seated upon the medulla oblongata, being also connected with the ponticulus and stratum zonale. The larger tumor, resting upon the posterior surface of the right restiform body, and thus filling up a considerable portion of the ventricle, was, in its upper surface, pressed upon by the right tonsil of the cerebellum, the pressure being transmitted to the restiform body and adjoining parts. With the smaller tumor this pressure must have been inconsiderable.

The examination of thin sections, both of the tumors and the medulla oblongata, showed that the neoplasm consisted of bundles of very fine fibrillæ, most intricately interwoven in various directions. In the meshes of this fibrillar interlacement a considerable number of small round or oval nuclei of $\frac{5}{1000}$ mm. in diameter,

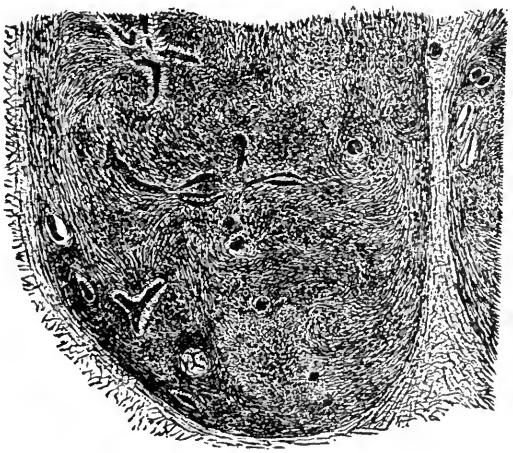

FIG. 2.

were embedded in the form of numerous groups, representing minor centres, in each lobule of the tumor; around and between these nuclei the fibrillar bundles were arranged in a general manner (fig. 2), while, at the same time, finer subordinate bundles passed, in the form of a plexus, between the nuclei. As the fibrillar element—if stroma it may be called—of this neoplasm

bears the distinct character of the fibrillæ of the neuroglia, and as no spindle-shaped cells were observed in the tumor, the latter evidently represents a so-called glioma of Virchow. The arrangement of these fine fibrillar bundles is of the most intricate nature; they are observed to pursue almost always a more or less circular course in their interlacement, crossing in every direction. The nuclei contained within their meshes appear to be free—I have, at least, not been able to detect any protoplasm surrounding them; the majority of them are small and round, of the diameter mentioned above, but there are also observed a considerable number slightly larger and of an oval form.

In the sections made through the medulla oblongata and tumors the origin of the latter from the stratum zonale and ponticulus—the latter forming a part of the stratum—is distinctly observed. In that portion of the stratum zonale adjoining the larger tumor, namely, the fibrillæ of the neuroglia are seen to pass from the former into the latter, where they collect into fine bundles, from the interlacement of which the lobules are formed, while the same bundles, arranged in the form of a looser tissue, without lodging any nuclei, serve to connect the individual lobules of the tumor. In that portion of stratum zonale from which the larger tumor arises, a considerable number of small bi-polar and some multipolar ganglion cells are met with, which, however, do not pass into the tumor. The microscopical examination also shows how from this part of the medulla the tissue of the latter has been to a certain extent slightly drawn out and deranged by the tumor, as far back as the nucleus of the pneumogastric nerve, the ganglion cells and nerve fibres of which are observed separated in the form of columns, parallel to the surface, and in a direction toward the origin of the tumor.

The tumors, particularly the larger, are abundantly supplied with blood-vessels filled with blood corpuscles, indicating that they were in a state of congestion during life; the same phenomenon is observed in the vessels of the medulla oblongata. The vessels entering the tumor appear to have been directly derived from the choroid plexus of the fourth ventricle. They are seen to enter the loose interlobular tissue, whence they send their ramifications into the interior of the individual lobules.

As regards the condition of the medulla oblongata itself, I may state that its consistence appeared to be greater than normal. That this was the case became evident during the cutting of the sections by a certain indian-rubber-like toughness, which rendered

the tissue more difficult to cut than that of a normal medulla, though the microscopical examination revealed no increase in the number of the small nuclei of the neuroglia.

There are two interesting features presented by the above-described neoplasm, viz.: the development and growth of a tumor as large as the one here concerned, through a delicate ribbon-like pedicle ; and, furthermore, the peculiar symmetry observed in the seat of these tumors. It may be presumed that if the patient had lived long enough they would, by a continued growth of the smaller one, have eventually completely filled up and distended the whole ventricle. While in other pediculated tumors the pedicle is usually formed by traction owing to the weight of the tumor, we observe in this case the tumor growing out, and, moreover, in an upward direction, from the pedicle, adapting its form to that of the cavity into which it grew. As concerns the symmetry of location of pathological formations and lesions, it has often been observed. I know not whether a satisfactory explanation has ever been rendered of this interesting phenomenon, and regret, for the want of time, not to be able at present to enlarge upon it.

Another interesting feature presented by this case consists in the absence of any special nervous symptoms, though the pressure exerted by the larger tumor upon the adjoining parts must have been considerable. Whether this pressure upon the nucleus of the pneumogastric nerve and the lesion observed in this centre stood in any relationship with the pneumonia, from which the patient died, remains an open question.

Explanation of Illustrations.

FIG. 1.—Representation of the medulla oblongata, with pons and the tumors attached.

FIG. 2.—Representation of a transverse section of the tumor, showing its structure. The fibrillar bundles, highly colored with picro-carmine, are seen crossing another in every direction, while they pursue a circular course around the groups of nuclei ; the latter are colored dark-blue with hematoxylin. In the plane of the section the fibrillar bundles, of course, appear cut at various angles, from the transverse, through the oblique, to the almost longitudinal. The vessels in the section are colored highly carmine. Magnified about 50 diameters.

THE VIBRATION OF THE RATTLESNAKE'S TAIL.

By ISAAC OTT, M.D.

THE rapidity of movement of the wings of insects has been the subject of investigation by Marey. No one, as far as I know, has made any inquiries about the rapidity of the movement of a rattlesnake's tail. The noise of the rattlesnake must not be confounded with the rapidity of movement of the tail or rattle; for the rattle is composed of flattened, hollow, spherical, horny shells, which, striking against each other, set up their own vibration, which makes the noise. My investigations simply determine how often the swing of the rattling shells takes place. It is like determining how often the child swings his rattle, and not the noise or note of the rattle itself. The snake experimented with was one which had been kept about nine months, and was not as energetic as one recently caught, but the note of his rattle was as usual. His head was secured by means of a wire around the neck, and at the end of his rattle was attached a short piece of thin copper wire by means of sealing-wax; then the tail was taken in hand, and the point of the copper pen directed against the smoked revolving drum of a Marey-Secretan apparatus. A tuning-fork was run over the drum to determine the rate of movement of the drum. By an analysis of the curve it was found that the rate of vibration of the tail

was about sixty per second. The resistance from the friction of the pen against the drum may have had some influence in lowering the rate of vibration, but the muscular power is so great, and the weight of the tail considerable, that the heavy body, once set in vibration, is not much affected by friction in this case. The extent of the vibration also has an effect upon the frequency, and the greater the extent of the vibration, the greater the resistance. All these causes may make the normal number of vibrations seem less than they actually are, but it seems to me that they are of but little import, because of the weight of the tail and the powerful muscular force driving it.

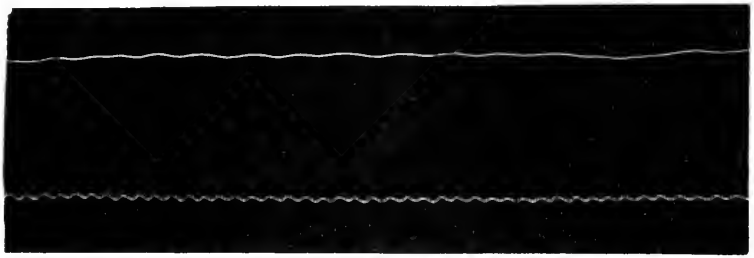

FIG. 1—Gives the vibration of the rattle on a rapidly revolving cylinder. The lower curve gives the tuning-fork vibration one two hundred and fortieth of a second.

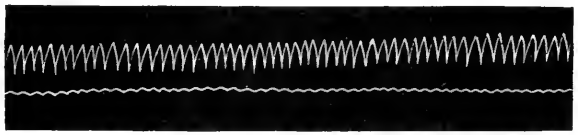

FIG. 2—Gives the curve of the rattle on a slowly revolving drum ; the upper curve is that of tuning-fork one sixtieth of a second.

To confirm this view I removed a screw from one arm of the tuning-fork, and attached to the arm, by means of sealing-wax, the amputated rattle of the snake. The tuning-fork was one beating sixty single vibrations per second, so that the rattle was swung backward and forward at that rate. No difference in note could be detected between the

rattle run by my tuning-fork and that run by the nervo-muscular apparatus of the living animal. The extent of the vibration exemplified also how the snake changed the intensity of the sound of his rattle. I might add that in handling the snake during these experiments he frequently ejected a fine spray from the glands about the cloaca, which was of a penetrating odor.

AMERICAN NEUROLOGICAL ASSOCIATION.

EIGHTH ANNUAL MEETING.

(OFFICIALLY REPORTED BY M. JOSIAH ROBERTS, M.D.)

First day, afternoon session.

WILLIAM A. HAMMOND, M.D., President, in the Chair.

The AMERICAN NEUROLOGICAL ASSOCIATION convened in the New York Academy of Medicine, June 21, 1882, for its eighth annual meeting. In the absence of the retiring President, Dr. Robert Bartholow, the Secretary, Dr. Seguin, called the Association to order at 2:30 P.M., and introduced the President-elect, Dr. William A. Hammond, of New York.

Present—Drs. Amidon, Bannister, Beard, Birdsall, Edes, W. A. Hammond, G. M. Hammond, Gibney, Gray, McBride, Miles, Morton, Ott, Putnam, Rockwell, Seguin, Shaw, Spitzka, and Webber.

Dr. HAMMOND thanked the Association for the honor conferred upon him by electing him to the presidency. He thought the Association had great cause for congratulation for the work it had already done in view of the indifference of many and the hostility of a few. During the present meeting a number of important and interesting papers would be read. Nowhere in the world was neurological science better cultivated than in this country, and he thought the Association had no reason to feel ashamed of the part it had taken in it. There was one point which he wished to call attention to, namely, the formation of local neurological societies throughout the country. These would be a great stimulus to special work and would serve as feeders to the Association. As proof of the value of such local societies for this purpose we had only to look at the New York Neurological Society.

The reading of the minutes of the last annual meeting being called for, it was moved by Dr. McBRIDE that as they had been printed and sent to each member for perusal their reading should be dispensed with. Carried.

Dr. SEGUIN reported that the Council recommended the notification of the delinquent members before acting in accordance with Art. 8 of the by-laws. Upon motion of Dr. SHAW the recommendation of the Council was adopted.

The Secretary, Dr. SEGUIN, reported that he had received a letter from Dr. Bartholow, dated June 20th, expressing his regrets at not being able to be present. He also reported the receipt of several pamphlets and monographs from Dr. M. Bernhardt, associate member of the Association.

The Treasurer, Dr. SEGUIN, then made his report, which, upon motion, was adopted.

NOMINATION OF CANDIDATES.

Dr. GEO. M. BEARD nominated Dr. C. L. Dana, of New York, Seconded by Dr. J. C. Shaw.

Dr. J. J. PUTNAM nominated Dr. C. F. Folsom, of Boston. Seconded by Dr. R. T. Edes.

NOMINATION OF OFFICERS.

Dr. T. A. McBRIDE nominated Dr. R. T. Edes, of Boston, for president.

Dr. E. C. SPITZKA moved that nominations for president be closed. Carried.

Dr. SHAW nominated Dr. W. J. Morton for Vice-President.

Dr. J. J. PUTNAM nominated Dr. E. C. Seguin, the present incumbent, for Secretary and Treasurer.

MEMBERS OF COUNCIL.

Dr. Miles was nominated by Dr. McBRIDE.

Dr. Shaw was nominated by Dr. AMIDON.

Dr. McBRIDE moved that the Secretary cast the vote of the Association for all candidates for office. Seconded.

Dr. PUTNAM objected to this motion, for the reason that the Secretary might wish to vote for some member of the Association not nominated.

Dr. McBRIDE withdrew his motion.

The President appointed Drs. Putnam and G. M. Hammond as tellers.

Voting was by separate ballot, and resulted in the election of the gentlemen above nominated for the offices.

MISCELLANEOUS BUSINESS.

Dr. R. W. AMIDON moved that the place of next meeting be left to the discretion of the Council. Carried.

The Secretary, Dr. SEGUIN said he wished to call the attention of the Association to Dr. Jewell's amendment to the Constitution, due notice of which had already been given :

"That all active members of the Association who shall hereafter remove from within the limits of the United States, shall thereby become Associate Members should they so desire."

Dr. J. C. SHAW moved that the proposed amendment become a part of the Constitution. Carried.

Dr. SEGUIN gave notice that he had received a number of replys from gentlemen who had been elected Honorary and Associate Members of the Association. He held cordial letters of acknowledgment in his hand from Drs. W. Erb, of Leipzig ; C. Westphal, of Berlin ; H. C. Bastian, of London ; M. Bernhardt, of Berlin ; J. S. Lombard, of Leamington, England ; J. R. Reynolds, of London ; Thos. S. Dowse, of London ; J. Hughlings Jackson, of London ; H. Obersteiner, of Vienna ; and W. R. Gowers, of London.

Dr. E. C. SPITZKA moved that these letters be placed on file in the archives of the Association. Carried.

Dr. SEGUIN remarked that he held in his hand the first attempt at a printed programme. He had experienced great difficulty in securing the titles of papers to be read in sufficient time for printing and distribution. He recommended that the members of the Association be more prompt in the future in sending titles of their papers.

Dr. L. C. GRAY moved that the time for reading papers be limited to thirty minutes. Carried.

Dr. SEGUIN presented the following report of the Committee on the Hammond Prize :

"The Committee on the Hammond Prize, for the best essay upon the 'Functions of the Optic Thalamus in Man,' beg leave to present the following report.

"They have received only one essay, bearing the motto : '*Dans les sciences expérimentales quelques faits bien précis valent mieux que tous les raisonnements.*'

"This essay, written in French, presumably by an Italian physician, has been carefully read. It embraces a fair summary of the present state of science upon the question under study, and includes several interesting new cases of disease of the thalamus. It does not, however, contain any really original material, experimental, clinical, or pathological, and does not advance our knowledge of the functions of the thalamus.

"Consequently the Committee recommend that no award of the Hammond Prize be made this year, and they hope that this generous inducement to original research may be again offered to the scientific world.

"J. S. JEWELL (per E. C. S.).
"E. C. SEGUIN.
"F. T. MILES, *Chairman.*"

President HAMMOND said he would very gladly renew his offer of the above-named prize for another year. If at the end of that time, the prize was not awarded, he would donate it to the Association, or to the New York Neurological Society, with the understanding that it should form the basis of a permanent fund for the promotion of original research.

Dr. SPITZKA moved that the present Committee on the Hammond Prize Essay be continued for another year. Carried.

There being no other miscellaneous business, the Association proceeded to its scientific work, and took up the order of papers.

"The myography of nerve degeneration in animals and man," by Dr. R. W. AMIDON, of New York.

The object of this paper is to study, by means of careful electrical examinations and myographic tracings, the effects of peripheral nerve injury in man; alongside of which to place similar observations on frogs whose nerves have been cut, and, by knowing the histological changes occurring in the frog, to infer that not dissimilar ones exist in man when the outward manifestations are the same.

As a sphygmogram is a pulse-tracing, so a myogram is a muscle-tracing. By means of a mechanism, to be described later, a muscle, by its contraction, moves a lever which makes a mark on the smoked paper of a revolving cylinder. It writes indelibly on paper the following facts: quickness of muscular contraction and relaxation (abruptness of the up- and down-stroke), amplitude of the muscular movement (height and breadth of curve), and,

by means of some accessory apparatus (the chronograph and the tuning-fork), the quickness of contraction after the application of stimuli (the latent period), and the effect of a continuance or a withdrawal of the same.

In the first place normal nerve and muscle reactions were taken in healthy frogs as follows: By means of a double interruptor the circuit carrying electricity to the frog is made and broken at the same time as the circuit of the chronograph, hence the moment the electricity reaches the muscle it also reaches the chronograph and breaks the line.

Having broken up the brain and spinal cord of the frog, to stop voluntary and reflex movements, the sciatic is exposed, the tendo Achillis is cut and fastened to the myograph needle, and the frog is securely pinned to a cork stage, with one electrode under the nerve and the other in some indifferent point, as the small of the back. We take the tracings produced by the cathode (neg.) closure contraction, cacc, and the anode (pos.) closure or opening contraction, ancc or anoc, excited by a small Grenet cell, and afterward the reaction to a secondary current of a Dubois induction apparatus. The same process is repeated with the muscle.

The sciatics of several frogs were cut and the animals were kept in a *very* warm room, so that nerve degeneration would not be retarded for perhaps weeks, as it sometimes is in frogs, especially in the winter.

The series of myograms obtained shows graphically the progressive changes, quantitative and qualitative, which an irreparable injury to a motor nerve produces in the tributary muscles.

The myographic studies undertaken in man were chiefly in cases of nerve injury, or diseases which cause nerve degeneration and muscular atrophy.

There was a striking similarity in these myograms. All are *delayed*, have a *sloping* up-stroke, a *rounded* top, a *sloping* down-stroke to a certain point where the muscle remains *tonically contracted* till a *fall* occurs, about as soon after the *breaking* of the current as it commenced after the *making*. Dr. Amidon asserted that a careful perusal of the explanatory text accompanying the plates, and a comparison of the different traces among them would show:

First, the identity as to form and relation of human and frog myograms in health.

Secondly, the great similarity of the pathological myograms in frogs and man (section or disease of nerves).

Thirdly, the marked myographic changes where slight trophic disturbances affect human muscles (disuse, muscular atrophy, etc.).

Fourthly, the profound alterations in contour of myograms of muscles for a long time severed from the vitalizing power of their nerve centres (chr. musc. atrophy, chr. poliomyelitis, etc.).

The future of human myography could not be predicted. It may become useful as a very accurate mode of differential diagnosis and prognosis. As an adjunct to our laboratories for the study of experimental therapeutics it needs no lauding. Its employment is far more simple and occupies much less time than one would think, and the American apparatus is so much cheaper than the imported, that it comes within the reach of almost any one.

Remarks on Dr. Amidon's Paper.

Dr. PUTNAM inquired if, in man, the prognosis was better when excessive anode action was less than cathode action.

Dr. AMIDON replied that he would not always give a bad prognosis when the anode was larger, but where the cathode was decidedly larger he would be certain of recovery.

Dr. PUTNAM remarked that it had seemed to him we might determine the period between contraction and excitation, and use it as a guide for determining electrical signals which would be available for diagnostic purposes instead of the form of curve.

Dr. AMIDON expressed the opinion that the plan suggested would be equally useful, if as accurate. Where the latent period is long you can observe it with the naked eye; but the graphic method he thought would better magnify the finer deviations.

Dr. W. J. MORTON inquired if the author of the paper took into consideration in his experiments the polar differences of the induced current. He was of the opinion that either one pole or the other had been used indifferently. There was a difference which he thought ought to be considered in fine investigations.

Dr. AMIDON did not think there was any polar difference. He had always used the secondary coil. That there was no difference between the two poles chemically he was certain.

Dr. MORTON did not think the chemical difference was great, but when it came to the question of physiological tetanus, that was something much easier to be seen and more pronounced than chemical differences.

Dr. ROCKWELL, in corroboration of Dr. Morton's remark, said that the negative pole of the induced current had a greater influence over the uterus than the positive, and he thought there must be a difference, which should be taken into account in such delicate experiments.

Dr. E. C. SEGUIN wished to ask Dr. Morton if he referred to the current of the secondary helix.

Dr. MORTON said that he referred to both the primary and the secondary; that the secondary current that corresponds to the break is greater than the secondary current that corresponds to the make. This point could easily be demonstrated by making the experiment. There was a decided difference no matter whether the primary or secondary coil of the induction apparatus was used.

Dr. SEGUIN labored under the impression that the current from the first helix had a strong direction or polar difference, while the current in the secondary helix was of equal intensity at each make and break, and that there was no polar difference. It would be difficult to imagine a polar difference in alternations of the same current.

Dr. MORTON stated, that if the original "break" current in the voltaic arc is stronger than the "make" current the coincident induced current must be stronger, whether it was a primary, secondary, tertiary, or further removed induced current.

At each make and break a given pole, say *A*, is quickly and alternately both + and —; but since the tension of the break current is the greater of the two and has electricity of a constant sign at each of its ends, it results that *A* is always predominatingly +, and *B*, the other pole, always predominatingly —. Hence it is perfectly clear that the choice of poles does make a difference in deciding the presence or absence of the reaction of degeneration; in recording such observations the faradic pole employed to obtain muscular contractions should be noted.

Dr. W. R. BIRDSALL said it was not possible to determine that, for it was vibrating so rapidly that it could not be decided whether it was making or closing, no matter whether it happened to stop on the negative or positive pole.

Dr. AMIDON remarked that he had made so many observations that had there been any polar difference he would have observed it in his tracings.

There being no further discussion, Dr. SEGUIN called attention to the fact that a reporter from the lay press was present.

Dr. AMIDON moved that the proceedings of the Association be excluded from the lay press. Carried unanimously.

Dr. GEORGE M. BEARD, of New York, next read a paper entitled, "The symptoms of sanity and the diagnosis of insanity."

Dr. Beard stated that the object of his paper was twofold: *First*, to show what a sane man was, so that we can answer the question, "How can you tell a sane man when you see him?" The normal retina, the normal ear-drum, the normal throat, the normal condition of the different parts of the body generally, have long been studied in order to enable us to know when disease attacks the body; but no one has studied the normal mind in such a way as to contrast it with an insane mind. The *second* object of his paper was to reconstruct the subject of insanity on the basis of evolution—to carry evolution into psychology. The law of evolution is the highest generalization the human mind has ever reached, and it is greater than gravity. It is revolutionizing the science of medicine. It originated, in its modern phase, in the brain of Herder, was developed more by Goethe, and more recently still by Darwin, who has just passed away, and by Herbert Spencer, and many others. Evolution in relation to medicine had been studied by Jackson, Mercier, and Ross. Dr. Beard said the symptoms of *sanity* were as follows:

1. Activity of the instinct of self-preservation.
2. Adaptation to environment.
3. Correspondence of character to age and station.
4. Rememberable consciousness.

He who responds to all these tests is a sane man, no matter how sick he may be in body or mind. He who does not respond to these tests is an insane man, no matter how well he may be in body. Insanity is a disease in which mental responsibility is seriously impaired. There can be no insanity with perfect responsibility. The very essence of insanity is irresponsibility. The mind may even be impaired, without being seriously impaired. For example, in hysteria, hypochondria, hystero-epilepsy, and in neurasthenia, there may be mental impairment not serious enough to be insanity. Those who suffer from these diseases usually, in spite of their bodily and mental disease, and in spite of their mental impairment, retain activity of the instinct of self-preservation, adaptation to environment, correspondence of character to age and station, and rememberable consciousness.

Dr. Beard presented a drawing, after Möbius, of Leipzig, from a work on nervousness recently sent to him by the author. It was an interesting coincidence that Dr. Beard was working in the same line at the time he received this work. The figure of Möbius showed the relation of the different nervous diseases to each other—how they run into one another. Dr. Möbius' figure, however, was not based upon evolution, but so far as it went, was original, important, and in harmony with the facts observed. Dr. Beard's figure was based upon evolution. It represented the most important nervous diseases in the form of a tree, each disease being a branch; one side being devoted to the physical, the other to the mental diseases. On the mental side were trance, hypochondria, mental hysteria, hystero-epilepsy, and insanity. On the physical side, chorea, neuralgia, neurasthenia, physical hysteria, epilepsy, and paralysis, beginning from the bottom and going to the top of the tree. Dr. Beard said that when mental disease attacked a person the symptoms began from above downward, beginning with the tips of the branches and blossoms. The symptoms of insanity appear in the following order, the later acquisitions first disappearing, and then the earlier.

First.—There is a decline in manners, that is, minor morals; then more extensive moral decline.

Second.—Decline in the power of originating thought.

Third.—Decline in the power of acquiring thought.

Fourth.—Decline in memory of recent events.

Fifth.—Decline in memory of old events.

There can be no insanity without moral decline. All insanity is moral insanity. When a worm gnaws at the roots of a tree it is the blossoms that first begin to fade. When insanity attacks a mind it is the minor morals that are first destroyed. When an insane man wishes to kill, the chances are twenty-five to one he will kill himself. Next to himself he will kill some relative or friend he dearly loves, as wife or child. The third temptation is to kill some public character, politician, champion walker, or any one who happens to be prominently before the public and excites the emotional nature. When any person without a confederate kills or attempts to kill the President of the United States or the Queen of England, the presumption is a thousand to one that he is crazy.

Dr. Beard then went on to give, by means of his four tests of *sanity*, the differential diagnosis between fanaticism and insanity, between genius and insanity, between vice and insanity. Dr.

Beard read an unpublished letter, which had just come into his possession. It was from Guiteau, in response to a letter from his brother asking whether he would like him with him during his last hours. By Dr. Beard's four tests of *sanity* it was shown that a part of this letter was enough upon which to rest a diagnosis of insanity, and by these tests he was able to declare that Guiteau had been insane for more than twenty years. Dr. Beard drew a distinction between Jesse James, James Fisk, J. Gould, and Sindram, men who were simply vicious and depraved, and men like Guiteau and McLean, who were crazy.

There being no discussion on Dr. Beard's paper, Dr. James J. PUTNAM, of Boston, read a paper, the title of which was, "Contribution to the study of central myelitis."

The communication consisted of the clinical history and autopsy of a hospital patient, whose trouble was ushered in by a chill, three weeks before entering the hospital, followed by pneumonia; who had retention of urine for three days, attacks of vomiting; improvement, and after being in the hospital eight days died with symptoms of dysentery. Autopsy twelve hours after death showed a peculiar condition of the lungs, dark spots beneath the surface of the pleura, with irregular outlines, which were hemorrhages into the substance of the lungs. The gross appearance of the spinal cord, so far as its membranes were concerned, was normal. There was no trace of meningitis, in spite of the patient having suffered much pain. The naked-eye lesions of the cord consisted of evidences of subacute inflammation along its entire length in the central anterior cornua.

The case was further interesting as showing the extent of improvement possible while active changes were still going on. It afforded an opportunity of referring to Dr. Ross' views, who thinks that the spinal cord should be divided into fundamental and accessory portions, the latter being situated in the central portion of the anterior cornua, and also in the peripheral portion of the great group of ganglionic cells which lie about the periphery of the anterior cornua. These parts he considers are especially prone to inflammation, in the proportion that recently acquired movements are lost more quickly than those which have been long acquired.

Remarks on Dr. Putnam's Paper.

Dr. F. T. MILES, of Baltimore, inquired if examination as to tendon reflex was made.

Dr. PUTNAM replied that it was absent.

Dr. MILES thought this was one of the most interesting points to determine as to whether the disease was in the central or peripheral parts of the cord; there was no doubt but that they merged into each other. Nevertheless, for the matter of prognosis it was of importance to make a distinction as far as possible. In cases of neuritis we lost the tendon reflex and ankle clonus; in cases of myelitis these were exaggerated. In cases of multiple neuritis the diagnosis is based upon faradic contractility. Retention of the bladder and rectum are seldom implicated; there is loss of ankle clonus and tendon reflex. It is true that the tendon reflex is lost in poliomyelitis anterior, but here we ought not to expect pain.

Dr. PUTNAM remarked that it was just this question of pain which puzzled him. He was struck with the prominent symptom, pain, in the cases of poliomyelitis collected by Dr. Seguin. He thought it remained for future investigation to determine whether the peripheral nerves were first involved, and the affection of the anterior cornua secondarily. He had made no record of the faradic reaction. The atrophy was very considerable, but not as great as we sometimes meet it. The loss of power first extended nearly over the whole body, but afterward it was confined almost entirely to the right arm.

Dr. BEARD asked if the observations upon the case reported were not in harmony with Dr. Ross' views.

Dr. PUTNAM was not prepared to say.

Dr. BEARD remarked that Dr. Ross, following Herbert Spencer, had applied the theory of evolution to the spinal cord, as he (Dr. Beard) had, in his paper, just read, applied it to mental symptoms.

Dr. PUTNAM supposed none would doubt that there was a law of evolution, but its precise application in disease of the spinal cord was not yet determined.

Dr. WEBBER, of Boston, said the case reported supported Ross' theory more largely than he at first supposed. Where recovery took place to such an extent as in this instance, it would be interesting to observe whether any young cells were present.

Dr. SEGUIN inquired if there were any vacuole cells.

Dr. PUTNAM replied that a certain number were present. In reply to Dr. Webber's question he would call attention to a case reported recently, where recovery took place to a considerable extent while the lesion constantly increased, and in which no particular signs of restoration were present, from which the conclusion was drawn, that, up to a certain extent, the functions of parts may be maintained with a much more limited number of elements than ordinarily used.

There was no further discussion. Dr. E. C. SEGUIN read a short history of a "Case of injury to the motor area of the brain," with exhibition of the patient.

Wm. M. Gates, æt. 27, Middletown Springs, Vt. Dr. Middleton Goldsmith. Nine years ago struck by a stone just above right ear. Was senseless. Pt. says he could walk when he came to, but could not use left arm; claims that he could not move any portion of arm or hand. Could talk. Not much trouble from wound, but at the end became unconscious and had a convulsion.

Dr. Thomas was then called. Was convulsed generally, and had a depressed wound above the right ear; perhaps a little paralyzed, and leg was a little weak, but the palsy of arm was complete. Several repeated spasms; was bled for convulsions, but no operation was performed, no bone ever came away; several months before wound healed. Had other convulsions in a week, then very frequently, daily, several a day, sometimes a week without attack; once was three weeks without attack. Seizures now quite frequent; also has petit-mal, and in this perhaps the hand is stiffish. No evidence of nocturnal attacks.

Marked analgesia of hand and fingers, though he says he feels contact of objects, and pin going through.

Hand very athetoid; was contractive in flexion for quite a while after wound, time uncertain; limber for 4–5 years.

The man's head exhibits a rounded, saucer-shaped depression in the middle of the right parietal bone. The lower edge of the cicatrix is eleven centimetres above the apex of the tragus, and its upper edge five centimetres from the median. From the nasal spine to the anterior edge of the scar is sixteen centimetres. The diameter of the depressed area is between three and four centimetres, and its greatest apparent depth about eight millimetres. It is firm and bony throughout. Projecting the lines of Broca on the head the scar is found just anterior to the Rolandic line, overlying the middle of the ascending frontal gyrus.

The patient was examined by several members who expressed the opinion that the man's epilepsy might be cured by the proposed operation of trephining.

Dr. HAMMOND remarked he had now operated thirty-one times, and with gratifying results in many cases.

Upon motion the Association adjourned until 8:30 P.M.

First day, evening session.

The President, Dr. HAMMOND, called the Association to order at 8:30 P. M.

Present—Drs. Amidon, Bannister, Edes, Gibney, W. A. Hammond, G. M. Hammond, Miles, Mills, Morton, Ott, Putnam, Rockwell, Seguin, Shaw, Spitzka, and Webber.

The Secretary read the minutes of the afternoon session, which were approved.

Dr. Miles was requested to take the chair, while the President, Dr. HAMMOND, read his paper, entitled, "On the so-called family or hereditary form of locomotor ataxia."

Twenty years ago, when doubt existed relative to the seat and nature of the lesion constituting the disease now generally known as locomotor ataxia, Friedreich, of Heidelberg published an elaborate essay, of which the title, "On degenerative atrophy of the posterior columns of the spinal cord," indicated the view which he entertained of its morbid anatomy.

All writers had, so far as Dr. Hammond knew, accepted, without question, Friedreich's view of their character, while no one had thought it worth while to study them in the light of our present knowledge.

Some of the details of Friedreich's six cases were then given. Dr. Hammond said no neurologist of the present day, after a full consideration of these cases, would regard them as instances of locomotor ataxia. That they have been so regarded by competent authority can only be explained upon the hypothesis that they have not been thoroughly studied, and that one writer has accepted the statements of another without referring to the original source.

In every one of Friedreich's cases the first symptom observed was weakness of the lower extremities, which gradually extended so as to involve the upper extremities. We find also that in no single case, at any period of its course, was there the slightest loss of cutaneous or muscular sensibility. In no case was there any derangement of the excretion of urine.

Dr. Hammond thought when, as in Friedreich's cases, the lancinating pains are not invariably met with—in fact, being very rare,—when there is no swaying of the body on closure of the eyes, when the inevitable result is that the morbid process extends upward, that the speech becomes affected, that the pupils are always equal, not contracted, and reacting perfectly to light, we have an *ensemble* of symptoms which are absolutely incompatible

with the idea of primary degeneration in any part of the posterior columns of the cord.

In a subsequent paper Friedreich brings forward three other cases with similar features and occurring in sisters. He states that in one of these cases, the patient dying of typhus, the principal features revealed at the *post-mortem* were the facts that the posterior columns of the cord (the columns of Burdach and the columns of Goll) were in a state of sclerosis, and that the like condition existed in the medulla oblongata. Reference was also made to the cases of Carre.

Dr. Hammond reported in full the histories of twelve cases similar to those of Friedreich, which had come under his own observation. These examples of the disease all occurred in children. All were healthy up to the time of the appearance of the paralysis. Parents normally healthy. The disease begins with weakness in the lower extremities, and then gradually advances upward, with nearly complete freedom from pain. In none were there the peculiar sharp, lancinating, electric-like pains met with in locomotor ataxia. The pupils, when observed, were equal and normal in size and reaction. In all, the speech was involved in a peculiar manner.

It was the rarest phenomenon to find the pupils unaffected in locomotor ataxia when the lesion was situated in the upper region of the cord. It was also exceedingly rare to meet with speech derangements, and there was always cutaneous anæsthesia at some time or other in locomotor ataxia. In the latter disease there is almost invariably impairment of the contractile power of the bladder, or its sphincter, or both.

The gait of these children was altogether different from that of ataxics. Instead of the feet being put down with a jerk and in two distinct movements, they were moved exactly like those of a drunken man when he attempts to walk.

For these reasons, Dr. Hammond could not consider the cases in question to be instances of locomotor ataxia or sclerosis of the columns of Burdach. Doubtless, in some of them, these columns were involved, but it was in all such clearly a secondary phenomenon.

In the absence of sufficient *post-mortem* evidence, Dr. Hammond hesitated to assign a locality to the lesion which constitutes the pathological entity of the cases to which he had referred. He was inclined to think, however, that its primary seat is the medulla oblongata. This opinion was mainly based on a careful consideration of the symptoms.

Remarks on Dr. Hammond's Paper.

Dr. E. C. SEGUIN remarked that it had been his good-fortune to meet with quite a number of cases (at least a dozen) of this kind, of which he had notes. They had occurred in families, groups varying from one to three.

Some years ago he had a call from a patient who came to his clinic at the College of Physicians and Surgeons, in whom he made the diagnosis of disseminated sclerosis. This patient said his brother suffered similarly, being completely paralyzed in his lower limbs, and drawn about the streets of New York as a beggar. It was also learned that a sister had died at the age of thirty or thirty-two years, after having suffered for years in a like manner to that described by Dr. Hammond. Since January, of this year, he had seen a case from Morrisania, which was characterized by thick speech and difficulty in the movements of the legs and arms. The father described another child of the same family affected in like manner.

Dr. Seguin had seen a case in St. Luke's Hospital in which the symptoms were those of locomotor ataxia, except, that the speech was affected, and there was an increase of the tendon reflex. Upon these two symptoms he based the diagnosis of disseminated or nodular sclerosis. He had always understood Friedreich's cases, and in referring to them had taken pains to mention that they were cases of more or less disseminated sclerosis of the spinal cord. The same was true of Carre's case. He referred to a case which was supposed to belong to this class, in which he found disseminated spinal sclerosis clearly shown, but whether the child had at a previous period presented ataxic or paretic symptoms he could not say. Nystagmus, imperfection of speech, ataxia, and yet absence of pains, anæsthesia, and the peculiar iris symptom which we expect in post-spinal sclerosis, were characteristic of these cases.

Dr. A. D. ROCKWELL recalled to mind a case which simulated ataxia, and which the President and he had seen together some years ago. A brother of this patient had an affection of the eyes, and was now nearly blind. Another brother had difficulty in co-ordinating the movements of his hands and feet; and the son of the latter was the subject of excruciating sick headache.

Dr. W. J. MORTON would like to inquire how commonly the disease under consideration occurred in adults, in Dr. Hammond's experience. He had seen a case which exactly fitted Dr. Ham-

mond's description, which had been referred to him as one of locomotor ataxia, but which he felt obliged to diagnosticate as disseminated spinal sclerosis. The patient was a woman of twenty-five years of age, and had been affected some five years. She had no lack of cutaneous sensibility, no bladder symptoms, no ataxia with her eyes closed, but merely a staggering walk. There was slight nystagmus, and slight difficulty of speech.

Dr. HAMMOND said the objection to considering these cases, disseminated sclerosis, was that tremor was absent upon attempting voluntary motion. When the lesion was confined to the spinal cord there was always present tremor when the patient attempted voluntary movements. In the cases which he had seen there was no tremor, no agitation of the muscles accompanying voluntary motion.

In answer to Dr. Morton's question, he thought the patient referred to, might have been affected sufficiently early in life, to allow of classifying it among such cases as he had brought forward.

Dr. S. G. WEBBER, of Boston, thought he had heard of cases similar to those reported by Dr. Hammond. A brother of several sisters came to consult him about the advisability of bringing one of his sisters to see him, and on this occasion gave Dr. Webber an account of the whole family. One of the sisters had already died; another was so sick and feeble that it was thought she was past help; and a third, a younger sister, was in the early stage of the disease. The symptoms of all, as nearly as could be remembered, corresponded to those described by the author of this paper. A friend of Dr. Webber's told him of a family of four or more children, who, as they became of a certain age, were attacked by the disease, and finally died of it—so, in that town, the disease acquired the name of this particular family.

As to patients with disseminated sclerosis being affected with tremor upon voluntary motion, he would say that he had a case some three or four years ago, which he diagnosticated as locomotor ataxia, in which there was no tremor. There was a staggering gait, pain, and inco-ordination.

The patient died three months later with an acute disease, and the *post-mortem* showed disseminated sclerosis, but in the upper lumbar region the posterior columns were sclerosed. In the brain and medulla oblongata were quite a number of patches of sclerosis. When Dr. Webber saw the case there was positively no tremor on voluntary motion. He thought tremor was not so common.

Dr. SEGUIN was glad that Dr. Webber made that remark; he arose to make a similar one. His experience had shown him that all other symptoms might be present without tremor. He would remind Dr. Hammond of Charcot's peculiar experience two years ago, who had a case in his ward that was tetanized, and which he referred to as a case of sclerosis of the lateral columns. He was afterward obliged to publish it as a case of disseminated sclerosis. That such was what must be the case, it seemed to Dr. Seguin, if we considered the pathological anatomy of nodular sclerosis, as he called it, for the nodules were scattered throughout the cerebro-spinal axis. In ataxic cases we recognize nodules in the posterior columns. So we can sometimes recognize them in the anterior columns. If the nodules are more anterior the paralytic condition and quasi-ataxic state are the predominant symptoms. If the lesions are more in the lateral columns the symptoms may imitate primary lateral sclerosis.

Dr. PUTNAM had seen the two young women referred to; they were about 15 and 18 years of age, and were living in Boston. He had seen two other exceedingly interesting cases of this kind. He referred to two girls affected very much in the same way, but the condition reminds one more of typical disseminated sclerosis. His impression was that Leyden had noted these cases as examples of arrest of development.

Dr. HAMMOND said that the trouble came on after birth, and that there was no reason why there should be an arrest of development at this age in order to account for the symptoms. He was glad that the universal sentiment of the Association was that they were not cases of locomotor ataxia.

There being no further discussion, Dr. H. M. BANNISTER, of Chicago, read a short paper entitled, "Note on bromide mania, and the supposed compensatory action of epileptic attacks."

He recalled the fact that he had read a paper on mania last year before the Association, in which he made the query whether the excitement was due to the suppression of fits rather than to the medicine. In the discussion that followed Dr. Spitzka referred to former observations of some phenomena by Dr. Stark. By reference to these, Dr. Bannister found that he (Dr. Stark) commits himself to the view that the excitement is due to the suppression of fits.

On the other hand Dr. Hammond had noticed cases which, not being epileptics, could not be accounted for on the theory of Dr.

Stark. Dr. Bannister then gave the history of a case in which the fits were suppressed by bromides, with the result of producing maniacal excitement which subsided upon the discontinuance of the medicine. It was found, however, that they could be completely controlled and the general condition of the patient much improved by the administration of a one-per-cent. solution of nitroglycerine. As long as his observations were continued these facts were observed, and the case was conclusive, as fully as one case could be, that the mania was due to the medicine rather than the suppression of the fits. Details of other cases were given. The paper was offered as a supplementary note to the former paper above referred to.

Remarks on Dr. Bannister's Paper.

Dr. SPITZKA remarked that if he understood the reader of the paper correctly he stated that the fits being suppressed by other remedies than the bromides and without the occurrence of maniacal attacks, was evidence that the excitement was due to the bromides, and that Dr. Stark's observation was negated. He would be inclined to follow Dr. Bannister had he not encountered examples of the difficulty of making conclusions from a few cases. The case of an imbecile had come under his observation about two years previous; the saliva dribbled from the patient's mouth, in which condition he had been for months; he had maniacal attacks for 18 months. The patient was sent to an asylum under the idea that his epilepsy could never be cured and that he could never recover his mental condition. To the great surprise of Dr. Spitzka the patient was returned from a pauper asylum where he had no treatment whatever that could be called treatment. The patient had improved so much that it was considered no longer necessary to retain him. The fact that a certain group of epileptics experience a relief after a certain time seemed to show that there was some ground for Stark's conclusion.

Dr. BANNISTER remarked that the case was considered conclusive only so far as one case could be so considered.

Dr. SEGUIN stated that Schroeder van der Kalk calls attention to the same fact referred to in Dr. Bannister's communication and that his view was that the attack is in the nature of a discharge.

Dr. MILLS thought that it was important in considering a matter of this kind to very clearly differentiate hystero-epilepsy from epilepsy. There is a status hystero-epilepticus as well as an epileptic

status. The bromides do badly in hystero-epilepsy. With reference to the occurrence of mental disturbances in epileptics in consequence of the use of the bromides, his experience has been that we have at least three distinct conditions as regards epileptics. We have a pre-paroxysmal condition, a post-paroxysmal condition, and the distinct substitution of an epileptic attack by a maniacal attack. He would say on the whole that the more frequent the fits and severe the attack the more likely are patients to have maniacal excitement. He had in the wards of a hospital in Philadelphia a number of patients under the bromide treatment, who had been taking the remedy for months, and in very few instances had he seen bad effects from their use. He recalled one patient who came to the hospital and who was brought back on several occasions because of the maniacal attacks following paroxysms.

Dr. BANNISTER would say that there was no suspicion of hystero-epilepsy in the case reported by him.

"A contribution to the clinical study of arsenical myelitis," was the title of a paper by Dr. E. C. SEGUIN, of New York. The cases reported were a rare sequel of Paris-green poisoning. The author regretted that he had been unable to inquire into the literature of the subject, but believed it was scanty.

Detailed histories of three cases which had come under the author's observation were given. These cases all recovered. All three cases presented evidences of slight subacute myelitis, more distributed in the anterior cornua. In Case 1 the symptoms were more purely those of polio-myelitis. In all cases the symptoms of myelitis followed within a week after the ingestion of the poison. Whether the myelitis was caused by the direct action of the arsenite of copper upon the spinal cord, or whether it arose as a result of irritation of the nerves of the stomach and intestines, was the important question which Dr. Seguin wished discussed by the Association.

Remarks on Dr. Seguin's Paper.

President HAMMOND inquired if the poisoning was due to copper or arsenic, and referred to some experiments by a Frenchman who had found similar results from poisoning by copper.

Dr. SEGUIN's impression was that the effects reported were due to arsenical poisoning. Though he would not wish to use the cases as data for a theory, it appeared from them that the mye-

litis had resulted from the irritation of the gastro-intestinal track.

Dr. AMIDON wished to call attention to the similarity of these cases of paralysis to those of spinal cord paralysis following diphtheria. In two of the cases reported, the paralysis resulting from the poisoning was excessive. It had always seemed to him that the pathology of these cases and that of spinal cord paralysis following diphtheria were similar.

Dr. SEGUIN remarked that most of his cases of diphtheritic paralysis had shown an ataxic stage previous to the paralytic stage. They had no tendon reflex, no pains ; but the history of diphtheria was clear. He thought he had seen some cases in which the ataxic stage was absent.

Dr. MILES thought that it was not impossible that cases like those reported by Dr. Seguin might result from general diffuse neuritis. In certain cases of diphtheritic paralysis he had found *post-mortem* evidences of disease of the nerves. He could mention cases that presented all the symptoms referred to, where no toxic substance was taken, and where there was only exposure to cold. He referred to the case of a man whose first symptom was tingling in the lower limbs, which passed upward and gradually involved the whole body, until he was not able to move a single limb. Atrophy of the muscles occurred to an extreme degree, and there was loss of faradic contractility. Complete recovery took place in a short time.

Dr. PUTNAM inquired if any other facts led to the suspicion that the condition was due to intestinal trouble. Also if it was possible for paralysis to occur in consequence of a single large dose of copper. He had seen one such case in which recovery took place.

Dr. SEGUIN replied that he believed he stated that he was not willing to advance a theory based upon the three cases reported. They all had gastric irritation, as he supposed was the rule in cases of Paris-green poisoning. It seemed that irritation of the mucous membrane and nerves might have led to the production of myelitis in a manner similar to the production of that condition by cold from exposure, or by the application of cold to the surface of the body.

Dr. HAMMOND said that he had asked Dr. Seguin whether the poisoning was due to arsenic or copper, for the reason that 18 months ago he had a similar case where the poisoning was clearly due to copper. He had prescribed the ammonio-sulphate, with di-

rections to take $\frac{1}{12}$ of a grain. Instead of taking the number of drops ordered the patient took an equal number of teaspoonfuls. Paralysis of all the muscles of the body, except those of respiration, followed. She remained in that condition 72 or 80 hours, and then gradually recovered. There was absolute want of sensibility. The patient took about 20 grains of the ammonio-sulphate of copper.

The next paper was read by Dr. WM. J. MORTON, of New York: "Mechanical vibration for the relief of pain. A new percuteur."

Next to the anæsthetics and narcotics, revulsion or counterirritation has long held a prominent place in the treatment of pain.

The general law which governs the relief of pain by counterirritation has been recently formulated by M. Brown-Séquard, who, after careful experimentation, announced the general principle, that general and local anæsthesia could be produced in the lower animals by applying to their peripheral nerve distribution a strong counterirritant, like a few drops of chloroform, and that this anæsthesia was explicable on the theory of inhibitory action. A drop of chloroform on a Guinea pig's neck produced general anæsthesia. Here was an explanation of counterirritative procedures in medicine. It requires little imagination to figure the time when a certain localized and known peripheral area of the human skin may be counterirritated in order to produce an inhibition of pain in some spot far distant. At present the counterirritation is applied as near as may be to the seat of pain. Undoubtedly many of the cures or reliefs that are effected by general peripheral treatment, like slapping, rubbing, stroking with the hand, general applications of electricity, etc., are due to impressions produced upon the fine peripheral network of the sensitive nerves, and conveyed to centres which set up inhibitory or relief responses, in their turn curative.

Within a few years other and more delicate methods of affecting the sensitive peripheral network of nerves have been brought forward under the general term—æsthesiogenic agents. This work has emanated from the clinic of Prof. Charcot, and has been elucidated mainly by Dr. Vigouroux. The latter gentleman enclosed an arm in a thin wooden box, surmounted by a tuning-fork kept in vibration, and found that the arm was rendered anæsthetic.

Hypothetically all forms of force display themselves in vibrations: heat, light, sound. Nerve force, whatever its nature is,

is probably vibratile. And herein, theoretically, probably lies the explanation of the effects we have alluded to. A vibration different to the vibration existing in the nerve, whether healthy or diseased, is set up by the external agency employed.

There is a form of vibration, not yet alluded to, which is communicated directly from the vibrating agency to the part to be treated. This may properly be called mechanical vibration, and it was that to which Dr. Morton wished particularly to call attention. To Dr. Mortimer Granville, of London, is due priority of treatment by this method; while to Dr. Vigouroux, of Paris, we owe theoretical studies, and the practical extension of Granville's ideas.

A new percuteur.—Dr. Morton, in his instrument, has arrived at a mechanism which would have a more powerful stroke than Granville's clock-work percuteur and the dental hammer, and at the same time give less trouble than the tuning-fork percuteur, which requires the use of a small galvanic battery. His instrument involves the idea of applying the vibrating rod directly to revolving hammers actuated by a crank movement.

The instrument was small, light, and could be readily applied to any part of the body.

Granville's hypothesis of the action of percuteurs is, that sharp pains are represented by rapid vibrations of neurility, and that "boring" and "grinding" pains are represented by comparatively slow vibrations. Consequently, in order to break up either one or the other forms of pain, it is necessary "to set up a new set of vibrations, which shall interrupt or change the morbid set by introducing discord."

Remarks on Dr. Morton's Paper.

Dr. WEBBER inquired if it would not be advisable to have different-sized discs with which to percuss upon the surface of the body.

Dr. MORTON said that it would and that he was now having them made, together with a number of other minor improvements which would materially enhance the utility of the percuteur.

Dr. Mierzejewski, of St. Petersburg, and Dr. Auguste Ollivier, of Paris, were nominated honorary members by Drs. SEGUIN and AMIDON.

Second day, afternoon session.

President HAMMOND called the Association to order at 2:30 P.M.

Present—Drs. Amidon, Bannister, Birdsall, Edes, Gibney, G. M. Hammond, W. A. Hammond, McBride, Miles, Mills, Morton, Ott, Putnam, Rockwell, Seguin, Sinkler, and Webber.

The Secretary read the minutes of the previous session, which were approved.

The Secretary made a statement to the effect that he had received some photographs from Dr. J. J. Mason, and a paper by Dr. Schmidt, of New Orleans, with illustrations upon a tumor of the fourth ventricle. He had also received a note from Dr. Jewell, of Chicago, who stated that on account of ill-health he could not be present during the meeting.

Dr. J. J. PUTNAM, of Boston, first exhibited two instruments.

The first instrument was a little microtome especially devised for the purpose of cutting spinal-cord sections and to be held in the hand. It could be used for other purposes; it avoided the necessity of imbedding the specimen.

The other instrument was a modification of Pond's sphygmograph. The essential point of difference between it and the original is, that means is afforded for regulating the pressure upon the pulse. He had also added a counterpoise for holding the point in place.

President HAMMOND thought the modification of great value. He had been unable to use with satisfaction Pond's instrument.

Dr. S. G. WEBBER, of Boston, read a paper entitled "Lead paralysis."

The object of the paper was to present a few cases of lead paralysis, not for the purpose of discussing all the questions which naturally occur to one in connection with the subject, but for the purpose of a brief review of the theories of its pathogenesis, and secondly, to call attention to some unusual forms in which lead poisoning may show itself, simulating more serious lesion.

There are two views now most prevalent in regard to the seat of the lesion in lead paralysis. Some authors consider the central nervous system, the spinal cord and brain, to be the parts primarily affected, viz.: Erb, E. Remak, Eulenberg, Monakow, Bernhardt, and de Watteville. Westphal, Leyder, Lunker, Gombault, Charcot, favor another view, that the primary seat of the disease is in the nerve.

The evidence obtained by a number of authorities which were quoted, from *post-mortem* examination, Dr. Webber said would be conclusive that lead paralysis does not depend upon lesion of the cord; but objection has been raised that it requires only a very limited lesion in the cord to give rise to the symptoms observed, and it is said that the examinations have not been complete. Three observers had found the cord diseased. C. v. Monakow had reported a case which was of more than usual interest, and was very significant that there was lesion in the brain, the cord, and the nerves; the location of the lesions was such that the changes in the cord could not be secondary to the changes found in the brain; and as the distal ends of the nerves were more affected than the proximal portions—the roots were not diseased,—it is not probable that the changes in the nerves depended on those found in the spinal cord. Monakow concludes that the origin of the affection is to be sought in the spinal cord, though recognizing that there are difficulties in this view from the absence of changes in the radial nerve near the cord and in the nerve root.

The author of the paper stated that we had as yet no proof that the higher centres, as brain or cord, can cause lesion of distant parts of the nervous system, as nerve or cord, without a continuous track of degenerated tissue intervening. Such a relation may, in the future, be shown to exist, but at present it is not proven. On the other hand there are a few facts, as experiments on animals, the changes in tetanus and hydrophobia, which tend to show that the peripheral nerve may exert an injurious influence upon the nutrition of the cord, even when the intervening parts of the nerve are apparently unaltered. In lead paralysis the mass of evidence derived from pathological anatomy would show that the disease is primarily a neuritis unless the origin by separate and independent centres is accepted as the true explanation. The fact that many cases of lead paralysis recover is also in favor of the peripheral rather than the central origin of the disease.

Dr. Webber could not believe that the spinal cord is the primary cause of the atrophy in cases like those which he reported. Most of the examination of nerves and muscles in lead paralysis show that the nuclei still persist long after paralysis has shown itself; from these nuclei may be developed the new structures which take their part finally in restoring the normal functions of the limbs. The fact that so many observers find the spinal cord intact may encourage us to give a favorable prognosis.

Another important fact which he had observed was that either pain, more or less severe, or soreness, or a tingling sensation preceded the motor disturbance.

In only one of the four cases reported could the origin of the lead be discovered. This is perhaps not strange in view of the results obtained by A. Gautier, who examined different articles of food and found lead in preserved vegetables, fish, crustacea, meats; also in drinks and drinking water, and the water artificially charged with carbonic acid; in acid drinks and condiments put up in brass; in vessels and utensils of tin, in the glazing of the walls and furniture, the woolen and silk of our clothing, the leather of our shoes, enamelled cloth; in the oil in which sardines are put up he found a relatively large proportion of lead.

Remarks on Dr. Webber's Paper.

Dr. PUTNAM remarked that he had seen two cases, one of which he was sure Dr. Webber referred to, which would never have been thought to be cases of lead paralysis. One of these resembled lateral sclerosis, and the other myelitis exanæmia. The first one recovered.

Dr. WEBBER inquired if Dr. Putnam had made the examinations of the urine of healthy patients for lead as he intended doing.

Dr. PUTNAM replied that he had not.

Dr. MCBRIDE inquired what tests for lead were used.

Dr. WEBBER replied that the tests were made by Prof. Wood, of Harvard, and he thought there could be no suspicion as to their accuracy.

Dr. SEGUIN had in mind a case in which the symptoms of lead paralysis were absolutely identical with those of poliomyelitis. He referred to the poisoning of a lady, the wife of a member of the Geological Survey Corps, who had imbibed lead in Washington. The reactions were characteristic of degeneration. There were marked anæmia and some dementia. Her urine was examined in Washington and afterward by Prof. Wood, of Harvard, and on both occasions lead was found. This case was one of a number which he had seen, and in which he would defy any neurologist to make a diagnosis between poliomyelitis and lead paralysis. The symptoms, he claimed, even of limited lead paralysis were identical with atrophic paralysis with pain. The reaction in lead paralysis, whether limited or general, was identical to those in poliomyelitis. The course of the disease is similar, and the

course of treatment adopted is similar; we give iodide of potassium in nearly all cases. In cases of drop-wrist he had administered iodide of potassium. There are few cases on record with lesion. He was unwilling to give up the idea that lead paralysis, whether localized or disseminated, is a form of poliomyelitis.

Dr. WEBBER wished to say one or two words in regard to the pathology. It seemed to him that it was still undecided, and yet he thought in many of the cases, as he stated in his paper, neuritis would explain the symptoms. The affection, he thought, began in the nerves and minuter nerve branches running to the muscles. He thought that autopsies made by such careful observers, and in which no lesion was found, was sufficient ground for granting that we may have lead paralysis without lesion of the spinal cord.

Dr. MILES spoke of the pains in the adult, and of their absence in the child.

Dr. SEGUIN thought that Dr. Miles assumed something that is not yet proven. These children were very young and might have pain.

Dr. MILES said that that was true, but that the best authorities agreed that such was not the case.

Dr. BIRDSALL said he had the opportunity of examining a case already published that bore upon the point made by the reader of the paper. He thought when we considered how often this disease is not serious, we would admit that we might have changes in the cord not sufficient to produce apparent lesion. In his experience he had found the electrical reaction present in a very limited form. The true reversal of the formula of galvanic reaction is not as frequent as in ordinary myelitis of the anterior horns. It seemed to him, in a certain number of cases, that we might have some functional impairment without any lesion in the spinal cord. He was aware, that in some cases lesions were not found in the spinal cord, but were present in the muscles and nerves. These peripheral changes might, after all, be the evidences of central impairment. It seemed to him, that, the cutting off of activity of the cord, might be made manifest in the periphery. Of course this is only theoretical. It seemed to him, that in the majority of cases, the probabilities were that the central parts were primarily affected and the peripheral parts secondarily.

Dr. GIBNEY did not believe that children suffering from poliomyelitis anterior were free from pain, as said by Dr. Miles. He

saw a great many cases, and the mothers of most of them reported that they cried and could not handle their limbs. The reason why Dr. Miles and most neurologists did not know this fact was probably because they came in contact with only a few cases occurring in children. During the inflammatory stage he was quite sure they did have pain. The cries of these children were indicative of pain; the limbs were sensitive, and it was almost impossible to test the muscles.

Dr. W. SINKLER, of Philadelphia, believed that a large number of cases were central in origin.

Dr. WEBBER thought the lesion arose in different parts independently. In one of the cases, the brain, spinal cord, and nerves were affected. There were three distinct seats of lesion, but not connected by tracks of degenerated tissue. He thought the explanation was to be found in the idea that irritation was produced in the several parts by lead. In the kidneys we have the symptoms of albuminuria. In reality, lead paralysis is simply one manifestation of a general diathesis and of changes which may occur in other parts of the body. Bones have been affected by lead poisoning.

President HAMMOND had for a long time entertained the opinion that the original lesion was central, but now experience had convinced him that the original lesion is in the nerve. Within the last five years he had three cases of lead paralysis in left-handed painters, who were paralyzed in the left hand. Usually, the patients are right-handed, and the paralysis is in the right hand. He thought such cases were to be explained on the ground of actual contact with lead. He would like to ask for the manifestations of lead poisoning when taken into the stomach and when used locally. He cited instances of lead poisoning occurring in persons who colored their hair with dye containing lead, which affected the scalp directly. In regard to Dr. McBride's question, he would say that lead was not usually secreted except when taking iodide of potassium. A very easy test was the galvanic.

Dr. EDES thought there were other explanations of lead paralysis; he thought that painters got poisoned through their lungs or alimentary canal. He saw one case of lead paralysis which he considered to be general. He thought that, in lead paralysis as in writer's paralysis, those muscles were affected which were most used. He alluded to one case of lead encephalopathy where the autopsy showed no gross lesion, but Dr. Wood found a good deal of lead in the brain. The patient was an ordinary lead worker.

He remembered another case, that of a printer: while it might be supposed that the lead was absorbed through the hands, but the patient testified to the habit of holding the type with his teeth.

President HAMMOND still maintained his idea of the local absorption of lead, notwithstanding the examples of lead paralysis occurring in printers, cited by Dr. Edes. It was possible to explain such cases in two ways, but in lead paralysis due to hair dye it could not be asserted that women habitually drank their hair dye.

Dr. CHARLES K. MILLS, of Philadelphia, read a paper entitled "Clinical notes on twelves cases of brain tumor, chiefly with reference to diagnosis."

The notes presented were on twelve cases of intracranial tumor in which the clinical examinations and the autopsies had been made by Dr. Mills. The notes were arranged so as to give a very much condensed clinical history, and statement of the gross *post-mortem* appearances and the results of microscopical examinations. The facts thus presented were then summarized and conclusions drawn.

Headache, usually described as persistent pain of considerable severity, with exacerbations of great violence, was present in every case. In several instances the patients complained of the pain being greatest in the region of the head nearest the seat of the growth. Percussion of the head elicited or intensified pain in the cranial region, beneath which the lesion was localized in three out of four cases examined in this way.

Vomiting was a symptom in eight of the twelve cases. In a case of tumor of the cerebellum, so located as to cause irritation of the floor of the fourth ventricle, vomiting was persistent. In most of the cases the vomiting was ascribed to irradiation of irritation of the nerves of the cerebral membranes, the observer agreeing with Ferrier in reference to this point.

Vertigo was noted in ten cases, most marked in two cases of cerebellar tumor.

In Cases 4, 5, and 6 the tumors were located in the motor region of the convexity, and in each case an accurate local diagnosis was made during life. The symptoms characteristic of tumors in the motor zone of the hemispheres, as given by Seguin, are: localized convulsions in peripheral muscles; equally localized paralysis of peripheral parts; neuro-retinitis or choked disc; localized headache. (The *Medical Record*, Feb. 26, 1881.) To

these should be added pain elicited by percussion of the head in the neighborhood of the growth, and elevated surface temperature of the head, particularly over the locality of the tumor.

In studying the symptoms presented by cases of brain tumor, the clinician should never lose sight of the fact that tumors of any size invariably occasion a considerable amount of softening by obliterating vessels in their process of growth. Large foci or layers of softening were found in nearly all the cases. In others true abscesses were present.

More or less anæsthesia or impaired sensibility was present in seven cases. In one case, in which the tumor was situated in front of the optic chiasm, the diminution of sensibility in the left leg was probably the effect of remote pressure.

In a case of tumor of the motor zone, left hemianæsthesia, complete before death, was present. The anæsthesia was here doubtless due to the softening which accompanied the tumor, and involved the posterior portion of the lenticular nucleus and internal capsule and adjoining regions of the corona radiata.

In a similar case, with softening of the white matter of the parieto-temporal region ; in an occipito-parietal tumor, with softening of the occipito-parietal white matter ; in a tumor and abscess of the temporal lobe ; in a case of cerebellar tumor, but with softening also of the posterior portion of the internal capsule and small adjoining parts of the optic thalamus and lenticular nucleus, partial hemianæsthesia of the side opposite to the lesion was present.

Where anæsthesia is complete, or nearly complete, Dr. Mills thought the problem is a simple one, and a definite lesion to account for the symptom could be expected ; partial anæsthesia is sometimes apparent rather than real. He had frequently observed in patients suffering from motor paralysis, and in which autopsy had shown a lesion limited to a motor area, that sensibility was apparently blunted, or that, at least, the patients did not quickly respond to stimuli applied to the skin. It may be in such cases, as Ferrier has suggested, that the slow response is not because the patient does not feel, but because his volitional power is impaired.

Inflammatory, trophic, and anæsthetic phenomena in the eye were present in two cases—both in the præfrontal regions. They were most marked in the case in which the growth was near the optic chiasm.

In eight of the twelve cases ophthalmoscopic examinations were made ; in four of the eight, microscopical examinations of

the eyes and of the optic nerves were also made by Dr. E. O. Shakespeare, who had in these cases made the ophthalmoscopic examinations. In every case in which the ophthalmoscope was used, marked changes in the fundus were found. The results of the examinations gave choked discs in four cases, and descending neuritis in four cases.

Microscopical examinations were made in two of the cases of choked disc, and in two of the descending neuritis cases. Dr. Mills held to the distinction made by Allbutt and others, regarding those cases as examples of choked discs, in which the ophthalmoscope revealed great intra-ocular swelling; and those as descending neuritis, in which there was marked inflammation with little or no swelling.

The temperature of the head was taken with surface thermometers in five of the twelve cases (1, 3, 5, 6, 7). The observations taken on Cases 1 and 3 have been published in full elsewhere. *Philadelphia Medical Times*, January 18, 1879, and *New York Medical Record*, August 9, 1879. They showed considerable elevation of temperature.

In Cases 5, 6, and 7 the head temperatures were taken only once, but the observations were carefully made with tested thermometers, and gave striking results.

In Case 5, a gumma involving the motor zone of the right cerebral hemispheres, the temperatures were as follows:

Right parietal station, 97.2°.

Left parietal station, 96°.

In Case 6, a tubercular tumor involving the posterior extremities of first and second frontal and upper thirds of ascending convolutions, the temperatures were as follows:

Right frontal station, 98°.

Left frontal station, 96.3°.

In Case 7, a large growth in the postero-parietal and occipital regions, the temperatures were as follows:

Right parietal station, 98°.

Left parietal station, 97.8°.

The conclusions were that in cases of brain tumor the head temperature is elevated several degrees, and most near the seat of the growth.

Some points were made with reference to hyperæsthesia, mental disturbances, conjugate deviation of the eyes and rotation of the head, neuralgia, reflexes, constipation, respiratory and circulatory phenomena, body temperature, and hysterical manifestations.

With reference to local diagnosis, Dr. Mills concluded that the location of a brain tumor could be determined with great positiveness in the majority of cases, sometimes from a study of the active symptoms presented, and sometimes by the method of exclusion.

The general diagnosis of the existence of intracranial tumors could, he believed, be made with greater certainty, than that of any other serious encephalic disease.[1]

Remarks on Dr. Mills' paper.

Dr. PUTNAM wished to ask if the author of the paper made a sharp distinction between choked disc and neuritis. Most ophthalmoscopists consider that choked disc was only a sign of neuritis.

Dr. ROCKWELL said the difficulty of arriving at a correct conclusion in intracranial diseases was impressed upon him by a case who came under his observation some time ago. The patient was a young lady about 25 years of age, who had been suffering about ten or twelve months previous from hysterical attacks, followed by epileptiform attacks. Her only mental disturbance was mental irritability and confusion of thought. There was headache present from the beginning. This finally became excruciating in character. Two symptoms, the predominance of pain and the epileptiform attack, pointed to tumor, but in the *post-mortem* examination no tumor was found. There was only opacity of the arachnoid and a few hardened patches in it. From the fact that brain tumors may exist without any positive sign, though this is not usually the case, this case was interesting because the signs of brain tumor were so positive, and yet the *post-mortem* revealed only chronic meningitis. There was no suspicion of syphilitic taint in this case.

Dr. MILES said that one difficulty in the diagnosis of tumors of the brain was in determining the character of the tumor; that is, whether it was a destructive or pressure lesion.

Dr. SEGUIN had been very much instructed by Dr. Mills' paper. He was particularly pleased with his localization views. With reference to headache, he was ready to admit that it was one of the important symptoms, and in some cases that it was almost the only symptom; that it was excruciating and peculiar. It so happened, however, that in two of his cases of well-defined cortical

[1] Dr. Mills' paper will be published in full in the *Archives of Medicine*, edited by Dr. E. C. Seguin.

sarcoma no headache was present. In the first case the symptoms began in the leg. There was no headache until one night the patient had an apoplectic attack. The lesion was situated in the para-central lobule, and in the tumor there was a cyst. There was no headache that could be attributed to the sarcoma. In the second case of sarcoma there was no headache before the appearance of definite symptoms of brain tumor, but the patient experienced occipital neuralgia.

With reference to the neuritis and choked disc, Dr. Seguin was obliged to confess that he had had a very singular experience. He had seen a number of cases of encephalic tumor and a number of cases of cerebral tumor. It had so happened that in only one case of cerebral tumor had choked disc been present. Diagrams with descriptions appended were passed around illustrating the cases referred to. All of Dr. Seguin's cases of basilar tumor had had choked discs. Also case of sarcoma within the medulla oblongata. He presented a diagram of an abscess located in the frontal lobe in which there was no paralysis and no aphasia, the symptoms being those of extreme pressure. The pulse was slow, 58, and lower at times. He presented these cases bearing upon the subject of choked disc not with the idea of lessening the importance of that symptom but with the intention of emphasizing the idea that we should not reject the diagnosis of brain tumor on account of not finding choked disc.

Dr. AMIDON mentioned the case of a man 49 years of age who had no symptoms before he was seen except occipital neuralgia. The first symptom was a weak walk, more marked in his right leg, but he very soon began to have hemi-epileptic attacks. About two months before his death the patient was seen by two homœopathic physicians, one diagnosticated anæmia of the cord and the other locomotor ataxia. Two weeks before death the attacks became very much more severe. The lesion found was in the para-central lobule and was a small cell sarcoma. At the very last the patient had aphasia.

Dr. BIRDSALL presented diagrams of a case he had described two years ago, and with it a case in which several sarcomatous tumors were found, one of which was located in the ascending frontal lobe, and accounted for all the symptoms present, namely, mono-spasm and mono-plegia in the arm. Headache, vertigo, and nausea were present; choked disc absent. No temperature tests were made. Percussion elicited pain over various portions. In the first case the tissue was simply pushed aside and not destroyed.

Dr. MILLS thought we might consider these cases decisive in regard to the great value of the ophthalmoscopic appearances in diagnosticating encephalic tumors. Of course it had long been a question, and is to-day whether there is any real distinction between cases of choked disc and neuritis. His own opinion was in favor of such distinction. He was inclined to favor the so-called lymph-space theory in regard to the production of choked disc. He made his assertions with more confidence from the fact that the ophthalmoscopic examinations in his cases were made not only by himself, but by Dr. Shakespeare, and some other well-known ophthalmologists in Philadelphia. The same was true with regard to the microscopic examinations. Dr. Putnam's idea, as he took it, was that choked disc and neuritis were practically the same thing; that is, both were an inflammatory condition. Now that is true to a certain extent. The very initial process in cases of choked disc was not inflammatory but mechanical. With reference to the ophthalmoscopic examinations it is difficult to differentiate between real descending neuritis and choked disc. You will have as a rule more retinitis in the cases of descending neuritis, and less of intraocular swelling. Of course the microscopical examination, if carried backward toward the place of the tumor, will show whether the inflammation has passed up or down, or been present or absent. He could not account for the fact that in Dr. Seguin's cases choked disc was absent. With reference to headache, vomiting, and absence or presence of symptoms of this kind, he thought the generalizations would cover the exception. Tumors of the brain are in nine cases out of ten in his experience tumors of the membranes of the brain, and very usually there is a fusing of the membranes. He remembered a case of tubercular tumor in the optic thalmus in which the only symptoms were those of pressure and hemi-anæsthesia. Again, he recollected a case of glioma in which choked disc and headache were absent. Tumors, which did not involve the membranes, and which grew in such a way that they displaced the brain tissue by a slow process of absorption, would not be likely to give rise to this symptom. Headache is due to pressure or to irritation of the dura mater.

With reference to the destruction of tissue, it may have been observed that in almost every instance a certain amount of tissue was broken down back of the tumor. This is particularly the case in cortical lesions, and he thought it could hardly be otherwise. In every case of tumor of the brain the physician

should bear in mind the fact that he has not alone to deal with evidences of tumor itself, but that he has a large area of softening often, or even abscess, which will help to account for symptoms which are anomalous.

With reference to the use of chloral he had no special experience. He used morphine a great deal, and found it acted very well. One word as to hysteria, and its relation to brain tumor. He would say it was a very common complication of brain tumor. On the other hand cases of true hysteria were sometimes difficult to diagnosticate from those of brain tumor, but in hysteria you have no choked disc. Head pain is evidence of involvement of the cerebral membranes, and particularly of the dura mater. In Dr. Rockwell's case, he believed, there were some evidences of exudation and inflammation in the pia mater. He had seen some cases of chronic meningitis, in which headache was not present. He had never seen a case of pachymeningitis, in which headache was absent.

Dr. SEGUIN, with the permission of the association, made blackboard illustrations of two of his cases of brain tumor. In one of the cases there was typical choked disc and excruciating pain, the lesions were in approximately similar regions, and nearly of the same size; yet in the one case there was choked disc, and in the other not. Both tumors were globular. In the first case there were arm symptoms; in the second case leg symptoms. The explanation given by Dr. Mills, he thought, depended upon irritation of the pia mater, but there was also a dynamic element apart from the location and character of the lesion.

Dr. MILLS said these two cases, he thought, bore out his ideas of the occurrence of these symptoms of brain tumor.

There being no further discussion, Dr. A. D. ROCKWELL, of New York, read a paper entitled, "A case of post-paralytic chorea, with remarks on the treatment of choreic symptoms in general."

The patient, a lad aged 8 years, was sent to him by Dr. Wm. C. Wile, of Newtown, Conn. A year previously, he suffered an attack of acute articular rheumatism, which especially affected the joints of the right side. Paralysis quickly followed, and then chorea. A year, subsequently, when he came under Dr. Rockwell's care, the patient had not improved under ordinary methods of treatment. He could not carry a glass of water to his mouth without spilling. The speech was somewhat hesitating, and the right pupil dilated. Physical examination revealed a distinct

systolic murmur, a noticeable feature of which was, that it was inconstant, disappearing, and reappearing without evident cause. The treatment in this severe and unpromising case was threefold: 1. Ether spray to the spine. 2. Fld. ext. of conium internally. 3. Central galvanization. Under these influences the boy immediately and steadily improved, and in ten (10) weeks was discharged as cured.

The reader was inclined to regard the ether spray in these chronic cases as of but little value.

Conium he had more confidence in, but in face of the numerous remedies which have successively been proclaimed to be the best, he hesitated to speak in very positive terms. As has been said of iron, strychnia, zinc, arsenic, etc., so perhaps it may be remarked of conium, "that it is the readiness with which the ordinary case of chorea tends to recover, quite as much as the efficiency of the remedies, that has given them such repute in this condition."

In regard to the value of electrical applications, Dr. Rockwell's views had in many diseases been variously modified, but in regard to their efficacy in chorea, he held the same opinion that he gave a dozen years before, and with this added experience, claims the same position for it in its relation to this disease, as at that time. Dr. Rockwell admitted that there was much adverse testimony as to its value, and quoted in this direction at some length from Von Ziemssen, Hammond, Hamilton, and others. On the other hand it has been greatly praised by Remak, Benedict, Rosenthal, Onimus, Meyer, and others, for its quieting effects upon the muscular contractions.

He could account for the unsatisfactory results, only on the ground of a possible incompleteness of the methods of application, or a lack of persistency in the efforts made. He presumed that he would not be contradicted when he asserted, that electro-therapeutical measures, should be to a large extent, matters of detail. Localized applications will not, as a rule, command success in such a disease as chorea. General faradization and central galvanization he believed to be the essential methods of procedure, and these when attempted, should be carried out with as much care, as other important processes. In the case of this patient, the fact that both rheumatism and paralysis preceeded the chorea, would suggest embolism as the cause, but the rapid cure militates against this. It is, perhaps possible, that minute embolisms may have been resolved spontaneously, the subsequent chorea, being the result of the shock to the nervous system. As we may have a distinct cardiac murmur in chlorotic conditions,

and in some of the sequalæ of acute diseases, so it existed here, but the fact that it disappeared as the patient improved, was sufficient evidence of its functional character.

Remarks on Dr. Rockwell's Paper.

Dr. MORTON remarked that he had tried strychnia, arsenic, conium, and electricity in the treatment of chorea, and had become pretty well satisfied that many forms of severe treatment would cure chorea. He thought Dr. Rockwell's experience with conium would be found the same as that with other remedies if given in large doses. It had sometimes seemed to him that the principle of treatment in chorea is one by surprises, so to speak, rather than by specific treatment. As to electricity, he had no confidence in general applications, such as the so-called general faradization and central galvanization. He would expect no more from such treatment than from any surprise to the skin, as for instance the cold douche, bathing, friction and the like.

Dr. EDES said that the dose of conium as given in the book was absurdly small, namely that of five minims. He commenced with a dose of 15 minims and increased it until he obtained the physiological effect. He did not believe that five minims given three times a day would produce any result. In one case conium seemed to do good, but he did not consider that it at all compared in value with arsenic.

Dr. SEGUIN testified to giving conium by the teaspoonful and used Squibb's Fluid Extract; he said that he would give ten and fifteen minims at the first dose to a patient fifteen or eighteen years of age. With respect to treatment he was satisfied with arsenic.

President HAMMOND constantly gave conium in doses of sixty or more minims to adults and in doses of from fifteen to thirty minims to children from five to ten years of age.

Dr. ROCKWELL remarked that he commenced with five drop doses and increased to twenty-five drops at a single dose. He had not been in the habit of recording acute cases of chorea, and it was on this account that he had so much confidence in the treatment used.

The next paper was, "A case of athetosis cured by nerve-stretching." By GRÆME M. HAMMOND, of New York.

For the last ten years nerve-stretching has been resorted to, with more or less success, in almost all spinal and cerebral diseases in which there was the slightest possibility of a cure being

effected. The result of these operations have been as a rule very unsatisfactory in nearly all cases where the disease has been traced to any organic change in the central nervous system. Athetosis, according to the *post-mortem* examinations made on those who have died while suffering from this complaint, comes within this classification and up to the present time after almost all kinds of experiments repeatedly failed, it is unanimously looked upon as an incurable disease. So far as the author was aware only one operation for the relief of this disease has been performed prior to his own, and that was by Dr William J. Morton.

On May 23, 1882. Dr. W. A. Hammond sent to the author of the paper his original case of athetosis, recommending that one or more of the nerves of the arm should be stretched. This patient has been presented to numerous clinics and societies, and three years ago was exhibited to the American Neurological Association. His history is contained in Dr. Hammond's book on "Diseases of the Nervous System."

Up to the time of the operation the movements in the hand continued, with scarcely an instant's cessation, both day and night, interfering with his sleep, and consequently with his general health. His epileptic attacks increased, until he had as many as six or seven a week. On May 27, 1882, Dr. Hammond exposed the median nerve in the middle of the arm at the inner edge of the biceps muscle, and made slight upward and downward traction on it. Immediately after the patient recovered from the influence of the anæsthetic, he could extend his fingers and retain them in any desired position as long as he wished. The pain in the arm was entirely relieved, but the pain in the middle and ring fingers had increased. The movements and pain in his foot had also ceased, and had not up to the present time returned. The patient's general condition has improved steadily, and each succeeding day he has acquired new power. He can now not only dress himself, but can control the movements of his hand sufficiently well to write. Another interesting and remarkable effect of the operation is the influence exerted upon the frequency and force of the epileptic paroxysms, he having had but one since the operation, and that was on the eighth day. It did not last as long nor was it so severe as those he previously had.

Dr. Hammond thought the cure of athetosis by nerve-stretching could only be accounted for in two ways—either the injured nerve must be rendered incapable of transmitting the athetoic impulses, or the effect of stretching the nerve produces such a result

in the diseased organ as to render the conception of athetoic impulse impossible. Preference was given to the latter theory. The patient was then exhibited to the members of the Association.

Remarks on Dr. G. M. Hammond's Paper.

Dr. SEGUIN inquired how much force was used in stretching the nerves.

Dr. HAMMOND replied, very little.

Dr. MORTON said the movements in his case were not so rapid or so constant. In reporting that case he reported two further cases of disease for the relief of which nerve-stretching had not up to that time been tried; viz.: lateral sclerosis and paralysis agitans. He did not give his patient as immediately useful a hand as in the one just reported and exhibited. He thought, however, at the end of a year that his patient would have a quieter hand. This case was of special interest from the fact of its long standing and the great degree of recovery.

President HAMMOND said that the most astonishing feature of the case to him was the cessation of the movements of the foot and of the epileptic attacks. The patient had previously had from six to eight fits a week. The patient was formerly a very dissipated man, and drank as many as sixty-four glasses of gin per day. He declares that since the operation he has had no pain and no movements at night. Formerly he was an accomplished bookbinder. He expressed great fear of the return of the fits should he resume work at his trade.

Third day, afternoon session.

President HAMMOND called the Association to order at 2.30 P. M.

Present: Drs. Amidon, Bannister, Birdsall, Dana, Edes, Gibney, Wm. A. Hammond, G. M. Hammond, Kinnicut, McBride, Miles, Mills, Morton, Rockwell, Seguin and Spitzka.

In the absence of the Secretary the reading of the minutes of the previous session was dispensed with.

"A case of swift and one of slow compression of the upper cervical cord from displaced odontoid process: with specimens."

Dr. V. P. GIBNEY of New York, presented the history of a case of anterior poliomyelitis wherein both inferior and the left superior extremeties had been almost completely

palsied, only a few groups of muscles ever regaining any power. There had been and was at time of death an extreme degree of atrophy. Deformity from contraction had been overcome and the boy was enabled by means of orthopædic apparatus and crutches to walk short distances. He finally died of compression of the upper cervical cord from displacement of the odontoid process, the ligaments having become separated from their attachment by disease of the occiput and contiguous vertebræ. This case was also employed to illustrate the doctor's next communication.

Sections were made from the brachial enlargement exhibited very marked atrophy macroscopically even, of the left anterior cornua, and microscopically there were in some sections only one or two ganglion cells to be seen in the cornua of the left side, while in those of right side there were as many as fifteen in the field. Clark's columns exhibited the same lesions only not so marked as in the cornua. In section from the lumbar cord both anterior cornua were atrophied and scarcely any large cells could be found. An occasional patch of shrivelled cells was brought out by the carmine staining.

The case, as above mentioned, was now used to illustrate *swift compression of the cord*, and the history briefly was, that the boy fell, his occiput coming in rather violent contact with the floor. Pains, torticollis, and abscess followed, all within six weeks. The first abscess was to the left of the occipital protuberance and a deep incision was made, the bistoury coming in contact with bare bone. Shortly afterward a retro-pharyngeal abscess appeared and was opened. He died suddenly, nearly three months after the date of the injury, one evening as he attempted to turn in bed.

The autopsy revealed the tip of the odontoid imbedded in the cord and an erosion of the occipital condyles at the point of insertion of the transverse and check ligaments.

Sections through the portion compressed exhibited fine examples of myelitis of a degenerative character.

The second case was that of a boy aged 11 years, whom Dr. Gibney first saw February 27, 1882. He had a left spinal hemiplegia and a torticollis with enlargement of the spinous process of the second cervical vertebra. The torticollis dated from a blow in September, 1881, followed in four weeks by glandular suppuration. The loss of power was not observed until the latter end of the year.

There was preservation of reaction to both currents. He was

treated with a head support and faradism, with good results, up to April 1st. Was removed from hospital; shortly afterward treatment was suspended, and within a fortnight he became paralyzed in all four extremities.

On the morning of the 29th he raised his head in bed, gave a wildish stare, and expired.

The autopsy revealed a sclerosed condition of the arches of the spinous process of second cervical vertebra and a projection of the odontoid process backward into the spinal canal. The cord was found indented correspondingly and quite flaccid here.

Sections through this portion showed well-marked degenerative myelitis and sclerosis in the columns of Türck. Lower down there was marked increase of the neuroglia in the postero-external column.

The anterior horns presented very few changes; the parts corresponding to the crossed pyramidal tracts exhibited the most marked.

In sections above the point compressed and in the decussation, nothing more than a high degree of vascularity was observed.

Dr. GIBNEY acknowledged his indebtedness to Drs. Amidon and Birdsall for assistance in the preparation of the specimen.

Remarks on Dr. Gibney's Paper.

Dr. MORTON called attention to an extremely interesting specimen in this city illustrating the class of injuries described. It was in the hands of Prof. William Darling, and represented a fracture of the odontoid process and atlas; the spinal canal being reduced to the size of the little finger. The patient must have survived the accident quite a number of months, as the fracture is perfectly united. The specimen is interesting as showing with how small a vertebral canal a patient may continue to live. In relation to the same class of injuries, Dr. Morton has reported a very unique case, namely dislocation of the fifth cervical vertebra which was reduced at once by hanging the patient by the neck and chin. The patient exhibited the symptoms of almost complete cervical paraplegia. There was cutaneous anæsthesia of the arms and legs. The head was thrown backward, the chin upward and forward.

Dr. GIBNEY said that, as an illustration of the amount of pressure which the cord would bear, that Dr. Yale had reported a case of fracture of the odontoid process in which the man lived several

months, though he was tormented by a frightful neuralgia. Upon *post-mortem* examination, the canal was found very narrow. It was also true that patients suffering from Pott's disease, or with cheesy masses pressing upon the cord, lived for a long time, even after the occurrence of paraplegia.

REPORT OF THE COUNCIL.

The Council reported, through Dr. Seguin, favorably, and recommended for active membership, Dr. C. L. Dana, of New York.

The Council reported favorably upon and recommended for associate members, Drs. Mierzejewski, of St. Petersburgh, and Auguste Ollivier, of Paris.

These gentlemen were all duly elected by vote of the Association.

"The disease of the Scythians (morbus feminarum) and certain analogous conditions," was the title of a paper by WILLIAM A. HAMMOND, M.D.

From a very early period the idea had existed that the male inhabitants of the Caucasus are subject to a peculiar disease, the chief characteristics of which are the loss of the physiological and moral attributes of man, the supervention of impotence, the disappearance of the beard, the atrophy of the penis and testicles, and eventually the implication of the mind to such an extent that the subjects believing themselves to be women, clothe themselves like women, and adopt the manners, custom, and occupation of the female sex. Mention of this disease was first made by Herodotus, and next by Hippocrates, the latter considering it due indirectly to horseback riding, which was largely practised by the Scythians, and directly to the "opening of two veins which are near the ears," which he supposes to be in intimate relation with the generative organs. This custom was a prevalent practice for the relief of enlarged lower extremities, brought about by excessive horseback riding. A very full historical sketch of this and allied conditions was given, from which it appeared that the Scythians of an early day, and their descendants, were particularly subject to sexual impotence, and that this condition is accompanied with such moral and physical changes in the affected individuals, as to cause them to look like women, and to acquire the mental characteristics and instincts of the female sex.

Dr. Hammond's attention was first drawn to this subject over thirty years ago, when he was on duty as a medical officer of the army. He was stationed at an Indian village inhabited by Pueblo Indians. It was told him, with many injunctions of caution and secrecy, that among their number was an individual whose sex had been changed from male to female. Dr. Hammond took great pains to investigate this rumor, and made several journeys to neighboring towns, in company with the chief, for this purpose. He saw and examined several of these individuals. One was described as having a remarkable development of the mammary glands; the pubis was devoid of hair; the penis was greatly shrunken, being not over an inch in length, nor of greater circumference than the little finger. The testicles apparently consisted of nothing but connective tissue, and were about the size of kidney beans. There was no genital deformity whatever. The limbs and the whole body were full and rounded, and there was not a sign of hair anywhere except on the scalp. Voice shrill and weak; and when naked his whole appearance was more that of a woman than a man. When he put on his woman's clothes there was absolutely nothing in his appearance by which it could be determined that he was of the male sex. Dr. Hammond, after patient inquiry, ascertained that these individuals were an essential person in the annual orgies which were indulged in by the Pueblo Indians. They are the chief passive agents in the pæderastic exercises which form so important a part of the ceremonies. Hence it is that this condition is intentionally brought about. To this end the most virile man is selected, and the act of masturbation is performed upon him many times every day; at the same time he is made to ride almost constantly on horseback. By these and other means the peculiar evolution above described is finally effected. Among the Scythians this condition is the incidental result of customs, while the Pueblo Indians intentionally produce it for a specific purpose.

The case of Lord Cornbury, governor of New York during the reign of Queen Anne, was mentioned as a remarkable example of a man who delighted in clothing himself in female attire. He was probably what is now called a "reasoning maniac."

Remarks on Dr. Hammond's Paper.

Dr. SPITZKA thought it was necessary to do as Dr. Hammond had done, to draw the line between sexual perversion and those lunatics in whom there is no sexual perversion.

He had sometimes thought the condition referred to was due to a defect in the development of the brain. Up to the third week of development all members of the human race are male, even those who were to be females.

Now the change which results in the determination of the sex may be intercepted, and a hypospadia or other congenital malformation occur, and thus we may account even for the external resemblance of males to the female sex.

As to Lord Cornbury he did not consider him a reasoning maniac; nor did the doctor think he dressed in woman's clothes to curry favor with the queen, for that was unnecessary.

Dr. SEGUIN inquired of the author of the paper if he was informed of the case of a medical gentleman who lived within fifty miles of New York, and who, notwithstanding his habitually appearing in female attire, retained the respect and esteem of the community in which he lived.

Dr. HAMMOND replied to the last question in the affirmative, and said he had frequently talked with this doctor, and was well acquainted with the facts in his case.

In regard to Edwin Hyde (Lord Cornbury), Dr. Hammond did not think he could be called a lunatic to any extent. He was, the doctor thought, a reasoning maniac.

Dr. F. T. MILES, of Baltimore, exhibited some morbid specimens, and presented a brief history of a "Case of hemorrhage into the pons; death eleven months after."

Mary B., æt. 40, stout and vigorous, after several days suffering with severe headache in the back of her head, was suddenly paralyzed in June, 1881. Her description of the attack was that she felt at the time "as if she was drunk"; her head swam, she staggered, and fell unconscious. Upon recovery of consciousness she found that she could not move her right arm or leg, and that the hearing of the left ear had suddenly become bad. A few days afterward she observed that the sight of the left eye was getting dim, the cornea became milky, and this trouble increased until she became totally blind. She never lost feeling on either side of the body. [Some time after her attack there was rigidity of limbs, which lasted two or three months.(?)]

About four months after she was paralyzed she was examined by my friend and former pupil, Dr. H. Berkley, of Baltimore, to

whose kindness I owe the account of the case. He found an incomplete paralysis of the right limbs. The grip of the hand was considerably diminished, though it could be raised to the head with an ataxic movement, which was also seen when she attempted to touch the end of her nose with the eyes shut. The right leg could be moved slightly. There was double facial paralysis. The paralysis of the face was more marked than that of the limbs. The tongue was protruded to the right with an irregular, uncertain motion; the upper surface concave. The speech was slow and drawling. There was rigidity of the temporals and masseters (whether on both sides is not distinctly stated), so that the teeth could be separated from each other for only about $\frac{1}{4}$ of an inch. Tactile sensibility of the paralyzed limbs was unimpaired. The sensibility of the right side of the face is good, except a patch of anæsthesia over the masseter. On the left side of the face, all the region supplied by the supra-orbital branch of the fifth nerve was anæsthetic and analgesic; nowhere else was sensibility altered. The tongue preserved its tactile sensibility. The cornea of the left eye presented a fleshy thickening (pannus), which protruded between the lids, preventing their being closed. This diseased cornea appeared not to have entirely lost sensation. There was increased lachrymation in the left eye, causing a continual weeping.

The movements of both eyes were perfect. There was total deafness of the left ear. Taste and smell were not affected.

There was complete incontinence of urine and fæces. No ridging of the nails could be seen on the paralyzed side. Flushes of heat, with redness and a sensation of tingling, passed over the paralyzed side occasionally; indeed, the whole of that side appeared redder than the sound side.

Some three months before death the left eye shrank within the lids, and about the same time the rigidity of the jaws passed off, and she regained the use of the muscles on the right side of the face. During the time she was under observation there was no interference with the function of respiration or of deglutition. There was no polyuria; no albumen in urine.

The autopsy revealed a focus of hemorrhage in the left side of the pons, approximating the floor of the fourth ventricle, and extending several lines from above downward, the bulk of the clot being a little above the level of the acoustic striæ. The rest of the brain exhibited nothing noteworthy.

"The mechanical effects of nerve-stretching upon the spinal cord," by Dr. C. L. DANA, of New York.

The spinal cord hangs rather loosely in its canal. It changes its position in the different movements of the trunk. The question in nerve-stretching, therefore, is essentially, not whether the cord moves, but whether it is stretched. The spinal cord is quite firmly connected with the dura mater. This is fastened to the borders of the foramen magnum; below, it extends over the nerve roots into the intervertebral canals, and is continuous with the nerve sheaths. In pulling on the sciatic nerve the traction comes on the cord and dura together, but chiefly on the latter.

The obstructions which prevent traction on a nerve from moving the cord are:

First.—The union of the nerve to its sheath, and of that to the surrounding soft tissues.

Second.—The union of the sheath to the wall of the intervertebral canal. Here the nerve makes an angle also, and force is thus lost. The union in the canal may be very firm, and it is here that the strongest opposition is found.

Third.—The extensile character of the nerve itself.

From experiments made, Dr. Dana estimated that the spinal cord, as a whole, when removed from the body, could be stretched $\frac{1}{12}$ to $\frac{1}{15}$ its length, or something over an inch.

Anatomical and clinical evidence was adduced, showing that the spinal cord may be stretched when the sciatic, crural, or brachial nerves are pulled upon. Experimental evidence was also brought forward for and against the idea that the cord moves when the above-named nerves are pulled upon.

Clinical evidence to the effect that the cord was stretched by pulling on the sciatic was derived mainly from cases in which the *cutting operation* had been done. In *subcutaneous nerve-stretching* the evidence that any central change is produced is very slight. The following conclusions were drawn:

A.—As regards the cutting operation.

(1) Traction upon the sciatic nerve in the cadaver in the majority of cases, but not in all, stretches the cord.

(2) This stretching is greatest at the lower part, amounting to 2 or 3 mm. with a very powerful pull.

(3) The movement is distributed over the yielding cord, and only in a minority of cases does it reach the medulla; the medulla then moves very slightly, less than 3 mm.

(4) When the cord is not moved, it is due, probably, to the

strong adhesion of the sheath to the nerve, and of that to the surrounding tissue, especially in the intervertebral canal.

(5) Traction upon the nerve and sheath, if it reaches the spinal canal, acts chiefly upon the dura; that is, the cord is stretched partly by direct force, but chiefly by the movement of the enveloping membrane.

(6) It may be legitimately inferred that what happens in the cadaver occurs also in the living subject.

B.—As regards subcutaneous nerve-stretching.

(1) On the cadaver this is a powerful means of moving the cord.

(2) In the living subject it is very doubtful if subcutaneous nerve-stretching affects the cord mechanically at all. The clinical evidence is very meagre; anatomical evidence cannot be obtained.

Remarks on Dr. Dana's Paper.

Dr. MORTON had, at the invitation of the author of the paper, witnessed the experiments upon the cadaver referred to, and could testify to the care with which they were performed. He was convinced that the spinal cord was moved. In these experiments the dura mater was seen to wrinkle longitudinally when subcutaneous nerve-stretching was resorted to. He thought these experiments left no doubt as to whether the cord moved; in other words, is exercised. He thought the subcutaneous method would be the one most frequently used in preference to the cutting operation, as it was within the reach of all. Any physician could give an anæsthetic and move the limbs. He had used this method in cases of lateral sclerosis and observed benefit from it. Dr. Morton could not yet testify to great results, but in one case of paralysis agitans some relief was effected by subcutaneous nerve-stretching; and in a second case of this same disease, treated by surgical nerve-stretching, even more benefit had been obtained.

Dr. EDES inquired what was the minimum pull upon the sciatic nerve.

Dr. BANNISTER inquired if injury might not result from nerve-stretching should there be adhesion of the cord at various points.

Dr. G. M. HAMMOND inquired if the pull was exerted only toward the spinal cord or in both directions.

President HAMMOND had very little doubt, if any, that the spinal cord is stretched by the cutting operation, and he was also

confident he had stretched it by the subcutaneous method. In one case of spinal sclerosis he stretched both sciatic nerves by the subcutaneous plan, and produced very decided irregular action of the heart and vomiting. The subcutaneous method could not be practised with fat persons; here the cutting operation would be necessary. The pain accompanying the practice of the subcutaneous plan was not great. In a case where he performed the operation a number of times, ether was first given, and afterward no anæsthetic was used.

Dr. DANA said that Voigt had made some experiments from which he concluded that it was impossible to stretch any normal nerve subcutaneously to an abnormal extent. Subcutaneous stretching does stretch the sciatic nerve somewhat, but Dr. Dana doubted whether it had any effect upon the cord. The minimum pull on the sciatic nerve used in experiments was less than ten pounds.

Dr. MORTON feared that subcutaneous nerve-stretching was receiving scanty justice. He would like to call attention to the fact that a much greater and more effectual stretch could be effected by carrying the leg outside the line of the body, than when kept within the body line. Again, it was probable that the nerve was stretched to a greater extent in disease than in health, as it then might often be in a swollen or in a rigid condition.

Dr. DANA thought we made a mistake when we assumed that the spinal cord was stretched by the subcutaneous method.

Dr. R. T. EDES, of Boston, next read a paper on so-called "Spinal Concussion," in which there was degeneration of the postero-lateral columns.

The paper was intended to point out the occurrence, in a certain number of cases of somewhat obscure pathology, of a definite and well-known lesion.

He had not been able to find any statement of the frequent occurrence of this lesion, or its symptoms, among the very various and vague sequelæ of spinal concussion. Several cases had occurred in his hospital service, in which the clinical evidence of degeneration of the postero-lateral columns of the cord had been very clear, and where the causation had seemed to be a severe shock to the spinal column, producing no appreciable osseous or ligamentous lesion. Brief histories of four cases, with remarks, were given.

Dr. EDES exhibited an instrument for percussion to be used in

connection with an electrical apparatus, by means of which a tracing was obtained indicating the time to $\frac{1}{300}$ part of a second. The instrument was the invention of Mr. Brown, a hospital *interne*.

There being no discussion, the Association adjourned.

Evening session, third day.

President HAMMOND called the association to order promptly at 8.30 P.M.

Present—Drs. Amidon, Dana, Edes, G. M. Hammond, W. A. Hammond, Kinnicut, Miles, Mills, Rockwell, Morton, Seguin, and Spitzka.

The Secretary read the minutes of the afternoon session, which were approved.

Dr. WILLIAM J. MORTON read a paper entitled "Notes on a year's progress in medical electro-therapeutics by statical electrization."

Referring to the historical phases of statical electrization, the reader called attention particularly to the very recent period of the growth, extending from 1879 up to the present time. This period, chronologically brief, was full of both promise and realization. Statical electricity was now prominently before the profession.

Progress was recorded in many directions.

1. Machines. Excellent machines of a variety of sizes and especially equipped for medical use could now be obtained in America. The number of revolving plates in some of these had already been increased up to eight, thus ensuring a large working *quantity* of electricity. This the reader considered of much importance, since there existed a tendency in certain quarters to make use of toy Holtz machines. The glass case added by Dr. Vigouroux had proved to be a lasting improvement. The ingenuity of Messrs. Hall and Berg, the American manufacturers, had furnished us with self-charging machines superior to those brought home by the reader from Paris at the time when he had first introduced the subject of statical electrization to the profession two years ago. In place of the somewhat cumbrous French contrivance of a separate wheel and cushions, a piece of cat's skin was permanently glued to a stationary plate, and served as a simple but constant charger.

The substitution of bunches of brass friction wires for the ordinary combs was also an improvement, for the reason that with this device a machine could be very easily charged under adverse atmospherical conditions. It had been estimated that during the last year about four hundred medical Holtz machines had been sold.

2. Electrodes and other appliances for administration. Dr. Graeme Hammond had suggested for an insulating platform a large plate of glass such as is used in sidewalks. This would seem to be an excellent idea.

A number of improved electrodes had been added to the well-known patterns.

Among these are carbon ball and point electrodes, a roller, a rubefacient, an ear and a uterine electrode, multiple copper and steel point electrodes, and an adjustable or "body" electrode, corresponding to the universal discharger of the text-books.

The reader had invented an electrode by which muscular contractions could be produced without the spark touching the body. It consists of two adjustable brass spheres affixed to a handle; one of the spheres is connected to the earth by a small brass chain, while the other is connected to a stem on the end of which is the ordinary sponge electrode. On drawing the spheres apart a spark passes between them, while at the same instant a muscular contraction takes places at the point of application of the sponge. He had also invented two directors. This idea of mechanically directing the spark of an electrode by means of a special appliance was new. One difficulty in administering sparks is to cause them to hit a desired spot successively. A director obviates this. The simplest construction is an ebonite, or glass disc, some six inches in diameter, penetrated at its centre by a small hole. A second form of director is made by enclosing the brass ball electrode in a glass tube tapering to a hollow point like a blunt end syringe.

The new static induced current brought forward by the reader had stood the test of experience, and many physicians using Holtz machines have used it preferably in cases where they had previously employed the induction coil.

Therapeutic Progress.—While conceding the comparative inconvenience of the static machines, the reader felt more confidence than formerly even, that statical electricity as a curative form of treatment was fully equal if not superior to galvanism and faradism. The various methods in which electricity was

held to produce cures were passed in review, and the static from these standpoints compared with the faradic and galvanic electricities. A protest was entered against general administrations of electricity. An accurate diagnosis and a localized treatment must be sought for. The standing of electricity would be greatly advanced if electricians would confine their studies to demonstrable reactions such as may be obtained 1st by localized nerve and muscle and secretory stimulations; 2d, by localized reflex and inhibitory action; 3d, by localized alterations of nutrition.

Some of the diseases and affections in which static electricity was especially useful were specifically pointed out.

The hemianæsthesia of hemiplegia, if present, was removed. In the hemianæsthesia of hysteria the effect is very rapid, and permanent.

Theoretically, in progressive muscular atrophy the local effect of the spark should be of benefit. Practically, some excellent results had been obtained.

Two cases of angina pectoris had been treated with a relief from attacks still continuous.

Hysterical aphasia, as might be expected, was easily relieved. Spasmodic asthma had been treated successfully by applications of sparks to the chest and back, an effect due probably to counter-irritation and reflex action.

In locomotor ataxia a single case had been cured of pain and ataxia—absent tendon reflex had alone persisted. Other cases had been treated, but with no permanent benefit. Cases marked by predominating sensory ataxia showed at first a marked improvement, because of regained cutaneous sensibility. The pains of this disease were diminished.

In chorea the results obtained had not been so rapid as by the arsenic treatment.

Static electricity had also been found highly useful in diphtheritic paralysis, lead palsy, rheumatic paralysis, sprains, and writer's cramp.

The diseases in which, in the opinion of the writer, static electricity was equal or superior to other forms of electricity, were paralyses where other forms of electricity would be advised, neuralgias in every form, spinal irritation, rheumatism in all forms except the acute, and hysteria in all its manifestations.

In general it was a peculiarity of the spark to relieve pain—herein its effects were well marked in most forms of neuralgia.

The soreness and tenderness of rheumatic joints, fasciæ, and tendons are more certainly relieved by the spark than by any other method. It was the best method of treating the condition known as spinal irritation.

In hysteria statical electricity possessed an almost specific influence. In order to explain this very constant effect it had often been said that it was due to the impressive nature of the electrical appliances.

This the reader did not believe, since the effects of the electricity referred to followed each other in a fixed succession that in itself proved that the symptoms of cure were a part of the natural history of the disease rather than the accidental sequences of mental impression.

An improved Holtz machine and the new electrodes were submitted for examination. In conclusion, the reader stated that a year's further experience had deeply fixed the conviction, that in certain cases easily specified, and by means of specific and localized treatment, we possess in statical electrization an important addition to electro-therapeutics.

Remarks on Dr. Morton's paper.

Dr. ROCKWELL thought that a point that should never be lost sight of in this connection was the relation of static to other forms of electricity. To determine its comparative value and usefulness would require great experience and much time. His own experience with static electricity during the past year had been very satisfactory, but he did not think it was possible to consider it as valuable therapeutically as either of the other two forms of electricity. The dynamic form had a far wider range which could be readily pointed out. There were some cases in which static electricity was better than other forms, and that was what we ought to consider. He had been much gratified with the use of static electricity in a case of rheumatoid arthritis, and in a case of synovitis of the knee, sent him by Dr. Otis; also in a case of ovarian neuralgia great relief was afforded. He had found in one case that where pain existed and the parts were not tender to pressure, under the application of the sparks the patient recovered after faradism had failed. He had purposely kept his static machine uncovered to learn how much of the time it would work, and had found it impossible to get sparks from it more than half the time. Was this trouble experienced with the covered machines?

Dr. DANA had used statical electricity somewhat during the last six months and had found it a very useful therapeutic agent. He had been more particularly interested in its tonic effects. These had been particularly manifest in two cases, one of topical anæsthesia, the other that of an old gentleman. It would be of value in this relation to know whether statical or faradic electricity was the better. As to this he would not say. It was interesting to note the extent of penetration of the spark. In local applications to the abdomen he had found it aid the action of the bowels. With the idea of further studying its effects upon unstriped muscular fibre he exposed the intestines of a cat and applied a spark, when from a condition of laxity they would begin to contract and become hard and smaller. From this it would seem that sparks applied to the abdomen might have some direct tonic effect upon the intestines.

Dr. AMIDON said one great argument against the use of statical electricity was the bulkiness of the machine, while a faradic battery was compact and could be readily carried in the hand. Except as a counterirritant and a very slight tonic, he thought statical electricity of little value. It was a decided exciter of the imagination, and hence was of value where the influence of the imagination was of advantage. He thought it could not for a moment be compared in value with either of the other currents. The cure of a case of Bell's paralysis and one of progressive muscular atrophy had been mentioned, but he did not think it would be claimed that the latter could be cured. The contraction produced by the statical current causes a great deal of pain. The galvanic current is so much less painful, that the use of the other seemed beyond consideration. The same effects as are produced by the static current can be obtained by a magnet or a mustard plaster. Within the last few months he had seen a case of contracture of the right hand that became completely relaxed and the power restored simply by the application of the faradic current to the extensors of the forearm, and by the use of the faradic brush. Hysterical cases, as he had seen them, would not respond to faradism. Dr. Amidon declared he was perfectly open to conviction as to the value of statical electricity, but he was convinced that it could never take the place of galvanism or faradism. He had never used statical electricity much if any, but had had abundant opportunity of observing its effects in Charcot's clinic. From what he had seen he considered it a useful irritant or stimulant in and about joints, and a powerful

impressing influence upon the imagination of impressionable people.

Dr. G. M. HAMMOND wished to say a word or two about the effects of statical electricity in progressive muscular atrophy. He had four cases. In two cases the atrophy is in the thumb; in the first it is in the right thumb, and in the second both thumbs are affected. In the third case the muscles of the arm, shoulder, thorax, and back are affected. In the fourth case, the muscles of the throat, arms, and legs are the ones affected. At first he began treatment with the faradic current and could obtain but feeble contraction. The use of statical electricity was then resorted to, and upon the first application of this current fine contractions were obtained. All the above-named cases have shown improvement, except the one where the muscles of the arm, shoulder, thorax, and back are affected. This patient though he has not improved has not been getting worse, as was the case before he came under treatment.

Dr. MORTON remarked that the idea was not whether statical electricity would take the place of or drive out of the field either faradism or galvanism, or both, but that it had a field of its own, in which it had special value. It is a mistake to place statical electricity in antagonism with either of the other forms.

In reply to Dr. Rockwell's question he would state that since he had had his machine there had not been a day when he could not obtain a good spark from it. It was well known that unenclosed machines could not be relied upon. For this reason he had always advised the employment of the glass case. One point had been brought out in the discussion which he hoped to investigate, namely, the depth to which the statical current would penetrate; but we were also in doubt as to the depth or extension of the galvanic and faradic currents.

It only remained to notice the strictures which had been passed upon statical electricity in a somewhat wholesale manner by one of the speakers. Dr. Amidon was present at Charcot's clinic at the same time that he was, and it is certainly remarkable that two observers could have witnessed the experiments of Charcot at the same time and have arrived at such diametrically opposite conclusions. Dr. Amidon seemed to think that the imagination was the chief curative factor in the use of statical electrization. Why not apply his argument to other effective methods of treatment, and appeal to the imagination for a solution of curative results brought about by those other methods. It seemed to the speaker that it

required a more vivid imagination to discredit the results of Charcot, Vigouroux, his own, and a host of others, than could ever be evoked from the most susceptible of patients by the use of statical electricity. He was much pleased, however, that statical electricity had gained and was now gaining many warm friends in this country.

The Secretary, Dr. SEGUIN, read a letter from Dr. J. J. MASON, of Newport, R. I., which was accompanied by photographs of the nuclei in the nerve-cells of *iguana tuberculata.*

These were not intended as a challenge to any one, but merely to illustrate what Dr. Mason had found to be true in one specimen only. Of course he was sure that Dr. Spitzka did not refer to cells of the sensory root, for two reasons; the first being that sensation has never been for a moment in question, the nuclei which Dr. Mason had been studying belonging to cells which, although they may possibly have a connection with sensory filaments, are indisputably related to muscles, *e. g.*, oculo-motorius and motor root of trigeminus.

The second reason is that in *Science* for Feb. 19, 1881, vol. ii, No. 34, p. 75, Dr. Spitzka states, writing on the brain of the iguana: "While the cells of the oculo-motorio-trochlearis nucleus are of large dimensions, those of the abducens, facial, and motor trigeminal origin are remarkably small."

In the same periodical, vol. i, No. 7, p. 73, the doctor states: "The remarkable size of the oculo-motor nuclei, and the gigantic dimensions of their almost star-like multipolar nerve-cells, merit mention," etc.

Of course if the nuclei in the cells of origin of the motor root of the trigeminus are smaller than those of the oculo-motorius origin, this fact would settle the case against me. It was, therefore, with somewhat more than usual interest that I examined these centres in the iguana, with what result the photos show. These photographs do not prove, but merely illustrate, what I have found in an unbroken series of sections through both centres. I have found no gigantic cells in the nucleus oculo-motorius or trochlearis, and while the nuclei in the cells of the motor root of trigeminus are relatively smaller than those of the snapping-turtle, there is a good reason for this in the relative difference of development of the jaw muscles in the two animals. In the iguana, as stated in my last article on the subject in the JOURNAL OF NERVOUS AND MENTAL DISEASE, Jan., 1882, the eyeballs measured, antero-

posteriorly, ¾ inch. The demonstration, he thought, might be a source of satisfaction to some of the members of the Association in the interest of science.

Dr. SPITZKA remarked that he would admit the correctness of Dr. Mason's statement, if he could convince himself that the nerve-root in question was that of the trigeminus. From the measurements given, there seemed to him no doubt that the large auditory cells had been measured by the doctor; and as far as the shape of the ventricular contour in the photograph, as well as other details, permitted him to judge, the section was taken at a lower level than that of the trigeminus. In reptiles the fifth and eighth pairs are not as widely separated as in the mammalia, and they may for this reason be confounded.

Dr. W. R. BIRDSALL read a paper entitled "A note on the sleeping sickness affecting the negroes of West Africa." He stated that the remarkable condition known under the above name and others, such as cataphora, lethargus, morbus-somnificus, sleeping dropsy (Clark), somnolenza (Gaigneron), hypnosie (Dangaix and Nicolas), maladie du sommeil of the French, Schlaffsucht of the Germans, and under the different African names of ni-bazo-nicto, n,tonzi, la-lan-go-to, undoubtedly includes a variety of forms of stupor produced by a variety of causes. The remarks in his paper referred only to the disease as found among the West African negroes, where it assumes such a definite symptom group that it has been considered an endemic disease by several writers; by others, as one peculiar to certain negro tribes. It is characterized, according to the older observers, by a tendency to sleep to an abnormal degree, which gradually becomes more and more profound, the patient rising only to eat or to change his position, or when aroused by some unusual excitement, followed almost immediately by a return to profound slumber. Remissions may occur during which there is a partial return to a more wakeful state, but they are followed by a period of more decided sleep, until it is difficult for the patient to remain awake long enough to take food; he finally lies in a continuous sleep, in which he dies. During all this time there are few outward signs of disease; the pulse is regular, from 70 to 75; the skin cool, sometimes a little below normal; the tongue is moist, sometimes being covered with a white coat. Clark describes "sordes" at the base of the tongue, and in many cases swelling of the cervical glands; the bowels are regular, or constipated.

Slight headache, and a feeling of constriction about the head are often complained of in the early stages, and despondency is observed. The patient grows fat as long as he is able to eat, but in the last stage becomes emaciated, presents a feeble pulse, and dies quietly. In a few cases convulsions or muscular twitchings occur after the stage of profound sleep is reached, becoming less marked as death approaches. The course of the disease is from two months to a year, death being the inevitable result. Dr. Birdsall reviewed the original literature of the subject, including the observations of Winterbottom in 1819 on the Gulf of Benin; of Clark in 1840 at Sierra Leone, who made six autopsies and observed many cases; of Dangaix, Gaigneron, and Nicolas; particularly of Gurin, who observed 134 cases at the Island of Martinique among negroes recently from West Africa, many from the Congo, making 82 autopsies, in which a distended condition of the cerebral vessels was the only abnormal appearance found; also Dr. McCarthy's observations from Accra, on the Gulf Coast, in 1873. An unpublished letter was read from Dr. H. M. Bacheler, an American physician then at Gaboon, West Africa, written in answer to Dr. Birdsall's inquiries concerning the disease. The following is an abstract:

"Several years ago this disease was considered incurable by the natives, and no endeavors were made to alleviate the patients' sufferings; but subsequent inquiry and study have revealed the fact that there is an initiatory lesion which readily yields to the proper treatment; so that they now dread it less than formerly. The disease is ushered in by a chill and headache, the patient loses his spirits, is disinclined to do any thing, moves restlessly about, has a staggering gait, suffused eyes, and dilated pupils. This part of the disease is called '*ozyone*,' and as soon as recognized, his friends take the patient to the country doctors, who understand the condition; they immediately scrutinize the mucous membrane of the nasal passages and of the pharynx. This is found to be white in color, with an exudation of thin mucus. The bark of a certain tree is obtained, and an infusion made by boiling in a pot; of this the patient is to snuff up his nostrils a certain amount. Afterward another decoction is prepared, which is used in the same way, and continued till a cure is established. 'Ozyone' is said to be almost identical with our catarrh. Sometimes circumstances forbid the treatment, and the patient is allowed to retain his 'ozyone.' This may remain for from two months to a year before decided somnific symptoms present themselves;

when this stage is reached the patient does little else but sleep; his appetite, even to the very last, is remarkably good, but as soon as he has finished his meal he immediately retires until the next is ready, when, if he is awakened, he will rise again, eat heartily, and go back to bed. During the sleep the pupils are normal, as also the pulse, temperature, and respiration. The disease attacks men, women, and children indiscriminately. The duration of this condition, which is called by the natives '*Nkanli y' antyâvinla*,' is said to be about two months, at which time the patient quietly dies without any other prominent symptom."

All observers, except McCarthy and Bacheler, testify to the invariable fatality of the disease, notwithstanding treatment. McCarthy was informed by the natives, however, that the deep cervical glands invariably become enlarged and that the native doctors extirpate them, always curing the disease. He saw patients who had been operated upon, though he had observed but one case of the disease. He concluded that pressure of enlarged gland upon the vessels leading to the brain, by consequent diminution of the supply of blood to that organ, caused the tendency to sleep. Dr. Birdsall considered that the more recent facts of Dr. McCarthy's observations, and particularly the statements made by Dr. Bacheler concerning the throat affection, point to the disease being one of an infectious character, probably due to the introduction of some special miasmatic poison peculiar to certain parts of West Africa—the hot-bed of such poisons,—introduced perhaps through the mucous membrane and lymphatics, being very slow and mild in its action, apparently that of a veritable hypnotic; the passive congestion being a concomitant result of its action on the nervous system; perhaps reproduced within the system, in which case the mucous membrane and enlarged lymphatic glands of the neck might represent a nidus of the *materies morbi*. The absence of enlarged glands in certain cases, according to Clark, who observed them in others, would not allow Dr. McCarthy's theory of pressure on the cerebral vessels to account for the disease.

Dr. SEGUIN thought that seven years ago he had a case of sleeping sickness. The patient was a very black negro brought by his wife to Dr. Seguin's clinic. The only complaint was of excessive sleeping. He could be roused to answer questions but would immediately fall asleep after answering them. By pinching him and calling out he would again wake up. As Dr. Seguin remembered the case, there was nothing further than anæmia

noticeable; there was no tangible disease. He was very much disappointed at the patient not returning to the clinic.

Dr. MORTON had not met with this sickness among the native Africans though he had lived in a constantly changing community of them in the diamond fields of South Africa, where as many as three or four thousand raw negroes came in every month. However, most of these negroes were from the great central plateau of Africa, consisting mostly of Zulus, Hottentots, Corannas, Bechuanas, Batlapins, etc., etc.; all of them very different in appearance from the West Coast negro, among whom the sickness described existed. Possibly the West Coast climate, one of the worst in the world, had something to do with producing this lethargy.

Dr. E. C. SEGUIN, of New York, read a paper entitled "Vertebral cancer and paraplegia," which was as follows:

Mrs. P., aged over forty years, was seen with Dr. Burlingham, at Plainfield, New Jersey, on Nov. 10, 1881.

More than twenty years ago, while bathing, was struck in the left breast by a friend's elbow. Felt a good deal hurt at the time, and afterward said to this friend, "If I ever get cancer of the breast I 'll blame you for it." No attention was paid to the small induration which remained. In the spring of 1879 this lump grew and caused some pain. Dr. Burlingham, and Dr. Willard Parker of New York, advised its removal, which was done by Dr. Hart in the same year. The tumor was examined by some one for Dr. Parker, and was reported to be "myxo-sarcoma."

In a few months a marked recurrence of the disease took place in the breast, with involvement of the axillary glands. A second operation was done by Dr. Hart in June, 1880 and every thing removed; it was a remarkably clean operation.

Since that operation there has been only a small varying (?) tumor near the anterior axillary fold. Patient was married in the autumn of 1880. Soon became pregnant and seemed well.

In December, 1880, driving home through the snow, was exposed to a cold wind, and both her feet wet. She fancied that the cold air "struck her left hip." In about two weeks began to complain of pains about the region of the left anterior superior spine of the ilium and below. Later had pain in right anterior femoral region.

In January, 1881, had a first attack of spasm in the back. The head was thrown back, and the lower part of the back was

tense, painful, and causing the body to be thrown backward. She continued to have more or less of this "drawing" feeling in the lower part of the back, often as low as the sacrum. Then she could not stoop or bend forward.

Before her confinement early in February the pain appeared in both anterior femoral regions. This was a sudden attack of pain with "drawing" in the back; the pain then increased, with spasm or cramps, throughout the hips, thighs, and feet. These attacks often lasted half an hour. Forceps were used in the confinement; it was otherwise normal.

In the spring she seemed better; went about on foot, but had the same cramp-pains developed early in the morning by turning in bed. No numbness. In July was at the sea-shore quite wretched. In August Dr. Burlingham went to see her in consultation with Dr. Fisk. She then had more pain in the hips and back; lay in bed, afraid of any movement (of the left leg especially). Could not bring her heel to the ground.

Toward the end of September there was gradual loss of power in the right leg, then complete palsy of the left leg, and lastly the right leg was completely palsied; at the same time there were loss of feeling in the legs, and partial retention of urine.

Six weeks ago (about October 1st) the paraplegia was complete, with anæsthesia, but no abnormal reflexes, and has so remained. Has lost color and weight progressively; no fever (?). Complete extension (or rather the attempt to do this) causes severe tearing pains deep in the abdomen, above the umbilicus. Has a pseudo-cincture feeling above the umbilicus. Of late there have been some reflex movements in the legs.

Examination.—The patient exhibits complete anæsthesia below a level one inch above umbilicus in front, and as low as the posterior superior spine of the ilium behind. All voluntary power is lost below the epigastrium. Abdomen much distended; impacted fæces can be felt in the ascending and descending colon. Pricking causes reflex movements. There are no symptoms above the umbilicus, except the axillary tumor (quiescent nodule).

The spine presents two deformities: First, a well-marked kyphosis composed of three vertebræ in the lower dorsal region. Below this the spine is displaced anteriorly, and below; in the lumbar region there is another kyphosis.

The pains have ceased for several weeks. No alteration in nutrition; some œdema of the paralyzed limbs. Bladder quite full (now micturates by reflex action). In August, Dr. Fisk found

a little albumen and some casts; none since. Nurse reports thirst and flushing of cheeks in afternoon. Reflexes all raised.

Diagnosis.—Pott's disease in lower mid-dorsal region, probably from cancer of the vertebræ and of the dura mater; compression of the spinal cord.

Clinically the symptoms are those of Cruveilhier's "*paraplégie douloureuse.*" Advise no treatment. If pains return morphia to be given freely.

On December 30th I received the following letter from Dr. Burlingham:

"Dear Doctor: The patient, Mrs. P., you saw with me died yesterday morning. There had been no very material change in her condition since you saw her, except a gradual and general loss of strength. The appetite was good, and digestion well performed. The distension of the abdomen was much less, and the 'drawing' pains had almost ceased. Urine passed sometimes without her knowledge, and about two weeks ago was very bloody for a couple of days. The evening temperature ranged from 100° to 104°; morning temp. nearly normal. For the past month there has been a very considerable reflex action in the legs, the left one more violently; and she complained of her feet aching.

"Bed-sores formed over the trochanters and the sacrum. Forty-eight hours before death she first complained of stiffness about the jaws. Clonic spasms now followed, involving the facial and throat muscles, and causing a fear of choking to death. These continued till about half an hour before death.

"A *post-mortem* examination was made about eight hours after death.

"The spinal column only was examined. I send herewith the portion removed for your inspection.

"We did not find the bodies of the vertebræ in the condition in which you regarded them at the time.

"The mental condition of the patient remained clear until within fifteen minutes of death."

Had not Dr. Burlingham taken the trouble to send me the vertebræ the case might have remained an anomalous and discouraging one for the student of spinal affections. The bones viewed externally after death seemed nearly normal.

The portion of the vertebral column sent consisted of two segments, one from lower dorsal and one from the lumbar region.

In both these portions, several bodies contained round masses

of grayish gelatinous cancer, some nearly one inch in diameter, quite destroying the cancellous body. At two points, one in the dorsal region, there was absence of an entire body, with projection of the anterior wall of the vertebral canal upon the spinal cord, causing compression of that organ; this was at the 10th dorsal. The adjacent bodies had come together, causing the kyphosis observed during life. A similarly total destruction of a vertebral body had taken place in the third lumbar vertebra, causing some pressure upon the cauda equina. The smaller nodules were of varying size and age; all, however, gelatinous and tending to the classic globular form. There was no trace of intra- or extra-spinal cancer.

A microscopic examination of the spinal cord showed no distinct secondary degeneration, but a well-marked, diffused myelitis. This finding, with the fact that the projection of the remains of the 10th dorsal vertebra in the canal was small, makes it probable that the spinal cord suffered more from an irritative process than from simple compression.

Dr .H. D. SCHMIDT'S (New Orleans) paper[1] on "A case of tumor of the fourth ventricle of the brain, unaccompanied by special symptoms," was read by title.

There being no further business, the President thanked the members for their courtesy, wished them all a safe return to their homes, and, upon motion, declared the Association adjourned until the third Wednesday in June, 1883, the place of meeting to be hereafter determined by the Council.

[1] See this number of JOURNAL, page 509.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, June 6, 1882.

Dr. E. C. SPITZKA, President, in the chair.

Dr. GRAEME M. HAMMOND presented a case of Addison's disease in a young woman whose sister at the same time was suffering from progressive muscular atrophy.

The patient with Addison's disease was about twenty-six years of age. She had been suffering for over a year, and had been growing thin and weak. She had occasional remissions. The arms, body, and face were bronzed in different degrees. The nails were non-elastic. The mind was less bright than formerly; the temper irritable.

The sister had suffered from progressive muscular atrophy for about two years. Eighteen months ago she had complete paralysis of the palate, and the muscles of deglutition were markedly impaired. The lips protruded; she soon got tired when talking. The paralysis later invaded the arms and legs. At the present time she falls occasionally when walking. The faradic reaction was normal. The treatment had been static electricity, under which she had markedly improved.

Dr. E. C. SEGUIN related the case of a young lady with symptoms resembling progressive muscular atrophy, though not really so. The speaker said that he was unacquainted with progressive muscular atrophy, beginning in the way described by Dr. Hammond, except in children. He had never seen a case occurring in women of the age of Dr. Hammond's cases. He suggested that it might be a case of chronic polio-myelitis.

Dr. GRAEME M. HAMMOND could not admit that diagnosis in his case. He had two cases of progressive muscular atrophy under treatment, of about the same age with the present patient.

A paper was then read by Dr. N. E. BRILL, entitled "Report

of a case of destructive brain lesion accompanied by color-blindness."

The patient in this case was a man who rather suddenly developed brain symptoms. There was anæsthesia and paresis upon the right side, the loss of sensation being more marked than that of motion. The right hand was paretic.

The urine was alkaline and contained pus but no albumen. Tendon reflexes were more marked on the right side.

After a few weeks symptoms of irritation appeared; hyperæsthesia, restlessness, tinnitus aurium, mind not clear. There was slight amnesic aphasia. Color-blindness developed. He could not tell green from red. There was no limitation of the field of vision. Hemiplegia became well marked. Tremors were present. Patient gradually declined in health and died.

Autopsy.—The brain only was examined. The cerebral branches of the carotid and vertebral arteries were found to be healthy. The internal carotids had very rigid walls. Membranes normal. A focus of softening, triangular in shape, was found in the cuneus on the left side. It involved a large part of that convolution. The line of softening was very sharply marked from the healthy tissue, so that the case was one of very purely localized softening. A diagram showing the lesion was displayed. The reader of the paper then went over the literature of the subject, and gave a critical analysis of previous cases reported.

The paper being open for discussion, Dr. HERMANN KNAPP said that he was unable to discuss this paper. It was completely at variance with what he knew about the subject. He wished that the reader had mapped out the visual field. It was, he thought, impossible to conceive of a separate centre for color-perception. He thought, however, that here was a subject for neurologists to work out.

Dr. SPITZKA said that the patient was so dull when examined, that no more accurate knowledge of his visual defects could be obtained than was described.

The paper of the evening was then read by Dr. LEONARD CORNING. It was entitled: "Carotid compression and physiological brain-rest."

The paper being open for discussion, Dr. WM. A. HAMMOND said that while it was necessary to admit the practical facts given by Dr. Corning, he was unable to explain why carotid pressure should check an attack of epilepsy. The primary condition, as

we know, in these attacks, is one of contracted vessels and anæmia. Some time ago he had heard of persons stopping fits by putting rubber bands around the neck. But this was for the opposite purpose of checking the venous flow and thus causing congestion.

Dr. GRAEME M. HAMMOND related the case of an epileptic child, thirteen years of age, which had an aura, lasting about half a minute. He tried carotid compression on one occasion, with the result of completely stopping the fit.

Dr. M. J. ROBERTS related several cases in which he had used Dr. Corning's method and instruments successfully.

The first was a case of congestive headache.

The patient was suffering intensely with severe pain, suffused eyes, etc. A compressor was applied and in forty-five seconds the pain had ceased. The second case was also one of congestive headache, the speaker himself being the sufferer. He applied the truss and in fifteen or twenty minutes he felt relieved and slept.

The third case was one of profuse hemorrhage, following removal of an anterior nasal polypus. The patient was somewhat alarmed. He applied the compressor to the carotid. To his surprise the hemorrhage ceased in one or two minutes.

He had used compression in connection with the administration of ether in ten or twelve cases. In all it seemed to have some decided effect.

The quantity of ether needed was apparently less, and the patients did not struggle so much.

The speaker had used digital compression in the case of a child suffering from convulsions. He was able in this way to control the spasms.

Dr. CORNING said, in concluding, that he was not prepared to say as yet how permanent the value of his treatment in cases of epilepsy would be.

The Society then adjourned.

NEW YORK MEDICO-LEGAL SOCIETY.

At the April meeting of the Society, the President, Mr. Clark Bell, was in the chair; there was a large attendance.

The various Standing Committees made reports.

The Committee on Proposed Changes in the Law Regarding Experts was announced: Hon. David Dudley Field, Chairman; Jacob F. Miller, Hon. C. E. Pratt, Prof. F. Barker, Prof. W. A. Hammond, Dr. J. G. Johnson, and Prof. C. A. Doremus.

Large acquisitions to the library were announced, and among them a donation of $500 by E. N. Dickerson, Esq.; $25 by Prof. Fordyce Barker; $5 by Dr. J. G. Johnson; and a list of contributors of volumes.

Dr. A. L. GIHON, Medical Inspector of the Navy Department at Washington, read the paper of the evening, entitled "The prevention of venereal diseases by legislation."

The paper excited great interest, and an exhaustive discussion followed, which was participated in by Drs. F. R. Sturgis, R. W. Taylor, Wm. A. Hammond, A. N. Bell, Lewis A. Sayre, J. C. Peters, J. F. Dunphy, R. J. O'Sullivan, M. H. Henry, C. A. Leale, R. G. Piffard, Hon. G. H. Yeaman, Hon. G. W. Palmer, and the President, Clark Bell, Esq.

Mr. R. S. GUERNSEY then read a paper, entitled "Analyses and classification of medico-legal sciences."

At the May meeting, held May 3, 1882 President Clark Bell was in the chair.

Dr. W. A. HAMMOND read a paper by Dr. A. O. KELLOGG, entitled "An analysis of the mental condition of Charles J. Guiteau," which the author stated had been made at the request of the government, at the time of the trial, but had not been used.

The paper of the evening was read by Dr. E. C. SPITZKA, entitled "Evidences of insanity discernible in the brains of crimi-

nals and others whose mental state has been questioned, with some remarks upon expert testimony and the Grappotte case."

The paper was discussed by Dr. W. A. Hammond, Dr. Gray of Brooklyn, Dr. Geo. M. Beard, Dr. R. L. Parsons, ex-Surrogate Calvin, Gen. W. F. Palmer, and others.

Contributions of a large number of books to the library were announced, being sixty-four volumes and pamphlets by various gentlemen; the larger contributors being Dr. Bermingham, Dr. A. N. Bell, Prof. Baird, of the Smithsonian Institute; Hon. John Eaton, Washington.

The June meeting of the Medico-Legal Society was held June 8th, at Mott Memorial Hall, where this Society now meets, the President, Clark Bell, in the chair. There was a large attendance.

The President, CLARK BELL, read a short paper on "The duty of the Executive in the case of Guiteau."

Guiteau has been tried, convicted, sentenced to death, and unless the President intervenes no power can now save him from the scaffold he so richly deserves; but there are certain facts that must not be disregarded by the President, and which cannot be ignored, in this affair, in its relations to our country and people, in the question now forced upon the Executive of the nation, which I have thought should be considered by this body:

The considerations, I desire to submit to the Society are summarized in the following remarks:

1. It is not wise in the Medico-Legal Society to shrink from a clear duty from any mere fear of popular clamor.

If a scientific commission could be called now by the President, of five or more of the foremost alienists of this country, who were not sworn upon the trial, it would certainly justify presidential action, based upon any report or decision thus reached.

2. State executives have frequently resorted to their undoubted right to inform or instruct the pardoning power as to the actual mental state of the accused after sentence of death.

3. The recent attempt on the Queen of England's life was met by such an inquiry on the part of the British government in London, which has deprived that act of any political significance and from any scandal on the English name.

If, notwithstanding the success of Guiteau's attempt, a commission called by the government had found him insane at the time, it would be most fortunate for our fame and credit as a people. If this tragedy could now be generally regarded as the act of a

madman, and mankind concur in the view that no sane man could have planned and executed such a deed, it would be a relief to the civilized world.

4. Without reflecting at all upon the nature, character, or quality of the medical testimony given upon the trial, all must coincide that, with one or two exceptions, it was given by gentlemen who were in the employ and pay of the government, or in the interest of the defence, as is usual in such trials, and which was perhaps not at all improper.

It is also patent that the popular prejudice and clamor were then so great that no physician could be insensible to the fact, that giving testimony that Guiteau was insane would injure the witness professionally, or in popular opinion, and bring the physician who gave it into public odium.

Is and was Guiteau in such a mental state as would have justified his being placed in an asylum ?

Is his insanity of such a character, conceding that he can discriminate between right and wrong, and intelligently understand the nature and character of his act, that he should be put under asylum restraint ?

Was he in such a state in July last, supposing his effort had then failed, like the attempt made upon the life of the Queen of England ?

Was he or was he not in such a mental condition before July that he should have been placed in an asylum by his friends or the authorities, and a restraint placed upon his actions ?

5. A *post-mortem* examination of the brain of Guiteau might possibly disclose such lesions or pathological conditions as would demonstrate his insanity or throw light upon his psychical condition, as in the case of Freeman, but the better scientific view at this day is that it would not.

Guiteau's *post-mortem* will probably be negative in value.

6. If Guiteau is executed as a sane and responsible being, without having a scientific examination made of his mental state by a body of alienists that would command the respect of the world, it will be a source of lasting regret as well as of surprise to the generation coming after us.

7. In view of the circumstances of the case, its relation to the science we represent, what is the duty of this Society in the emergency concerning which I have ventured to submit the foregoing considerations ?

1. Should we respectfully suggest to the President, in con-

sidering this case and the petitions that are now going in from the medical profession who believe him insane and irresponsible, to take the assistance of such a commission, as the Executive of the nation, and repair an omission of both the people and the defence before as well as after the trial?

2. Should the President, in view of the abundant evidence of a very general belief in Guiteau's insanity, take the advantage of his legal conviction as a responsible agent, and commute the sentence to solitary confinement for life, as the most fitting punishment, and the safest course for the honor and dignity of the country?

I have taken the liberty of throwing out these brief views and suggestions on this case, on the eve of the time fixed for Guiteau's execution, from a sense of duty, feeling that this Society should not hesitate to speak from purely scientific motives, however distasteful to us the subject, or hateful may be the assassin.

Col. B. A. WILLIS said the trial of Guiteau has been discussed in this and all countries. Not only has he been tried by a jury of twelve men, but he has been tried by the tribunal of mankind, and found guilty. Should the paper read by the President become the voice of the Medico-Legal Society, no matter what judgment might be expressed as to the sanity or insanity of Guiteau, the insanity of the corporate body would be unquestionable; therefore, I will move that it is the sense of the Medico-Legal Society, of New York, that Charles J. Guiteau has been justly sentenced to death, as a punishment for his great crime, and his moral responsibility has been established beyond all doubt.

Gen. GEO. W. PALMER remarked: As I understand Col. Willis' motion, it is, as the sense of the Medico-Legal Society, that inasmuch as Charles J. Guiteau has been tried, convicted, and found guilty, and by a court and jury legally entitled to try and convict, and find guilty and sentence; that inasmuch as various motions have been made under the form of law, undertaking to use all technicalities of law, to see to it that nothing be left undone which could be done to save him from the gallows, and that all these questions have been decided against this man Guiteau; that inasmuch as this case has been tried, not only by a court and jury, but by all the American people, and they have all decided that this man, Charles J. Guiteau, is guilty, not only of assassination and murder, but of that degree of assassination and murder which reaches above and beyond the ordinary criminal intent, or design, or desire to commit crime,—reaches to that extent where

it takes away the intention and choice of the people; that, therefore, we, as the Medico-Legal Association of this great city of New York, representing what should be and what is the intelligence of both of the great professions,—that we should undertake to step in between this great criminal and his doom, on the ground that he may have been insane. It seems to me so strange that I cannot find language to express my ideas on the subject. This man who for years plumed himself on his intelligence; this man who studied law; this man who married a respectable woman for a wife; this man who disregarded all the home ties and connubial ties of earth; this man who had undertaken to show that he was greater than other men; this man who had undertaken to show that he was a greater Christian than other men, and that he represented the dogmas of the Church; this man who had undertaken to follow Bob Ingersoll through the Eastern States and refute and condemn his doctrines; this man who said that he represented certain great political factions; this man who, with malice in his heart because a consulship was not given him, shot our President! Who will after all this undertake to say that this man is a fool, buying a revolver, training himself to shoot at a mark, dogging the President's footsteps, and finally shooting him to the death!

Can there be any doubt of the sanity or insanity of this man? It seems to me that it would be beyond the power of the human mind, no matter what language on the face of the earth was used, to express that degree of indignation which all the civilized world would express, if we should to-night, as a body, express even a doubt as to this wretch's sanity, and say that we are of the opinion that a commission should issue to examine him at this time.

Dr. GEO. M. BEARD: If Guiteau is a sane man then we are all insane. It is the opinion of the best experts in this country and in Europe, that Guiteau is insane. I may say that there never was in the history of the trial of any lunatic, such a unanimity of testimony as in the case of Guiteau. The best men in Boston, in New York, in Philadelphia, and in Chicago,—the best men in all parts of the country are unanimous in their opinion on this subject. And, Mr. President, you will bear me testimony, that there never has been any subject discussed before this Society, where the medical men so thoroughly agreed with each other. Men who were always quarrelling here and everywhere else; those men who had a large experience in the treatment of this kind

of disease, and who were, according to their own opinion, familiar with the literature of France and Germany, were unanimously of the same opinion. If there was a commission appointed which had the confidence of the medical world, and which would give an honest opinion, Guiteau would never be hanged, and it would be an excellent thing for history. I am glad that our President has seen it proper to make these remarks, for it brings the subject fairly and squarely before the corporate body, and there has been an amount of unsolicited testimony since the trial. If a man be a lunatic, no matter what the enormity of his crime, he should not be visited with punishment.

One gentleman here to-night has said in a speech from a scientific point of view, that he could not find words to express his thoughts on this subject. If he will go back 200 years, and go over the speeches of the lawyers and judges who were concerned in the witchcraft trials, he will find words which will express his opinion, and I propose next week to put those words in a form that will give him a chance to go over them. He will then find that what he said in a feeble way to-night was said 200 years ago.

The President.—I desire to remark that I have expressed no opinion as to the sanity or insanity of Guiteau, nor as to his responsibility. It is well known that a petition to the President is now in circulation among the physicians, to examine, by a carefully selected commission, the question of his sanity. I call upon Dr. Frederick Lente to give his views upon the subject.

Dr. LENTE said : I did not come here prepared to make any remarks. Since the trial, I think that the opinion is general that Guiteau is insane, and the public generally regard him as an insane man, from the evidence of private examination and the evidence that came out during the trial. The evidence that was given at the trial is not satisfactory to the scientific world. I think that the witnesses were influenced by general clamor. Very few witnesses could be induced to go before the court and give evidence from their own honest convictions. The opinion is gaining ground through the country with intelligent people, that Guiteau is insane and has been insane for years. As to his responsibility, I do not want to give an opinion. It seems to me that there is a little inconsistency in the view that Guiteau should not be punished, and that he should be confined for life, which would be a greater punishment than if he was hung. It would be a dangerous thing for the world if Guiteau should go unhung ; it would

have a bad influence on the great number of cranks at large. But if he is insane he should not be hung, no matter what the effect may be.

Ex-Surrogate D. C. CALVIN said: I think that every one of the suggestions made by the Chair is worthy of our attention and grave discussion. They have not received that grave discussion, on account of the resolution offered by my friend, and the manner in which it was offered. The statement of my friend Gen. Palmer, that there is no language adequate to discuss the question, has foreclosed further discussion. But I beg leave to say that there are different opinions about this matter, and in the minds of some of the foremost medical men of the day there are grave doubts as to the sanity of Guiteau. Before he is hung the matter should be settled by the decision of a commission of medical men in whom the public will have confidence. I do not think that the dignity and character of the American people will suffer by a little delay to find out whether we are hanging an insane man or a sane one. If he was sane when he committed the act Gen. Palmer may study his dictionary till doomsday and he will not find words to express my indignation; but if he was insane, that makes a difference, and I beg leave to ask Gen. Palmer if Guiteau had shot Patrick Burns who carries a hod, if, in his opinion, he would ever have been tried.

If Gen. Palmer had been present at Washington and witnessed personally the judicial proceedings and understood the tactics that were used to bring certain expert physicians to testify to Guiteau's sanity, he would have a different opinion of the verdict by the twelve men. I am sure that that jury settled that verdict before a particle of evidence was given, and if evidence for the prisoner was piled as high as the Capitol it would make no change in that verdict. I believe in discussing this matter fully and fairly, and I don't believe in using harsh terms when scientific questions are asked of a scientific society.

I agree with Mr. Palmer that in conformity with law he has been properly found guilty and sentenced. I believe that Judge Cox charged the jury precisely according to law.

If he was sane he should be punished, but if on the contrary the act was the outgrowth of his insanity on one point, he is free from guilt and incapable of performing crime.

It is not easy to say when one part of a mind is dethroned, whether the other parts are dethroned or not.

The Chair called upon Dr. W. R. Birdsall.

Dr. BIRDSALL thought that it would be unwise for any opinion to go out from the Society.

Dr. C. L. DANA, being called upon by the Chairman, said: I have good facilities for becoming conversant with the medical literature of France, Germany, and England, and I do not think that Dr. Beard is correct when he says that the best experts in this and other countries consider Guiteau insane. As far as the expression in England is concerned I do not know one case where such an opinion has been expressed by men of ability on this case. As the Society generally knows, the *Lancet*, which employs experts to write editorials on such subjects, considers Guiteau a scamp.

D. C. RIDDLE, Esq., remarked: I certainly appreciate the manliness and independence exhibited in the remarks read by the Chair, and I appreciate the remarks made on the other side, condemning any action on the part of this Society.

I admit, as a lawyer, that if this commission were to sit it would be a practical retrying of the great issue, whether the man is responsible or not. This was the issue in the trial, and the question was not whether Guiteau was insane or not, but whether he was responsible or not for the crime. If such a commission were appointed it would be a retrial; still there is another side to be looked at. If there is even a question as to his sanity I do not see any great impropriety in the President appointing a committee of scientists to examine him. If found sane he can be executed. I do not forget the indignation we all felt at the first flash of the telegraph from Washington, and how we felt that this man should be torn limb from limb. If it is true that this man is insane I do not see why it should not be investigated by such a commission. I just met a man from Washington who said that it was the belief there that Guiteau was irresponsible. The feeling which pervaded the world at the dastardly act is gone. The feeling now is that this man was irresponsible for his act. If he was, the American people can never afford to hang a lunatic,—no more than Virginia could afford to hang John Brown. We can afford to be just. I say we can afford to be *just*, and if a commission consisting of such gentlemen as the Chairman referred to can satisfy the American people on that subject, it is the proper thing to have.

Mr. GILBERT R. HAWES, said: It seems to me that the discussion has taken a wide range, and I do not think that we ought to-night to take any action on this subject. Unfortunately, two of our ablest members, Drs. Hammond and Fordyce Barker, are

absent, who stand among the foremost on questions of insanity. The former, in a paper read before this Society a few weeks ago, said that a man might be physically insane and yet, morally responsible for his acts. He showed by statistics that in about nine cases out of ten, where persons had committed crimes and been sent to lunatic asylums and subsequently pardoned, that on being released they had committed similar crimes. Every man is afflicted with some physical deformity, and no man is perfect. If a man is insane on the subject of religion, as a great many men are, it does not follow that he is not responsible when he commits a cold-blooded murder. One part of a man's reason may be dethroned, and yet the other parts perform their functions properly. I think that it is proper that this Society, as a society, should here to-night state its opinion as regards the responsibility or insanity of Guiteau.

G. P. AVERY, Esq., remarked : I am not in sympathy with this attempt to reopen the trial of this assassin. If his trial is reopened, every murderer who sets up the defence of insanity, and on whose trial evidence of the same character is given, shall be entitled to a retrial and a reopening of his case.

I do not believe that the Medico-Legal Society should attempt to impeach the trial, as conducted by Judge Cox, or the verdict of the jury, and I will make a motion to lay on the table the resolutions that were offered by Colonel B. A. Willis.

The motion, on being put to vote, to lay the resolutions upon the table, was declared carried by a large majority.

Dr. E. C. SPITZKA said: I move that the remarks of the President be incorporated in full in the minutes as presented, so that the Society could in after years point with pride to him as a member who had the courage to take the right side on this question in disregard of public opinion.

This motion was seconded, and on being put to vote was declared carried unanimously.

Reviews and Bibliographical Notices.

The decay and final extinction of aristocracies.[1]

A subject of fresh interest has lately arisen in the scientific world, attracted the attention of several able writers, and caused considerable comment. We say lately advisedly, for the subject in itself is not a new one, nor are its effects more pronounced now than in past years, but until Dr. Jacoby's work on selection made its appearance a short time ago, the matter was regarded from a much more restricted point of view. We refer to the tendency toward degeneration, and the subsequent gradual extinction of such families as have attained to eminence or occupied positions of high rank in various countries throughout the world. That the existence of this strange peculiarity is both remarkable and interesting cannot be denied, and it seems extraordinary that nothing has been said about it till of late years when we consider that the fact was evidently well known to the ancients. Much, it is true, has been written about the degeneration of the entire human species, in the tendency continually manifested to deviate from the original stock, but the decay, as confined to a particular social class, seems to have escaped attention hitherto. A recent author, who has apparently made a masterly study of the subject, notwithstanding that his theory as to the absolute cause of this deterioration is somewhat open to criticism, affirms that families degenerate in just proportion to their elevation, and that those who, from a low position, have been raised to a high one, enjoy their privileges only temporarily, and after a certain time has elapsed, disappear.

If we go back to the earliest stages of the world's history, to those days when aristocracies were first instituted, we find the

[1] Études sur la sélection dans ses rapports avec l' heredité chez l' homme. Par le Dr. Paul Jacoby, Paris, 1881, 8vo, pp. 608.

rule to be equally applicable. During the prosperous days of the Roman Empire, the nobility, to preserve it from extinction, had constantly to be replenished from the lower orders of the people. Throughout the reign of Julius Cæsar and that of Augustus, an immense number of plebeians were ennobled, and yet scarcely fifty years later, the Emperor Claudius was forced to create a new aristocracy. In many cases the degeneration was so rapid, that some families became extinct with the third and fourth generations, while those extending beyond a fifth were very rare. Such facts as these, though insignificant and perhaps valueless to the historian are of the utmost importance to the scientist, and although the subject is exceedingly complicated and too involved to be pursued minutely in all its details, a few observations upon its principal points of consequence, will not, I trust, be unworthy of consideration.

By following attentively the history of numerous European dynasties, extensively discussed by Jacoby, we obtain a mass of curious and interesting facts tending to demonstrate the remarkable swiftness with which these families have declined and finally become extinct in every branch. A few of these may be mentioned by way of example.

The dynasty of Savoy, founded by Humbert about the year 1000, decayed gradually from the second generation and became extinct in 1831. This is one of the longest on record, and it is astonishing that it endured as long as it did, inasmuch as the entire family was characterized by frightful debauchery, epilepsy, and weak intellectual development, and many of its members were childless or else died in infancy. Dr. Jacoby gives a reason for the continuation of this dynasty, of which we shall speak later.

The famous Medici family, after the second or third generation had been reached, was distinguished by a complication of nervous disorders, debauchery of the worst kind, intense cruelty, cowardice, and every possible species of infamy, combined with premature death. One branch became extinct with the celebrated Catherine de Medici, whose history is too well known to require any comment here. The second branch died out with Cosimo III, a confirmed lunatic.

The House of Burgundy, which ascended the Portuguese throne in 1095, disappeared completely in all its branches at the expiration of two hundred years. This family, like those just mentioned, was composed of debauchees and ruffians, among whom an occasional instance of exaggerated melancholic piety made itself apparent.

In this connection, Dr. Ireland's interesting paper on "The History of the Hereditary Neurosis of the Royal Family of Spain," cannot be overlooked.[1] John II, of Castile, and Isabella, of Portugal, were the founders of this family. The former was "weak almost to imbecility." The latter, toward the close of her life, was insane for many years. Here we have hereditary neurosis making itself apparent in a family for three hundred and fifty years, occasionally passing over a generation, accompanied by insanity, epilepsy, hypochondria, melancholia, suicide, and imbecility. As Dr. Ireland remarks, a part of this tendency was evidently the result, not of the direct hereditary influence, but of the close intermarriages with families of the same stock. Dr. Jacoby takes up the subject of this family at an earlier period of its history than does Dr. Ireland, and shows how deeply tainted each of the parent roots was with tendency to extinction.

The decay of other celebrated continental families, the Valois, the Houses of Orleans and Condé, and the French Bourbons might be traced in the same manner, did space permit. It may be said, however, that the degeneration, as in the preceding cases, was, when once fully established, rapid and unmistakable, while the final member, with whom the family became extinct, was generally totally depraved, addicted to atrocious vices, displaying propensities of the most monstrous character, or else was a simpering idiot. In regard to the Bourbon family mentioned above, it should be stated that the last member, the Count de Chambord, still remains, but is childless.

Let us glance for a moment at the English throne, and we shall find no deviation from the inevitable rule. We are truly amazed when we come to consider the facts as they actually stand. From the reign of Edward II (1307), until George I ascended the throne, four centuries in all, England expended and wiped out six dynasties. The Plantagenets, the Lancasters, the Houses of York, Tudor, Stuart, and Orange. All these families gradually became extinct, and as to the Hanoverians, who succeeded them, it is superfluous to recall their lamentable and disgraceful history, characterized as it is by the most inferior intellectual development, and the most flagrant, daring vices.

"Such," says Dr. Jacoby, "is the sad story of the English throne, and," he adds, significantly, "its continual decay and degeneration cannot surely be denied by any one who is familiar

[1] *Journal of Mental Science*, July, 1879, p. 184.

with the dynasty from the ascension of the Georges to the throne, *to the present day.*" (P. 430.)

If we leave the dynasties and reigning families of Europe, and turn our attention simply to the nobility and aristocracy, we perceive identical indications of declension and final extinction within a comparatively short period. As has been said before, the rapid disappearance of eminent aristocratic families in the Roman empire necessitated the constant creation of nobles from the people. In England very few of the immense number of baronetcies made by James I were perpetuated for any length of time. They degenerated with such surprising rapidity that, although fifteen hundred and twenty-seven baronets were created after the year 1611, there were only six hundred and twenty-six in the year 1819, and out of this number thirty alone dated from 1611. This fact seems almost incredible, and the following one is no less remarkable. Fifty-three lords temporal were convoked for the parliamentary session in 1457, and yet Henry VII could only discover twenty-nine in the year 1486, and of these several had recently been admitted to the peerage.

In ancient Greece there were more than eight hundred Spartan nobles in the year 480 B. C. But in Xenophon's time only fifty could be found, one family after another having become extinct.

Brought face to face with facts such as these, facts which have been carefully analyzed and tested, the tendency toward degeneracy manifested by families occupying a high social position can no longer remain a subject of scepticism. But we naturally conclude there must be some reason for this striking peculiarity, some paramount cause which we can grasp, as it were, and examine minutely. We look for some theory concerning the determining reason of the phenomenon, and in answer to our expectations a number of dogmas and opinions have been expressed, most of them dealing principally with degeneration as applied to humanity taken as a whole ; that of Dr. Jacoby, however, and one or two others, treat of degeneration as we are discussing it here, solely in connection with social status. It has been affirmed that such conditions as are favorable to the maintenance and progress of the individual are utterly opposed to the perpetuation of the species, and that, for example, the greater the advancement of civilization and luxury, the less the population is increased. That an antagonism should exist between the individual and the species which, amid certain favorable conditions, is exceedingly pronounced, while when subject to adverse influences, such as pri-

vation, want of culture, etc., it is not perceptible, seems difficult to comprehend. There is absolutely nothing to sustain the theory that unfavorable conditions are necessary to the full development of talent and other qualities of a high order. On this point, however, there is such an endless variation of opinion that it seems needless to discuss it. Dr. Jacoby's theory differs from others essentially, inasmuch as it is totally removed from any thing pertaining to surrounding influences, and deals entirely with natural selection. "The sudden extinction of noble and aristocratic families," he says, "is wholly and entirely due to the exclusiveness of their position. Without contracting precisely consanguineous alliances, they, nevertheless, generally marry those who belong to their own particular set or circle, who have been educated and brought up amid similar surroundings and subjected to identical influences. The neurotic element is thus largely developed, and increases with immense rapidity. It has been seen that a family threatened with complete extinction, owing to apparently exhausted vitality, can effect an interruption in the degeneration by contracting marriage between one of its members and a person belonging to an entirely different caste."

The dynasty of Savoy, previously mentioned as being one of the longest on record, owes its extended vitality, according to Dr. Jacoby, solely to a marriage contracted between Amadeus III, one of its principal members, and a certain nameless and insignificant woman whose antecedents were directly opposed to his own. "It is obvious," continues Dr. Jacoby, "that if this theory be the correct one, it should hold good in all cases of social selection. Degeneration will surely make its appearance under these conditions, regardless of the sphere in which the selection occurs or the peculiar influences immediately surrounding it."

We cannot but admire the painstaking and masterly researches which have been made in regard to this highly important and interesting subject, but no theory, as yet, appears to furnish a satisfactory solution of the problem concerning the marked want of vitality in the upper classes. That social selection is an important factor in the matter is doubtless true, but it would be absurd to suppose that there are no other influences at work upon it. If we come to consider the lower classes and examine the hospitals, do we not find greater evidences of degeneration than in the upper classes? As there can be no question of social selection here, other influences must be the cause. Also, where dynasties and noble families are concerned, it is an easy matter to trace ances-

tors and discover their distinguishing characteristics, but it should be borne in mind that this privilege is not granted to us by the lower classes. Were the facilities for obtaining family histories equal in the two castes, similar revelations as to degeneration would probably be forthcoming.

"The immense increase not only of mental aberration but all other abnormal states closely allied to adverse physical and moral conditions in the human species," says a prominent scientific writer, "has forcibly attracted my attention of late. Wherever I go, I hear physicians complain of the great augmentation of insanity, paralysis, and epilepsy combined with a perceptible weakening of intellectual and physical force which we are apparently unable to arrest. To these affections may be added hysteria, hypochondria, and suicidal tendency which lately have attacked workmen, day laborers, and the inhabitants of country villages to an alarming extent. This is the more surprising as these maladies have been considered hitherto to be confined exclusively to the upper and wealthy classes.[1]

We can attribute this proclivity to deterioration to various causes, such as habitual intoxication for instance, unfavorable hygienic conditions, unhealthy occupations, as working in mines or in badly ventilated factories, the indiscriminate use of opium, insufficient or improper nourishment, and a thousand other complex circumstances which tend to produce adverse constitutional modifications.

But, it may be asked, if the excessive use of spirituous liquors observed in the upper classes to a considerable extent, is an impediment to the continuation of the species, why should the lower orders of the people whose drunkenness and exceeding debauchery are almost proverbial, multiply to such an enormous extent?

In reply to this question, we may inquire in our turn whether they do multiply as is supposed, and whether degeneration and sudden arrest of development are not quite as marked in one case as in the other. The following instance which has come under my own observation may help to demonstrate the fact that deterioration is the inevitable effect of certain causes independently of social caste.

An Irishwoman, living in New York, married a man of her own class, both of them being at the time perfectly healthy. No in-

[1] Morel: *Traité des dégénérescences physiques, intellectuelles, et morales de l' espéce humaine*, Paris, 1857.

sanity, epilepsy, or other nervous affection existed among the ancestors on either side as far as could be ascertained. The husband, however, shortly after his marriage became addicted to occasional fits of intoxication, although he could hardly be termed a habitual drunkard. Sometimes he would remain drunk for ten days at a time, but when sober again he would often stay so for a considerable period. Nine children were born of this marriage. The eldest is now a grown man, strong and healthy. The second is also of adult age and sound constitution. The third died at the age of twelve months, and twins which succeeded this child also died at an early age. Next came an imbecile dwarf followed by a second imbecile dwarf. Then a girl was born who is healthy and quite intelligent. A third idiotic dwarf was the last child.

The mother asserts that all three of these idiots were very fine children up to the age of three years, but that they stopped growing at that period. At present, Johnny, the eldest, is eighteen years of age. His appearance is idiotic in the extreme, and when he plays it is as a child of two or three years old would amuse himself. He can speak but few words, and it has been found impossible to teach him any thing, even his letters. He strenuously objects to being dressed like a boy, and insists upon wearing a frock. Joe, the second imbecile, is fifteen years of age. His mind is very feeble, but he is unmistakably more intelligent than his brother. He talks a little more and his amusements are of a higher order. James, the third dwarf, is the most intelligent of the group. His articulation is more distinct than that of either of the others, and his expression is decidedly more intellectual. A peculiarity of these idiots is the fact that all three possess the Mongolian-like features which is a common type with the crétins of the Alps and Pyrenees. The eyes are small and set angularly in their sockets. The cheek-bones are high, and the complexion is similar to that of the Tartar race. People who have seen the photographs of this strange group of beings have asked if they were not Japanese.[1]

In this case the peculiar arrest of development, intellectually and physically, is clearly due to the father's excessive use of alcoholic liquors, and similar evidences of degeneration can be remarked wherever intoxication is habitual with either father or mother.

[1] See "A Lecture on Arrest of Development," by W. A. Hammond, M.D., delivered at the University of the City of New York, March 13, 1879.—*Neurological Contributions*, vol. i, No. 1.

Dr. Morel mentions seven children whose father died of general paralysis resulting from alcoholism. These children were characterized in infancy by terrible convulsions, which, as they grew older, were followed by the most inferior intellectual development, hypochondria, mania, and hysteria. So faintly defined was the intelligence of all seven that they could neither acquire any sort of information nor apply themselves to any thing whatever. One or two were deformed, and some became hopeless idiots at an adult age.

In regard to defective nutrition combined with the lymphatic and scrofulous constitutions which predominate in certain countries, several examples have been forthcoming. One is that of a woman aged fifty-six. Her tendencies were of the most vicious character, resulting ultimately in acute mania which necessitated her removal to an asylum. Another is a man twenty-three years of age. All the members of his family have become either scrofulous or idiotic. Isidore, the one in question, is the most degraded type of a human being. He has not even the instincts of a beast, and he is so hideously deformed that locomotion is impossible.

Concerning degeneration as resulting from the peculiar construction of the soil, unhealthy dwelling-places in large cities, etc., Dr. Morel furnishes the following examples. Zoe, fifty-two years of age, was born in Paris, and her father and grandfather were natives of the same place. She was one of a numerous family of children, but all of them except herself, died at a very early age. Zoe was a semi-crétin, such as is frequently to be met with in the degenerating conditions of unhealthy lodgings in the large centres of population. Her ideas were of the most restricted order, and her speech almost inarticulate. She was able to occupy herself with such employments as required merely simple automatism on her part, but she was incapable of instruction beyond a circumscribed limit.

Victorine, twenty-one years of age, was a native of a country where goitre is very prevalent. This affection is independent of crétinism, but often accompanies it. Victorine's intelligence was extremely obtuse. Her form was dwarfish and badly shaped. She presented, in short, complete evidences of degeneration.

So far as aristocracies are concerned, some writers do not consider abuse of spirituous liquors to be of much consequence. The English nobility and upper classes, it has been stoutly asserted, indulge in brandy, beer, wine, etc., to a great extent, and

degeneration in these circles is, no doubt, wonderfully rapid, but then the Italian aristocracy decays equally fast, notwithstanding the fact that it is an abstemious aristocracy in which intoxication is almost unheard of. In ancient Greece, it is further stated, none were more frugal than the Spartans, while the Roman nobles were celebrated for the simplicity of their living. These, however, were the very people who decayed the most rapidly. How is this to be accounted for?

In these latter cases, we may say unhesitatingly, some other deteriorating influences were undoubtedly at work, apart from alcoholic excess. The unhealthy atmosphere which pervades the generality of Italian cities is too well known to require special mention, and the prevalence of malarial fevers and other conditions opposed to the proper maintenance of the nation are daily brought before our notice.

By carefully examining the minute statistics furnished it will be seen that in every dynasty or noble family mentioned as degenerating and becoming extinct, debauchery, vice, and depravity were prominent features almost from the very beginning. These distinct evidences of deterioration have been attributed to social selection, but why should they not be the inevitable effects of certain other causes, such as immorality, for instance, combined with intoxication, insalubrious dwellings, improper diet, and an unhealthy atmosphere?

"No matter what country is in question," says Dr. Morel, "wherever the consequences of alcoholism or other excesses are carefully investigated independently of the particular degree of civilization in which they occur, the same deplorable facts make themselves apparent. And these facts," he continues, "are childless marriages, premature death, idiocy, suicidal tendencies, epilepsy, etc."

Thus we have a variety of degenerating influences continually at work upon all classes and undermining vitality; influences of which, so far as aristocracies are concerned, social selection is but one of the factors that go to make up the whole.

While, therefore, it cannot be denied that this last-named agent may predominate in the decay and subsequent extinction of aristocracies, it can hardly be claimed that it is the sole cause, it being rather one of several causes all conducing to the same end.

Without wishing in the least to cast any reflection upon the theory of selection, which indeed has been properly determined so far as it goes, it would seem, nevertheless, that the fact has

been "viewed unequally," as a scientific writer expresses it, and that there is a marked fallacy in this otherwise admirable argument.

We have only considered one of the many interesting questions discussed by Dr. Jacoby. His work is of especial interest to physicians, and we therefore commend it to their attention as containing a vast amount of valuable information from which the author has constructed theories of the most striking, but at the same time apparently well-founded character.

Cerebral hyperæmia: does it exist? A consideration of some views of Dr. William A. Hammond. By C. B. BUCKLEY, B.A., M.D., formerly Superintendent of Haydock Lodge Asylum, England. New York: G. P. Putnam's Sons, 1882.

We were at first somewhat surprised that the Messrs. Putnam should have been instrumental in giving to the public a work which is nothing, unless it be a virulent attack on a gentleman with whom they are on terms of personal friendship, as well as being the publishers of several of his books, among them, by the way, the very one against which and its author Dr. Buckley has leveled his artillery of invective and misrepresentation. When, however, we were informed that they had at once submitted the manuscript, with the concurrence of Dr. Buckley's agent, to Dr. Hammond for his opinion, and that he had returned it with the report that "there was nothing in it of any consequence; that, to be sure, it was abusive, but that so far as he was concerned, he did not care whether they published it or not," we came to the conclusion that Dr. Hammond was either "spoiling for a fight," like the gentleman at the Irish fair, who had been long waiting for some one to tread on the tail of his coat, or that he held Dr. Buckley's views of himself and the subject of cerebral hyperæmia as of no importance one way or the other.

It is scarcely worth our while to discuss the matter from Dr. Buckley's standpoint, but there are one or two things about his book which strike us very unpleasantly. He constantly misquotes Dr. Hammond; he misinterprets his words, and this in matters about which there can be no mistake; and he draws conclusions from what Dr. Hammond says which the text does not warrant. In the first place, he takes the unwarrantable liberty of italicizing Dr. Hammond's words to suit his own ideas. He thus lays stress on expressions to which Dr. Hammond does not attribute any special significance. This is certainly not in accordance with the

canons (not "cannons," as Dr. Buckley spells the word repeatedly) of fair criticism.

On page 11, and again on page 103, Dr. Buckley says that Dr. Hammond states of a certain patient that he was permanently and completely cured after ten days' treatment (p. 11), indeed "completely restored" (p. 103).

These are entirely incorrect statements for which there is not the slightest justification, for Dr. Hammond never said any thing of the kind. What he did say of the patient was as follows ("Diseases of the Nervous System," seventh edition, page 177): "At the end of ten days he had lost his diplopia, the pupil of the right eye had regained its natural diameter and irritability, and the vertigo and headache had notably diminished. The treatment was continued, and at the end of a month he had recovered the sensibility and power on the paralyzed side to such an extent, and had improved so much in other respects, that I advised him to take a short journey. He was absent two weeks, during which time he continued to take the pills as before, and on his return was to all appearance well. He has since remained in excellent health."

We do not see that unfair criticism could go farther than has Dr. Buckley in his reference to this passage, in distorting and falsifying Dr. Hammond's meaning.

Then, on page 127, Dr. Buckley endeavors to make it appear that Dr. Hammond contradicts himself relative to the causes and treatment of cerebral hyperæmia. Says Dr. B.: "For we will find in the list recommended for *treatment* such powerful heart tonics and nerve tonics as arsenic, strychnia, iron, phosphorus, and quinine—all of which it will be remembered were in that terrible 'Cannon No. 7' in Morbid Anatomy; and the deleterious effects of which were given as the proofs—indeed, almost the only proof of the existence of the malady."

Now in turning to what Dr. Buckley is pleased to call "that terrible 'cannon' No. 7," on page 84 of Dr. Hammond's "Cerebral Hyperæmia," we find that arsenic is not included in the list of substances capable of causing the disease; but is, on the authority of De Lisle (Du traitement de la congestion cerebrale, etc., par l' acide arsenieux, Paris, 1877), confirmed by Dr. Hammond's own experience ("Cerebral Hyperæmia," p. 102), recommended in the treatment of cerebral congestion and hyperæmia. As to the strychnia, phosphorus, iron, and quinine, Dr. Hammond states on the same page that they are only to be given in cases of debility after the cerebral hyperæmia has disappeared.

But this is not all; Dr. Buckley has on several occasions deliberately misquoted Dr. Hammond's language by inserting words which Dr. Hammond did not use. He moreover, indulges in presonal abuse of Dr. Hammond to an extent which shows that there is probably some other motive actuating him than a mere desire to set the world right on the subject of cerebral hyperæmia.

We are aware that it is a serious charge to make against a critic, that he alters the language of the author he criticises, to suit his own arguments. It, in fact, amounts to an allegation of forgery; for although, probably, as there is no money value involved, the law would not take hold of an offender, it is exactly on an equality, so far as morality goes, with altering any other paper to which a signature is appended. We may surely say that a writer who would commit such an act is not entitled to the slightest consideration from us or any other reviewer, and that no language we could apply to him would be too strong. We propose to demonstrate the fact of Dr. Buckley's dishonesty, and then we shall dismiss the further consideration of him and his book.

On page 89 he says, speaking of Trousseau's remarks relative to chlorosis:

"What more intelligible or forcible language could any writer use to insist on the proposition that chlorosis is primarily a nervous disease, and that the condition of the blood is a mere sequence, than is herein expressed? And yet Dr. Hammond, with characteristic modesty, informs us that he 'first pointed out this fact to the profession in 1868.' What further proof need be adduced of his utter unreliability as a medical authority; for, assuredly, if the old logical aphorism—*Falsum in uno, falsum in omnibus*—has any force in ordinary life, it must apply with much more vigor to the ordinary practice of medicine wherein so much deference is paid to prominent authorship?"

As is perceived, Dr. Buckley makes use of the words (which he asserts are Dr. Hammond's), "first pointed out this fact to the profession in 1868," to accuse him of dishonesty in making a false claim, and to otherwise indulge in personal abuse. He also makes them the excuse for an elaborate though shallow argument to prove that Dr. Hammond has no right to the credit of *first* pointing out that chlorosis is a disease of the nervous system.

Now what will be thought of Dr. Buckley when we say that Dr. Hammond not only makes no such claim, but that he never used the words attributed to him, and contained in the above quotation from Dr. Buckley's book?

What can be thought but that Buckley has been guilty of a most impudent and barefaced attempt to deceive the public and to make capital for himself?

In his work on "Cerebral Hyperæmia," p. 54, we find the remarks of Dr. Hammond which Dr. Buckley pretends to quote in part. They are as follows: "The affection known as *chlorosis* occasionally presents features similar in some respects to those of cerebral hyperæmia, and indeed there is reason to believe that the former is not only a disease of the nervous system, as I pointed out several years ago,[1] but is in no essential respect different from the latter."

There is here no claim to originality. Dr. Buckley has deliberately inserted the word "first," and has, moreover, altered Dr. Hammond's language in other respects. It is a forgery pure and simple.

Now turning to the original article, which was published as Dr. Hammond says several years ago, we find a paper by him in which he attempts to combat the generally received opinion that chlorosis is primarily a disease of the blood. He quotes several well-known authors who entertain this belief, among them Dr. Flint, and then proceeds to state his own opinion, to the effect that it is a disease of the nervous system. He then uses these unmistakable words:

"In the enunciation of this opinion I claim nothing on the score of originality, and will presently bring forward the statements of other writers who have already promulgated it in a more or less modified form. I merely wish to present the view more connectedly and prominently than has yet been done, and to detail the particulars of several cases which point strongly toward its confirmation."

And then he quotes Becquerel and Rodier, and gives them the credit of having clearly announced, in 1844, that chlorosis has its "seat and its point of departure in the nervous system."

"*Falsum in uno, falsum in omnibus*," quotes Dr. Buckley. We leave it to our readers to say, to whom the citation is more justly due, and whether the author of the book before us is not "hoisted with his own petard."

Manuel de vivisections. Par le Dr. CHARLES LIVON, professor suppléant d' anatomie et de physiologie; avec figures intercalées dans le texte. Paris, 1882.

[1] "Chlorosis, a Disease of the Nervous System." *Quarterly Journal of Psychological Medicine*, July, 1868, p. 417.

This work is only intended for those making their first attempts at physiological work. It makes no claim to rival the large works of Cyon, Scheidlen, and Sanderson. In the first part, the first chapter gives a description of the instruments generally used ; the second chapter, the choice of animals ; the third and fourth chapters, the mode of serving animals and fastening them ; the fifth chapter, the operations most commonly made.

In the second part are described special operative procedures on the glands, the circulatory, respiratory, muscular, and nervous apparatuses. The explanations given are clear and easily understood by means of the figures found in the text. Whilst making no pretensions to originality this work is certainly an excellent *résumé* of instructions for the physiological neophyte. It is written from practical knowledge, and describes several little things of great importance to the working physiologist.

Suicide : an essay on comparative moral statistics. By HENRY MORSELLI, M. D. (International Scientific Series : Appleton & Co., New York, 1882.)

Dr. Morselli divides his work into two parts : the first, analytical ; the second, synthetical. There is, moreover, an appendix showing the method by which statistical data of suicide are collected ; and some tinted maps illustrating the comparative intensity of suicide in the various parts of Europe. The analytical portion of the book is based upon statistical tables, comprising data for the study of suicide from every conceivable point of view. There is not only, in fact, no deficiency upon the statistical side, but the most fervent devourer of statistics might find here, one would suppose, a feast if not a surfeit. Nobody nowadays is likely to underrate the value of tables of this kind ; but the question will occasionally arise, whether the significance of some of them may not be so far supplementary to that of others as to become practically superfluous likewise. In the present case, such a misgiving would be enhanced by consideration of the fact that many of the groups of data are negative rather than affirmative in their testimony, while not a few of them appear helplessly to contradict each other. The difficulty of constructing a redoubtable scientific structure upon a foundation composed of materials so ambiguous, will perhaps suggest itself to a dispassionate judgment ; and the more credit will be accorded Dr. Morselli for the laborious and conscientious manner in which he has struggled with his subject. The learned author, while not seeming to underestimate

the magnitude of the task before him, or to disguise the unsympathetic character of much of his *impedimenta*, nowhere betrays any serious doubts as to the possibility of reducing suicide to strictly scientific terms, or even as to his own ability to assume a prominent part in the attainment of that result. It is not always perfectly evident, to the reader of the essay, how the writer of it contrives to maintain so much composure in the presence of obstacles that might discourage ordinary enterprise ; especially as Dr. Morselli disclaims *a priori* argument, and professes to gain his conclusions by impartial consideration of facts. The conclusion at which he arrives, or which, at all events, he announces, is that suicide is not an act depending upon the personal spontaneity of man, but is a mere social fact in the same sense as are births, deaths, crimes, etc. It is an effect of the struggle for existence and of human selection, working according to the laws of evolution among civilized people : and the sole cure for it is " to develop in man the power of well-ordering sentiments and ideas, by which to reach a certain aim in life ; in short, to give force and energy to the moral character." We quote the author's own (translated) words in this instance, lest, in paraphrasing them, their purport should be misinterpreted. For their purport as they at present stand, only the author and his translator can be held responsible ; and possibly they likewise monopolize the knowledge of what that purport is. We have not had the opportunity of comparing the American edition of Dr. Morselli's work with the original ; but, except upon the assumption that his style is one of unusual verboseness, long-windedness, obscurity, and grammatical frailty, we cannot avoid suspecting that he has been unfortunate in the selection of his American literary tailor, who modestly withholds his name from the title-page. But this by the way. The interesting point is that Dr. Morselli is led by his tables to regard self-slaughter as an act dependent rather upon the suicide's derivation and environment, than upon himself ; to consider it " under the generic aspect of a tendency certainly hurtful, but connected with the natural development of society." Admitting these conclusions to be warranted by the ascertained facts, it follows that would-be reformers should apply their efforts rather to society than to the individual ; since, however highly the latter may appreciate the good intent of their exhortations, he would be precluded, by the automatic helplessness of his position *vis-a-vis* to the statistical tables, from profiting by them.

It would manifestly be impossible, within the limits at our dis-

posal, to enter upon an exhaustive examination of the steps whereby Dr. Morselli's persuasion has been reached, and for the attainment of which (as he himself intimates) Messrs. Malthus, Darwin, Spencer, Carpenter, Laycock, Buckle, Wagner, and others, are more or less responsible. A brief glance, however, may be given at the general features of his route. In the first place, then, it is to be observed, that the statistics of suicide have only begun to be collected since the year 1817 or thereabouts; and that the returns have been received only from Europe and some parts of the United States. Of these returns a large portion are so incomplete as to afford but an insecure basis for argument; and all of them suffer from the drawback that the prejudices, the habits, the indifference, and the bad faith of those from whom information is sought, deprive that information of an appreciable part of its value. Furthermore, various possible tables, such as that relating to the limits and classification of individual motives, have not as yet come into existence at all. In fact, had Dr. Morselli proposed to himself to show that suicide is the result of the individual's free will and choice, instead of the contrary, it seems likely that the arduousness of his labor would have been in no way diminished; since few suicides have manifested an interest in scientific progress sufficient to induce them to bequeath to statisticians a subjective analysis of their proceedings. Be that as it may, we are informed by the author that the statistical returns of suicide show a regularity surpassing that of the laws of birth, death, and marriage; that accidents over which the human will has no control often show greater variations than suicide, homicide, and marriage; that the frequency of suicide shows a growing and uniform increase, more rapid than that of population; and that the average number of suicides per million of population varies, in various nations, from about 20 to 300, rising in special instances to much higher figures. All this indicates a grave and possibly alarming state of things, which might end in the depopulation of the globe by the simple process of self-extermination; the rather since Dr. Morselli has made up his mind that suicide and civilization proceed *pari passu*, and that the latter at least is destined to prevail. Nevertheless, the evidence does not so far seem to be conclusive that suicide is a merely social necessity; for statistics might conceivably be collected to prove the uniform increase of the eating of turtle-soup, or the compilation of dry-as-dust folios; though neither of these practices could prudently be described as being as much beyond the individual's control as birth, death, or even marriage.

Referring to the tables, however, one fact seems to emerge with a constancy agreeably in contrast with that of the majority of results obtained: namely, that the Germanic race is the one most prone to suicide; and, on the other hand, that the Slavs are least so. Those nations in which the Germanic element is strongest are always those which find life least endurable. The mind finds no difficulty in accepting this discovery, if, indeed, it were not already prepared for it; and when it is added that Saxony is the hot-bed of suicide in Europe, and probably in the world, readers who happen to have visited that country might almost feel moved to exclaim: "I told you so!" But how does this assist Dr. Morselli in believing that suicide is an involuntary phase of social evolution? Is not its tendency rather to prove that the self-murderous impulse is strictly and intelligibly subjective? The author, however, has other tables in reserve; and he endeavors to prove that it is the superior cerebral development of the Germanic race, and their bias toward Protestantism—which, as being a mystic form of religion, tends to agitate and confuse the mental faculties—that are responsible for their equivocal behavior in the matter of self-destruction. The inward struggles of conscience, and the state of mental compromise between the metaphysical and the positivist phases of civilization, are affirmed, on the testimony of the necessary tables, to be productive of the fatal issue. There seems no reason why this should not be true, nor why, if true, they should confirm the author's hypothesis. But here, the tables on which Dr. Morselli would rely are turned upon him by the evidence of certain other tables, which declare that the suicidal tendency in some nations of high civilization is not greater than in others imperfectly civilized; that in France education appears to have no influence on suicide; that the influence of Paris neutralizes that of religion; that the people most devoted to the moral sentiment and domestic affections have most illegitimate children, and are most suicidal; that, although all that causes retrogression in a state or class promotes suicide, yet there is no exact relation between specific crime and the suicidal tendency—there being, for instance, more criminals and less suicides among Catholics than among Protestants, while Jews are less criminal and oftener insane than either Protestants or Catholics; that the development of commerce would seem to increase suicide, as in the case of Saxony, but, on the other hand, Genoa, with more trade than all the other Italian ports combined, has fewer suicides than Ravenna, which is comparatively inactive; that when the

State tyrannizes over the individual, suicide is rare, while peoples given to helping themselves are apt to cut their throats; that although the relation between density of inhabitants and suicide is wanting almost everywhere, yet the proportion of suicides in Europe is greater among the condensed population of urban centres than among the scattered inhabitants of the country—with the deduction that this rule is not uniform, nor according to the ratio with the mass of the inhabitants; that the army, the institution above all others obstructive of civilization, suicide is more prevalent than anywhere else—in Italy, for instance, the army suicides being tenfold as numerous as among civilians; and so on, until the student is almost impelled to exclaim with jesting Pilate, "What is truth?" and to stay not for an answer.

The fact seems to be, that although the statistics undoubtedly go to prove something, the discovery has not yet been made of what that something is; but only, and at most, that Dr. Morselli's particular conviction has, up to present accounts, rather less evidence in favor of it than the theory which contradicts him. Dr. Morselli is painstaking, methodical, and honest to the point of admitting more evidence against his cause than for it; but he seems to us to fail somewhat of placing suicide among the exact sciences; and if we accord him a perfect right to hold his own opinion concerning it, it is precisely because there is just as much —or as little—ground for one opinion as for another. Meanwhile, and pending further developments, we conceive that no harm will be done by refraining from pushing the theories of natural selection, of Malthusianism, and of automatism too far in relation to suicide.

The true value of the book probably lies in the tables, partial and untrustworthy as many of them are. We learn, for example, such curious facts as that the ratio of female to male suicides is as one to three or four; that Spanish women are more suicidal than any others in Europe; that countries with a larger number of women than men, have, nevertheless, more suicides than in the alternative case; that the period of most frequent suicide is from the fortieth to the sixtieth year—in women, under thirty or thirty-five; that more widows commit suicide than widowers; that divorce is more fatal to men than to women; that marriage checks suicide, and that children have a more restraining influence upon mothers than upon fathers; that prisoners in solitary confinement commit suicide at the rate of 1,370 to the million, while on the associated system the proportion is only 350; that post and telegraph em-

ployés have the least tendency to suicide of any of the professions, while those engaged in industrial occupations are at the other extreme. But we have passed our limits, and must refer the reader who desires further information to the book itself.

Some experiences of a barrister's life. By Mr. Serjeant BALLANTINE. 12mo, pp. 527.

Serjeant Ballantine, an eminent member of the English bar, has seen fit to give us some experiences of his career as a lawyer, which for frankness and freedom are unsurpassed by any similar productions in the same line which have come under our observation. His references to the medical profession are many, and generally are in a kindly spirit; but his criticisms on judges and his fellow barristers are often so thoroughly outspoken and antagonistic, that we venture the assertion that the author will be kept in hot water for the remainder of his life. However that may be, the honesty of the serjeant is not to be questioned. Many *causes célèbres* have their interiors exposed to view, and his remarks relative to expert testimony are such as will meet with general acceptance from both the medical and legal professions. There are also shrewd observations in regard to damages for railway accidents, kleptomania, and other medico-legal subjects of great interest to physicians.

We wish we could speak in equally unqualified terms of what he says about vivisection. Here he looks at the matter altogether from the animals' point of view, disregarding entirely the advantages which properly conducted experiments afford to human beings. We wonder, for instance, what he or Mr. Bergh would do, if it was suspected that the baby of either of them (if either has a baby) had taken food which it was supposed might have caused certain alarming symptoms, and the doctor, to test the matter, so as to have a guide for his own action, and to subserve the possible ends of justice, should give a portion of the suspected mass to a worthless cat or dog. And yet, such conduct, from their standpoint, would be altogether unjustifiable. The cruel sentimentality of the serjeant on this subject is strangely at variance with his hard common-sense on other matters.

A remarkable feature of his book is the revelation it makes of his bad memory in regard to occurrences which one would think could scarcely fail to make a strong impression upon him. He forgets with whom he dined on several memorable occasions; the name of the vessel that brought him back from his memorable visit to India; the name of a fish which he found particularly

palatable, and other like circumstances. There is scarcely a page that does not contain some notable lapse of memory relative to things, persons, or events, which most men in his situation would have remembered to the end of their lives. His outspoken revelations in regard to prominent officials would scarcely be outshown by the police records of Deadwood, Tombstone, or by our own Congress. Thus we are told that a Mr. Chisholm Andrews, a member of Parliament, on being appointed Attorney-General for Hong Kong, celebrated the event by breaking the heads of a couple of policemen, and after entering upon his duties, committed so many vagaries that the government was obliged to recall him. It appears, too, that London gambling-houses and other dens of iniquity keep the police in their pay so as to escape arrest.

We were innocently under the impression that such practices were confined to a well-known police district in New York. Altogether, the turning inside out of police, legal, and social matters made by the serjeant, are quite consolatory to our civic and national self-composure. We certainly advise all our readers to get this book, and to read it with the confidence that they will find much in it to reconcile them to our own curious ways.

Neurologisches Centralblatt. Uebersicht der Leistungen auf dem Gebiete der Anatomie, Physiologie, Pathologie, und Therapie des Nervensystems, einschliesslich der Geisteskrankheiten. Herausgegeben von Dr. E. MENDEL, Privatdocent an der Universität Berlin.

Neurologisches Centralblatt. Review of the work done in the Anatomy, Physiology, Pathology, and Therapy of the Nervous System, including Mental Diseases. Edited by Dr. E. Mendel, etc., etc., Berlin.

We welcome to our exchange list this new journal, devoted to the interests of neurological progress. Two numbers are to be issued each month.

Under original contributions we find in the first number articles from Dr. A. Eulenburg and Th. Rumpf, and among the collaborators are many familiar names, such as Erb's and Flechsig's. The abstract department, under the title of *Referate*, gives a careful outlook over the most recent advances in nervous diseases in all its departments.

Judging from the specimens already received, it is safe to predict a successful future to Dr. Mendel's journal. It at once takes its place on its merits among the serious enterprises in this department of medical knowledge.

Editorial Department.

IN this number of the JOURNAL we print the official report of the proceedings of the American Neurological Association at its eighth annual meeting held at New York in June last. The character of the papers presented was fully up to the usual high standard of excellence of work published by the Association, while the discussions gave every evidence of warm emulation in the study of nervous diseases.

Among those present from other cities were Drs. Edes, Webber, and Putnam of Boston, Miles of Baltimore, Mills and Sinkler of Philadelphia, and Bannister of Chicago. Letters of regret at not being able to attend were received from Drs. Jewell of Chicago, Schmidt of New Orleans, and Bartholow of Philadelphia.

New active members were elected. To the roll of honorary members were added the names of Drs. Mierzejewski of St. Petersburg, and Auguste Ollivier of Paris.

Not the least agreeable feature of the session was the evening reception given to members by the President, Dr. Hammond, on the second day. Altogether the eighth annual meeting of the Association was a memorable success.

WE are obliged to lay over until our next issue a number of original articles, among them reviews of recently published books, in order to give room to a very full report of the proceedings of the American Neurological Association. We feel sure that this report will prove of sufficient immediate interest to justify both the exclusion of other material and the delay which has unexpectedly

ensued owing to the fact that separate proof-slips were sent to widely scattered members.

DR. Stephen Smith of this city has been appointed State Commissioner in Lunacy. His previous knowledge of the practical needs of the insane acquired as a working member of the State Board of Charities, as well as his high general professional attainments, justifies, doubtless, his selection, though we should have been glad to have seen an appointment made that, in addition to the qualities contributed by Dr. Smith, carrried with it the further, and in this case, somewhat essential qualification of previous special study of insanity.

WE have not hesitated to devote considerable space in the columns of the JOURNAL to the case of Guiteau, since it has served as a nucleus for instructive essays and discussions. A natural and final contribution to the subject is an account of the autopsy and of the histological appearances. This we herewith print *verbatim* from the report made to the New York *Medical Record* of July 8th, and from the *Medical News* of September 9. 1882.

NOTES OF AUTOPSY HELD UPON THE BODY OF CHARLES J. GUITEAU.

TO THE EDITOR OF THE *Medical Record:*

SIR: As requested by you, we enclose preliminary notes of the autopsy held upon the body of Guiteau. The examination was made under the direction of Dr. Lamb, U. S. A., to whose courtesy we are indebted. Each physician present was left at liberty to make his own notes and observations. Those enclosed are compiled equally from notes independently taken by us. We were greatly assisted also by Dr. Chas. K. Mills, of Philadelphia.

Dr. Lamb will publish later a full report which this does not forestall, but to which it is, as stated, simply preliminary.

WM. J. MORTON, M.D.
CHAS. L. DANA, M.D.

NEW YORK CITY, *July*, 5, 1882.

The *post-mortem* was held about three-quarters of an hour after death.

GENERAL APPEARANCE OF BODY.

The body was still warm; the limbs flaccid. There was no emaciation. The skin had a marked yellowish tinge. There was a slight but wide-spread ecchymosis upon the left side of the face. When the body was first taken down the eyeballs protruded and the lids were open.

A brownish red mark, made by the rope, extended three fourths of the way around the neck, the knot having evidently slipped from the left side to the back. The mark went just above the thyroid cartilage.

The penis showed that there had been an erection and emission. There was a tight prepuce, with slight adhesions and abundant smegma. There was no mark of a venereal sore.

The *eyes*.—The pupils were slightly and equally dilated, the vitreous cloudy, and fundus indistinguishable.

Abdominal cavity.—Section through the median line showed considerable deposit of fat. The liver was congested, but otherwise normal. The gall-bladder contained a little bile. The spleen was enlarged. Its weight was fifteen ounces. Its tissue appeared normal. The other abdominal viscera were normal. The bladder contained about five ounces of urine.

Thoracic organs.—In opening the thorax a slight venous effusion was found in the right pectoralis major muscle.

The heart was firm. A soft clot was being formed in the right ventricle. The left ventricle was empty. The heart ceased action in systole. Weight, 10¾ ounces. A spot of old inflammation existed on left ventricle near the apex. There was a slight atheroma at the beginning of the aorta. There were a few pleuritic adhesions on each side. The pleural cavities were empty. The lungs were slightly congested. A few small, gray bodies resembling miliary tubercles were found in middle part of the left lung, near the outer external surface. Otherwise every thing was essentially normal.

The *neck*.—There was externally a mark, as has been described. Both the sterno-cleido-mastoid muscles were ruptured; also the thyro-hyoid membrane. The hyoid bone was not broken, nor the laryngeal cartilages. There was no fracture or dislocation of the vertebræ.

HEAD, SKULL, AND BRAIN.

The appearance of the face and eyes has been described. There was a scar on the scalp an inch long. It was situated above and behind the left temple, at about two thirds the height and an inch in front of the auriculo-bregmatic line. It extended through the scalp, but there was no corresponding mark of any kind upon the skull.

The *skull*.—The most noticeable asymmetry was a slight flattening of the upper and anterior part of the right parietal bone. The flattening ended sharply at the coronal suture. It included a space about half the size of the palm of the hand. Other points of asymmetry were not sufficiently noticeable to be studied with the means at our command.

The *cranial sutures* were distinct. There was no visible trace of a frontal suture, the two halves of the frontal bone being thoroughly welded. On the inner surface of the skull the bony prominences were well marked; also the Pacchionian depressions. No abnormalities were discovered. There was a slight prominence corresponding to the flattening of the parietal bone before mentioned.

The thickness of the skull was not measured owing to lack of facilities. An attempt was made to measure its cubic contents but it failed for the same reason. As regards thickness there was no striking abnormality at least.

The relative size of the fossæ could not be accurately determined at the time of autopsy.

Brain membranes.—The dura mater was quite strongly adherent in places to the inner surface of the skull. Near the trunks of the middle meningeal arteries upon each side, the membrane was thickened and strongly adherent to the bone, though it could be stripped clean. It was also adherent near the longitudinal sinus in front. There was at these points, probably, a slight chronic pachymeningitis externa. There was no exudation upon the inner surface of the dura anywhere. The cerebral sinuses contained but little blood. There was rather more than the average amount of Pacchionian granulations distributed along the middle part of the upper surface.

The *arachnoid.*—There were very well-marked milky opacities of the arachnoid extending over the upper convex surface. These opacities were over the fissures only. In some parts they had a somewhat yellowish look.

The subarachnoid space contained no abnormal amount of fluid.

The *pia mater* presented no abnormal appearance. It came off easily from the brain.

The *blood-vessels* of the membranes and brain were not full, and the general appearance of the brain was anæmic.

There was no special examination of the larger vessels.

THE BRAIN.

The *weight* was forty-nine and a half ounces (measured on a grocer's scales).

Its *consistence* appeared to be normal.

Its *specific gravity* could not be obtained owing to lack of facilities.

The *measuremeut* of its *chords and arcs* could not be obtained for the same reason.

As regards *contour and shape* exact studies could not be made. There was no apparent asymmetry of the two hemispheres.

The *comparative weights* of the cerebra and the other parts could not be obtained.

The *cerebellum* was well covered. The occipital lobes were not noticeably blunt or sharp.

The frontal lobes were peculiarly shaped. Looking at them from in front and above, they presented two protruding points from which the surface sloped away in a concave curve. This pointed apex of the lobes, with the concavity of the orbital and beginning of the frontal surface, was carefully noted by all of us at the first exposure and removal of the brain.

THE LOBES AND CONVOLUTIONS.

Frontal lobes.—Their peculiar shape has been referred to. As regards size they appeared to be well developed.

THE FRONTAL LOBES—LEFT SIDE.

The *first frontal fissure* was very long. It was broken by a single bridge near the junction of the anterior and middle thirds. The *secondary fissure* was

very marked, so much so that it seemed almost to form an independent primary fissure. The *seeond frontal fissure* was well defined, but interrupted by four small concealed connecting convolutions. It communicated with the first by a cross fissure. It was not confluent with the præcentral fissure.

The *præcentral fissure* was well defined and not confluent. The convex surface of this lobe, as a whole, was marked with an unusual number of cross and other secondary fissures. It was not of a confluent type, but it showed a marked tendency to the four-convolution type.

The *orbital surface* showed a radiate orbital fissure starting from a single central depression or fissure. There were five radiate fissures from this centre. The *olfactory fissure* showed nothing peculiar.

THE FRONTAL LOBES—RIGHT SIDE.

The *first frontal fissure* was well defined, non-confluent, except that at its posterior extremity it communicated with a deep cross fissure. The *secondary fissure* was a typical one. The *second frontal fissure* was well defined and non-confluent.

Præcentral fissure.—(No notes.)

The *orbital surface* was well fissured. The *orbital fissure* branched off from a small isolated central convolution in seven different rays.

The *olfactory fissure* was normal.

The right frontal lobe was not of a confluent type, nor four-fissured, but had an unusual development of secondary fissures, like the left lobe.

THE PARIETAL LOBES—LEFT SIDE.

Fissure of Sylvius.—The distance of its lower end from the apex of the frontal was not measured ; nor the angle it formed with a horizontal plane. In both these respects it *appeared* to be normal. There was a partial confluence with the first temporal and also with the fissure of Rolando. From the surface it appeared as if the latter fissure passed directly into the Sylvian. On parting the convolutions, however, a connecting convolution was seen. The fissure seemed to be of average length.

The *anterior branch* was well defined and non-confluent.

The *fissure of Rolando* was well defined and not confluent. The præ- and post-central convolutions as well as the præcentral lobule were large and well developed.

The *retro-central fissure* was well defined and separated from the interparietal by a small concealed connecting convolution.

THE PARIETAL LOBES—RIGHT SIDE.

The *fissure of Sylvius.*—There was no confluence, apparent or real, of this fissure.

The *anterior branch.*—(No notes.)

The *fissure of Rolando* was well defined and non-confluent. It extended slightly into the longitudinal fissure, fissuring the paracentral lobule. The central convolutions, as they lay under the depressed parietal bone, were examined with special care. The præcentral convolution was well developed throughout its whole length. The post-central convolution was well developed up to its upper fourth. Here it became narrow and shrunken.

The *præcentral lobule* was quite small. On the left side, *per contra*, this lobule was well developed, while the fissure of Rolando wes separated from the longitudinal fissure by a broad convolution. (There was a deficient innervation of the left side of the face.)

The *retro-central fissure* was well defined and confluent with the interparietal.

THE LEFT SIDE.

The *island of Reil* was well covered. Seven straight fissures and eight convolutions were present.

The *interparietal fissure* began at the retro-central and ran a well-defined course, ending in the transverse occipital, from which it was separated, however, by a small convolution. It had no complete confluences.

THE RIGHT SIDE.

The *island of Reil* was well covered and had five straight fissures and six convolutions.

The *interparietal fissure* began in and was confluent with the retro-central. It was well defined. No abnormal confluences noted.

TEMPORO-SPHENOIDAL LOBES—LEFT SIDE.

The *first temporal fissure* was well defined for depth, but was not so long as usual—not running up to the angular gyrus. It was slightly confluent with the fissure of Sylvius.

The *second temporal fissure* was not especially well defined.

On the basal surface the *inferior temporal fissure* was well defined and not confluent.

The *collateral fissure* was well defined and long, extending to the anterior end of the temporal lobe.

The *fusiform lobule* was smaller on this, the left side, than on the right.

TEMPORO-SPHENOIDAL LOBES—RIGHT SIDE.

The *first temporal fissure* was well defined and of normal length, with no confluences.

The *second temporal fissure.*—(No notes.)

On the basal surface the *inferior temporal fissure* was normal. It was incompletely confluent with the *collateral fissure*, which was well defined but shorter than that on the left side.

THE OCCIPITAL LOBES.

The *primary fissures* were present in these lobes on both sides and no especial peculiarities were noted.

The *anterior occipital*, or Wernicke's fissure, was present on each side, was well defined and non-confluent.

The *right transverse fissure* was well defined, beginning on the mesal surface and passing out with two small interrupting convolutions.

The *left transverse fissure* was well defined ; nothing further noted.

Thus of the three fissures which combine in apes to form the ape-fissure, viz., the second temporal, the anterior occipital (Wernicke's), and the transverse occipital, two were only normally defined ; the remaining (the temporal) was not strongly marked.

MESAL SURFACE—LEFT SIDE.

The *calloso-marginal fissure* ran its usual course to form the anterior boundary of the præcuneus. It was broken in the last part at the præcuneus by a convolution.

Above this fissure was a *secondary fissure*, running parallel to it and ending about opposite the first third of the corpus callosum.

MESAL SURFACE—RIGHT SIDE.

The *calloso-marginal fissure* was continued on through the præcuneus to the parieto-occipital fissure, from which it was separated by a small convolution.

The *secondary fissure* upon this side was still more developed than on the left, and ran back to the anterior boundary of the paracentral lobule.

On the whole it would appear (1) that the brain was marked by an unusual number of cross and secondary fissures, especially in the frontal lobes; (2) that it was not of the confluent fissure type; (3) that the convolutions on the two hemispheres were quite asymmetrical.

THE INTERIOR OF THE BRAIN.

The white substance was somewhat whiter than usual, and of normal consistency.

The gray cortex was measured and seemed to be somewhat thinner than usual. Eight or nine measurements in different parts gave a thickness varying between $\frac{1}{8}$, $\frac{1}{9}$, $\frac{1}{12}$, $\frac{1}{16}$ of an inch.

The *ventricles* were dry, the ependyma normal, the choroid plexus showed nothing noticeable. No spots of hemorrhage or softening were found, and no tumor was present.

THE CEREBELLUM.

Nothing peculiar was noted regarding this portion of the brain.

The brain was finally cut into various pieces.

Portions were distributed for microcsopic examination.

MICROSCOPIC EXAMINATION OF GUITEAU'S BRAIN. CHANGES IN ITS ORGANISM DENOTING INITIAL DEMENTIA PARALYTICA.

The following is the official report of the microscopical examination of the brain of Charles J. Guiteau, who died by hanging June 30, 1882, at the United States Jail, Washington, D. C., in execution of judicial sentence, published in the *Medical News* of Sept. 9, 1882.

D. S. LAMB, M.D.

SIR: The committee of three whom you, with the assent of Rev. Dr. W. W. Hicks, requested to make a careful microscopical examination of sections from the brain, dura mater, and lung of the late Charles J. Guiteau, and to report the conditions found to be present, have completed their investigation, and have agreed upon the following report:

Thin sections, prepared by Dr. J. C. McConnell, of the Army Medical Museum, from the lung, dura mater, and brain, were submitted to your committee for their inspection.

The committee regret that the preparations presented did not more completely represent the whole brain and its membranes.

The lung.—The sections of lung were from the left upper lobe, Their appearances were common to miliary tubercle. Some of the minute nodules consisted of aggregations of recently formed miliary tubercles in which giant-cells were quite distinct. Others contained older foci of similar aggregations which had undergone corneous degeneration.

Considerable pigmentation of the pulmonary parenchyma, very like that of anthracosis, was also to be seen.

Dura mater.—The sections of dura mater were from the region of the middle meningeal artery. They showed but few, if any, signs of inflammatory action, and there was not much thickening evident.

Brain.—The brain sections comprised the following series, viz. : sections from two portions of the *corpus striatum*, marked respectively corpus striatum 1, corpus striatum 2 ; and sections from four portions of the gray matter of the convexity or cortex of the cerebrum, labelled respectively frontal region, convexity 1, convexity 2, convexity 3. Those from the frontal region were probably from the superior frontal convolution, whilst those marked convexity 1, 2, and 3, were cut respectively from the ascending frontal, the ascending parietal, and the superior parietal convolutions bordering upon the median longitudinal fissure, but the committee were not informed from which hemisphere.

A close examination of these sections, under a high power of the microscope, revealed the lesions noted below :

Corpus striatum 1.—Not a few of the blood-vessels, particularly capillaries and venules, were decidedly abnormal. Their perivascular lymph-spaces were often more or less completely filled with masses of yellowish brown pigment granules, which appeared to be the degenerated remains of old blood extravasations.

In areas very numerous but mainly limited to the gray or ganglionic substance, the capillary blood-vessels presented their walls in a state of granular degeneration. Sometimes these granules were limited within the endothelial cells, constituting the wall of the capillary, but often they were found for a considerable distance completely encircling the vessel.

The lumen of the blood-vessels was usually void of blood corpuscles, and was patulous. A small number of very minute recent hemorrhages were to be seen.

In the gray or ganglionic matter of these sections were quite numerous areas, in which alterations of the neuroglia and of the ganglionic nerve corpuscles were very plainly visible. In them the pericellular lymph-spaces were much crowded with lymphoid elements. In some areas the whole space seemed to be occupied by collections of such cells, no trace of the neuroglia cell or nerve corpuscle remaining. Most frequently, however, neither the encompassed nerve corpuscle nor the neuroglia cell was destroyed. On the contrary, their nuclei and branched processes were generally distinct. Yet in many cases the body of the cells was extensively tinged with a yellowish-brown pigment, and, in a smaller number of cells, the presence of well-defined, dark granules in the cell-body was sufficient to mask entirely the nucleus, if any existed. Moreover, in the latter case, the cell processes were sometimes much less numerous than normal, and the body of the cell was not so angular.

Corpus striatum 2.—In these sections, the neuroglia and nerve corpuscles were found to be in much the same condition as above noted.

In a general way it may be stated that the cellular hyperplasia or cell multiplication was more marked than in No. 1.

With respect to the lesions of the blood-vessels, two departures from health were noteworthy. Instead of those lesions consisting of the remains, in the perivascular lymph-spaces, of blood extravasations, as in the first sections examined, these spaces at points along the course of the vessel were often found crowded with lymphoid elements. In some instances, these white cells were clustered closely around and adherent to the wall of the vessel upon its exterior, and often most abundantly aggregated in the immediate vicinity of a bifurcation. In others the cells were closely packed together upon the external wall of the perivascular lymph-space and slightly infiltrated the adjacent neuroglia.

In the white fibrous nerve substance there were isolated bundles of nerve fibres and collections of such bundles, easily distinguished from the others by the presence, in greatly increased numbers, of cell elements upon and between them. Under a high power of the microscope, these elements were found to be outside the capillary blood-vessels, and to occupy the same relation to the nerve bundles and to the vessels, and to present the same general microscopic picture as that seen in longitudinal sections of the optic nerve in a descending optic neuritis.

The areas of diseased structures above mentioned were more or less diffusedly scattered among tissues in which nothing distinctly abnormal could be made out.

Cerebral cortex. Frontal region.—The first layer seemed to be thinned almost to nothing in spots at the convexity of the convolution. The depths corresponding to these spots were, perhaps, a little more hypercellular than other portions. In the second, fourth, and fifth layers, especially in the two latter, the blood-vessels presented, in a marked degree, degenerations similar to those remarked in the corpus striatum.

In the second, fourth, and fifth layers, the pericellular spaces, both of the neuroglia cells and of the ganglionic corpuscles, were more or less filled with lymphoid cells. In these layers some ganglion nerve cells were also quite freely pigmented. Sometimes one half the body of the cell was densely packed with pigmented granules to such an extent as to veil the nucleus, but the latter as well as the enclosed nucleolus even then could generally be discerned, although with difficulty.

This cellular hyperplasia was much more marked in the fourth and fifth layers than elsewhere, and was pretty uniform throughout them, yet even here there was an obvious tendency to distribution *en plaques*.

In the subjacent white nerve fibrous substance, the vessels were also sometimes slightly altered, and a few examples of cellular hyperplasia along the nerve bundles, much as was described for the corpus striatum, were rarely seen.

But few recent hemorrhages were visible in the sections examined.

Convexity Nos. 1, 2, 3.—The same abnormal appearances were remarked in all these sections, varying only in degree. It is sufficient to state that they were usually identical with those noted in sections from the frontal region, the only difference worth mentioning being the fact that the areas in which the vessels

offered a granular degeneration were much less numerous and extensive than in the frontal region.

In the foregoing report it is to be assumed that the structures not specially mentioned were found in a condition so nearly normal as to call for no remark.

It should be stated, however, that in these various brain sections numerous so-called minute vacuoles were found. Whether these forms were real cavities or were transparent, highly refractive bodies of a definite constitution which was not revealed by the method of preparation, the committee do not undertake to say. Neither do they, in view of the wide-spread difference of opinion among observers, feel warranted in expressing a positive opinion as to whether or not these so-called vacuoles are to be regarded as *post-mortem* changes.

As bearing somewhat against the assumption of a *post-mortem* origin for such appearances in general, the following facts, besides many other considerations, may be referred to:

1st. They are not constantly found in brains which have been obtained thirty-six or forty-eight hours after death, long after decomposition has set in.

2d. They have not infrequently been found in brains of animals killed for the purpose of experiment, when the nervous tissue has been instantly subjected to the action of the most perfect preservative fluids.

3d. They have been met with when the brain substance has been examined perfectly fresh.

4th. If they are the result of *post-mortem* change, they should not be met with immediately after death, but should appear and increase in number as decomposition advances. Yet no such relation to the time of death and state of decomposition has been observed for them.

In estimating the significance of these vacuoles in Guiteau's brain, it should be remembered that the specimens were obtained and submitted to the action of the preservative agents not more than five or six hours after death, an early period rarely possible with human subjects; that the microscope showed the elements of the brain well preserved in other respects; that in some brains examined forty-eight hours after death these appearances are absent, and in others they are often less numerous than they were found to be in this particular brain; finally, that they were associated with abnormal conditions of the blood-vessels and of the cellular elements of the brain.

In conclusion, your committee have no hesitation whatever in affirming the existence of unquestionable evidence of decided chronic disease of the minute blood-vessels in numerous minute diffused areas, accompanied by alterations of the cellular elements in the specimens of brain submitted for their examination. Whilst the lesions found were most marked in the corpus striatum and in the frontal region of the cerebral cortex, yet they very diffusely pervaded all portions of the brain which the sections represented.

They are of the opinion that all of the lesions to be recognized in the sections placed in their hands have been pointed out in the foregoing report. They regret that it has not been possible to subject the tissues to all the tests which might determine the nature, beyond a peradventure, of the so-called vacuoles referred to.

They have not been called upon to pass upon the bearing the lesions found might have upon the state of the subject's mind, and, therefore, do not offer an opinion.

Respectfully submitted,

J. W. S. ARNOLD,
E. O. SHAKESPEARE,
J. C. MCCONNELL.

September 4, 1882.

Dr. Lamb furnishes the following measurements of Guiteau's skull:

Cranium of a male, age nearly 41.

Internal capacity	1530 cc.
Length	182 mm.
Breadth	144 "
Breadth of frontal	97 and 125 "
Height	133 "
Index of foramen magnum	45 "
Frontal arch	290 "
Parietal arch	323 "
Occipital arch	243 "
Longitudinal arch	380 "
Circumference	521 "
Length of frontal bone	127 "
Length of parietal bone	135 "
Length of occipital bone	183 "
Zygomatic diameter	125 "
Facial angle	71°

Skull, mesocephalic.

A FORCED DEDUCTION.

SUMMING up the lesions discovered by the microscopical examination of portions of Guiteau's brain, the *Medical News* (Sept. 9, 1882) says: "They (the lesions) constitute the initial stage of a malady which, in its fullest development, is known as dementia paralytica or an allied disease, the early symptoms of which disorder correspond closely with the mental condition of Guiteau during the past year."

Guiteau was, then, insane, if there is any meaning in language. But the sapient *News* does not think so, and proceeds to eat its own words. Driven to the wall by the stern evidence of the facts, it proceeds to wriggle in this wise: "Mere structural changes of the organic substratum cannot be safely interpreted alone." But the *News* has already interpreted these changes to mean dementia paralytica—a well-recognized form of insanity;—hence, this eva-

sion is transparent. Even the *News* sees this, for it proceeds, like the squid, to conceal its discomfiture in more confusion by adding: "The clinical history must be studied in connection with the alterations in the cerebral structures." No discussion is needed here for pursuing "this logical course." The *News* hastens on to its own destruction and finds that it "can be conducted to but one conclusion, viz.: "that *although Guiteau was not strictly normal in respect to the condition of the organic substratum of the mind, and in respect to its symptomatic expression* (italics ours), he was, nevertheless, a responsible agent, in that he had *a clear perception of the distinction between right and wrong*, and realized the nature of the crime and its punishment."

Here, then, is the position of the argument: Guiteau's brain was diseased. It is demonstrated and admitted that he had dementia paralytica. As regards his mind, he was abnormal "in respect to its symptomatic expression." What then remains to demonstrate his sanity according to the *News?* Simply the assertion "that he had a clear conception of the distinction between right and wrong." Well, did he? To assert it simply begs the entire question; nay, more, contradicts the very arguments that the *News* has brought up to sustain its position. Do men with the clearly demonstrated anatomical lesions of a well-recognized form of insanity, and with minds abnormal in respect to symptomatic expression, know the difference between right and wrong? If they do, let the asylums of the land be emptied of their patients subject to paralytic dementia, and let them be held amenable to the law.

We confess to a feeling of regret at seeing our able contemporary sacrificing both pathological findings and clinical history to an unproven assertion based on the metaphysical relations between right and wrong.

And there is another feeling to which we are not altogether strangers: it is that of compassion for a distinguished alienist, of whom his country may well be proud; who, heedless of his reputation for caution and fair-play and scientific acumen, has rushed into print to defend his friends of the "asylum ring" on

this side of the water. If Dr. Bucknill were a Japanese of the olden time he could scarcely refrain from committing *hari-kari* physically, as he has already perpetrated it psychically. Probably no more humiliating spectacle has been recently witnessed than that of a gentleman of Dr. Bucknill's scientific position unsaying, in a recent number of *Brain*, his wise words of not very long ago. We await with interest his further lucubrations on the subject of reasoning mania in general and Guiteau's sanity in particular.

DR. L. C. GRAY ON HYPNOTISM AND OTHER SUBJECTS.

MEDICINE has not, so far as we are aware, heretofore been deemed a pursuit specially adapted for the display of humor; but in this era of progress, one must be prepared for any thing; and, accordingly, our readers will perhaps not be surprised to hear of the singular proficiency in that respect of Dr. L. C. Gray of Brooklyn. This gentleman has recently been entertaining the Medical Society of the County of Kings with a disquisition on hypnotism, illustrated by experiments on animals. Now, if there be any thing comical in the phenomena of hypnotism, it might be supposed that, in the large amount of attention which has latterly been given thereto, the comicality would have become somewhat threadbare. Dr. Gray, however, is not a man to be easily discouraged. Casting about in his mind for some means of tickling his auditors' midriffs, he hit upon the capital device of representing himself as being the only true and original hypnotic experimenter on animals—none others being genuine except "Mr. Egner, the bird-fancier." We can imagine the Homeric mirth which this announcement must have created. Here were Dr. Gray and Mr. Egner, the bird-fancier, on the one side; and, on the other, Dr. Czermak of Berlin, Dr. Hammond of New York (the first to produce hypnotic phenomena in animals), an indefinite number of so-called mesmerisers who had frequently performed the same feat, and a large body of hypnotic literature,—each and all whereof were in the ludicrous position of being ignored by this delightful humorist; indeed, if we may judge from the report of his lecture, he had never heard even of any

general writers on this subject, save for some cursory mention that had reached his ears of the works of Drs. Preyer and Charcot. After such a captivating opening, it is not to be wondered at that the lecture, *qua* lecture, was chiefly remarkable for what was not in it. But Dr. Gray had had his joke, and nobody could expect any thing more.

We have, however, one criticism to make on Dr. Gray's buffoonery :—that, original though it be in its initial *motif*, it lacks variety in its development. No jest, however excellent intrinsically, can fail to lose by persistent repetition. Mere alteration in the application will not suffice ; all truly great humorists have been men of great fertility of resource. Dr. Gray, it is to be feared, lacks ambition ; by dint of cutting a singular and unprecedented caper, he succeeded in raising a laugh ; and thenceforth, instead of employing his ingenuity to devise other amusing antics, he has contented himself with repeating his first gambol *ad infinitum*, until his most cordial appreciators begin to get a little weary.

Take, for example, the paper recently published by the doctor on genito-urinary irritation. Here we find him setting forth, as his own independent and unborrowed property, sundry important conclusions which had previously been elucidated with much care by Dr. Newton M. Shaffer. The latter gentleman was, it is true, beguiled into taking the joke seriously, and, in the pages of the *New York Medical Record*, gravely charged Dr. Gray with failing to give him credit for original researches and conclusions in the same direction. Dr. Gray, of course, desired nothing better than the opportunity thus afforded him ; and in his reply to the charge of plagiarism, archly omitted any allusion to three out of the six conclusions which he had originally put forth. Now, the three omitted conclusions were the most important attained, and, as was pointed out at the time, were so evidently covered by the articles he had ignored, that he would have convicted himself had he reproduced them in his defence. But who would, with a person whose mission in the world is to create laughter, have him conform himself to the behavior and principles of gentlemen ? When, at the pantomime, we see the clown picking the pockets of the other

dramatis personæ, do we call out for a policeman? Buffoonery, like beauty, is its own excuse for being: and if the clown were not a clown, he would be nothing.

Still, the clown ought to perfect himself in other arts besides pocket-picking. Let us take another instance of Dr. Gray's performances. In an extended paper touching upon cerebral thermometry, he had the amusing audacity to pass by without mention the original experiments thereon of Dr. Hammond. Here we find the same dashing execution, but also the same lack of novelty. Or, take one more case. In the *New York Medical Record* of Oct. 4, 1879, appeared a full account of the successful reduction of a traumatic dislocation of the fifth cervical vertebra, by suspension of the head and rotation of the body. The patient was paralyzed in the arms and legs, and was unable to swallow food. The case was reported by Dr. William J. Morton. At a meeting of the Neurological Society during the winter of 1881, Dr. Gray read a paper describing in great detail an almost identical case, and laying great stress upon its rarity, and so forth. At this meeting Dr. Morton related his own similar case, amid expressions of surprise on the part of the waggish Dr. Gray that he had not yet read it. This was good, but there was more to come. In the *Annals of Anatomy and Surgery* of February, 1882, appears Dr. Gray's identical paper, under the title: "Successful reduction, after four months' malposition, of a dislocated third cervical vertebra, causing various serious nervous symptoms," with no allusion to the fact that it had first been read before the Neurological Society, and, of course, with no allusion either to Dr. Morton's similar case and report thereon.

There is a degree of sameness in all this, which is scarcely relieved by Dr. Gray's remark that he had had "neither time nor inclination to search the literature of the subject thoroughly," the humor of which lies in the fact that the case in question was brought to his notice without calling upon either his inclination or his time; nor even by the further observation, "that this case is *unique* in its reduction after so prolonged a dislocation, and the supervention of such grave symptoms"; from which is drawn the

final, apparently unaided and original conclusions, that "the success attending it [reduction of the dislocation] would certainly seem to indicate that, on the one hand, the dangers of vertebral reduction are greatly exaggerated, and that, on the other, the benefit occurring from such reduction in seemingly grave cases has not been fully appreciated." No; the painful conclusion is forced upon us that Dr. Gray, in spite of all his gifts, either lacks originality, or will not sufficiently exert himself to command it. And by "originality" in this connection we mean, of course, not originality in research, but originality in his manner of appropriating the researches of others.

We trust that no one will infer, from the above remarks, that we have any intention of treating Dr. Gray seriously; that we desire to make him recognize priority for an original line of argument, for original conclusions, or for unique cases; that we would attempt to impress upon him that, in medicine, original workers and observers depend upon professional courtesy for a recognition of their labors. By no means; we have far too keen an appreciation of the rôle he is enacting for that. But if we could prevail upon him to bear in mind that the greatest and most entertaining charlatans of history have been men of more than one idea, and that whoever aspires to rival their fame must have more than one idea likewise, we shall not have written in vain. Should he fail to arouse himself, there is some danger lest he go down to posterity as a sort of scientific blotting-pad, whose sole originality consists in the doctor's signature.

VOL. I, No. 1, of the *American Journal of Stimulants and Narcotics* lies before us. This new journal is to be published monthly, at a subscription price of $2.00 per year, under the able editorial management of Dr. H. H. Kane, whose recent exhaustive studies upon the "Opium-habit" have made his name agreeably familiar to medical readers.

The main object of this new publication is "to study the sub-

ject of inebriety in all its forms"; not regarding, however, inebriety "as always a disease, or as always a vice."

We sympathize with the editor when he writes: "if any thing, the subject has been over-written, although not over-studied."

We expect much from Dr. Kane, and wish him every success in his enterprise.

Periscope.

a.—NORMAL HISTOLOGY OF THE NERVOUS SYSTEM.

THE DIAMETER OF NERVE FIBRES.—One of the most striking features in a transverse section of a nerve is the exceeding variability in the diameter of its fibres. Sometimes broad and narrow fibres are intimately intermingled ; sometimes bundles of narrow fibres are scattered among larger ones ; and, again, the difference is not very marked. Again and again the reason for this variability has been sought for, but thus far, as it would seem, with indifferent success. It was the endeavor to associate some specific difference in the nature of the fibres with the difference in calibre, which furnished at once the motive for research and the ground of failure. Neither the assumption that the fibres of the brain and cord are in general finer than the finest in the peripheral nerves, nor that a specific difference between the fibres of the sympathetic and the cerebro-spinal system may be found in the calibre of the fibres, nor that the motor fibres in the spinal nerve-roots are distinguishable from the sensory by their greater diameter, have stood the test of careful scrutiny. A recent publication by Pierret, in which he sets forth as a result of his investigations that the size of the ganglion cells in the brain and cord is directly proportional to their distance from the point to or from which the motor or sensory impulse is transmitted, suggested to Schwalbe[1] the possibility of a new solution of the problem which so many had fruitlessly endeavored to solve. Might not some such relation be discovered between the diameter and the length of the nerve fibres ; corresponding to this difference in the diameter of the fibres, are there differences in the diameter of the axis-cylinders ; do the nerve fibres become modified in diameter in

[1] Schwalbe : "Ueber die Kaliberverhältnisse der Nervenfasern." Leipsic, 1882.

their course outward from their origin in the brain and cord ; is the diameter modified by the size of the animal, by the physiological quality of the fibres? These are the queries which gave impulse to Schwalbe's researches.

He finds that the diameter of the nerve fibres does not stand in any definite relation to the size of the animal. His examination of the fibres in the spinal nerve-roots of the frog and man shows that *the diameter of the fibres is directly dependent upon their length.* Thus those roots through which the nerves pass to the extremities are largely made up of fibres of greater diameter than those distributed to the trunk; while those passing to the posterior are of greater calibre than those passing to the anterior extremities, especially in the frog. The presence of narrow fibres among those of maximum diameter is readily accounted for by the circumstance that some are destined to be distributed to parts relatively near to the origin in the cord.

A curve constructed on the basis of his measurements shows in the most graphic manner this most significant fact, and since the curves constructed from measurements of both anterior and posterior roots coincide very closely, it follows that in this particular the motor and sensory fibres are essentially alike. The maximum as well as the average diameter of the motor fibres, however, is greater than that of the sensory. While an examination of the nerve-roots shows great variability in the diameter of the fibres, a study of such branches as are distributed to a limited area, *i. e.*, such as have approximately equal lengths, reveals great uniformity in diameter.

He shows furthermore that the motor nerves possess a uniform calibre from the roots outward until they commence to divide, and then while the individual branches show a diminution in diameter, the sum of the diameters of all the branches is considerably greater than the diameter of the original trunk. The sensory fibres, on the other hand, show a uniform diminution in diameter, even before division of the trunks occurs. While both motor and sensory fibres suffer a diminution in calibre from the centre outward, the motor trunks increase in diameter in the aggregate, while the sensory trunks diminish.

In regard to the diameter of the axis-cylinder, in view of the great technical difficulties in preservation and measurement, he is only able to state that, in general, the diameter of the axis-cylinder is directly proportional to that of its fibre. In view of the fact that a greater diameter of a nerve fibre indicates a greater length,

the author suggests the possibility of using this principle in the study of the course of the nerves in the brain and cord. Since, moreover, the resistance to the nervous impulse may be supposed to increase with the length of the nerve fibre, the above-described relation between the diameter and length of the fibre suggests the possibility of a physiological compensation which might well be the theme of further research.

In regard to techinque, the author remarks upon the difficulty of obtaining accurate measurements of the fibres in transverse sections, especially of the spinal nerve-roots, on account of the lack of absolute parallelism in the fibres and the consequent obliquity of sections of some of the elements. He therefore prefers and practises the measurement of the isolated fibres seen from the side, and for the isolation recommends the following methods: If a small animal, such as the frog, is used, the trunk is macerated in 20% nitric acid at 40° C. and then washed. The fibres, by this method, retain their natural diameter, but are very fragile and must be protected from pressure of the cover-glass.

If single trunks are to be examined, he suggests that they be treated for twenty-four hours with 1% osmic acid, washed, and kept in glycerine acidulated with nitric acid for some time at a temperature of 40° C. The amount of acid required is greater for the mammalia than for the amphibia. Thus, for the latter he uses 1% and macerates for twenty-four hours at 40° C.; while in the former a 3% solution is necessary, and a maceration of two or three days. The diameter of the fibres, by this method, is well preserved and the isolation easy.—T. Mitchell Prudden, M.D.

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b.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

Nerves of the Rectum.—Dr. Fellner has made experiments upon this point. He irritated the nervi erigentes, which caused a contraction of the longitudinal fibres of the rectum. The circular muscles of the rectum remain undisturbed. They are called into activity by nerves springing from the posterior mesenteric ganglion, and going to the hypogastric plexus. The nervi erigentes and the hypogastric nerves stand in an antagonistic relation to the rectum, similar to that of the uterus. Between the irritation of the nerve and the commencement of muscular contraction, there is a latent period of about one second.—*Centralblatt für die med. Wiss.*, 1882, No. 22.

Irritability of the Sciatic Nerve.—Zederbaum and Kronecker have been trying the effect of nerve-stretching upon the irritability of it. Most of the experiments were made upon the sciatic nerve of the frog. Near the bend of the knee a cushion of hard rubber pressed upon the nerve for the distance of nine millimetres. The sacral plexus above was irritated by pushing the secondary coil of DuBois toward the primary till a muscular contraction ensued. The weakest current that would cause a contraction was taken as an index of the irritability. Then the plate of rubber was loaded with weights, and again the irritability was tested. Finally, the weight was removed, and a third test of irritability made. By a series of experiments during the course of several hours the irritability continuously rose till shortly before death, when it suddenly sank. The main result was that the irritability of the nerve, with the weight, in the beginning sank ; that by a certain weight it increased, but above a favorable weight the increased pressure lessened the excitability. Five hundred grammes seemed to be the highest weight favorable to the excitability, when it pressed upon the nine millimetres of nerve. The differences in excitability increase with the amount of difference in weight.—*DuBois' Archiv*, 1882.

Action of Piperidin and Coniin.—Fliess and Kronecker have been testing the action of these two bodies.

At the request of Herr A. W. Hofmann, Dr. Kronecker made a few comparative experiments upon the toxicological relation of piperidin and coniin, and found that between these two poisons a remarkable parallelism existed, as both substances are poisonous to nerves, paralyzing them. A parallelism existed in their chemical reactions. Piperidin mainly paralyzes the sensory ; coniin, like curare, the motor tract. Fliess has studied this more in detail, with the following results :

1. *Piperidin.*—In medium doses (.01 gramme) it removes the reflex irritability in about ten minutes. The reflex-time by small doses is at first lengthened, and soon returns to normal. The inhibitory apparatus in the brain is not paralyzed. The central nervous organs are not paralyzed. The motor nerves are not affected. The paralysis is in the peripheral termination of the sensory nerves. Piperidin in large doses arrests the breathing in frogs for a minute. The pulse-frequency after small doses of piperidin sinks to about two thirds of the normal number. When piperidin is directly

conducted through the heart it removes the heart-beat, but the muscular substance is not injured.

2. *Coniin.*—It paralyzes first the peripheral ends of motor nerves; later, the centre. In the beginning it calls out an excitation of the inhibitory apparatus. The convulsions seen in warm-blooded animals does not appear in frogs, not because of the paralysis of the motor nerves. The frequency of the breathing is first increased and then decreased. The pulse-frequency after small doses falls. When coniin is conducted through the heart it does not affect the cardiac muscle.—*DuBois' Archiv*, 1882.

MUSCARIN.—Franz Högyes has made experiments upon animals with muscarin and arrived at the following results:

1. Muscarin increases the excitability of striped muscle-fibre.

2. It depresses very rapidly the functional activity of the central nervous system, and lessens the excitability of the peripheral nerves.

3. The dilatation of the blood-vessels after an injection of muscarin is an immediate result of the paralytic action of this poison on the vaso-motor centre. Later, there ensues a depression of the smooth muscle-cells.—*DuBois' Archiv*, 1882.

EXCITATION AND INHIBITION.—Luchsinger decapitated a viper far below the medulla oblongata, and hung it up by a band loosely applied to the neck, when the play of the rhythmic movements began. It tried to raise its body by rhythmic movements for a minute, then suddenly sank relaxed and remained so about three minutes, when it began the movements again. If at the beginning of a series of rhythmic movements a place on the skin is slightly touched, the snake's body suddenly falls. Here the snake's own weight is the exciting irritant of the rhythm, and the touch calls out a reflex inhibition, of which this is a simple demonstration.—*Pflüger's Archiv*, Band xxvii, 3 and 4 Heft.

RAPIDITY OF NERVE-FORCE.—René has made further experiments upon the rapidity of the transmission of nerve-force, and found it in man, as a mean, to be twenty metres per second. All the numbers expressing the rapidity of nerve-force in nerves, either sensory or motor, exhibit considerable differences, according to the individual, or the procedure, or the region excited,

or even in the same individual. The intensity of the excitation has an important function ; the rate of transmission augmenting with it, especially in sensory nerves. For the motor nerves, when the excitation becomes strong, the rapidity diminishes. In locomotor ataxia there is a considerable retardation of rapidity of transmission of nerve-force, whilst in the beginning of general paralysis the rate is more rapid than normal.—*Gazette des hôpitaux*, 1882, No. 46.

Motor Centres.—Brown-Séquard has made a large number of experiments which, to him, appear to demonstrate that the existence of motor centres in the brain and the path of the pyramidal columns, as now held, are not to be admitted. He cut the left half of the pons Varolii, and found that the right half of the body had increased in power, and that the left had lost power ; on one side dynamogeny, on the other side inhibition. He then made a section of the left half of the cord below the medulla, and found that the left half of the body, primarily enfeebled, became stronger in a state of dynamogeny. A median vertical section of the pons and medulla oblongata caused no paralysis. The irritation of a motor centre, after a hemisection of the spinal cord on the opposite side, caused a bipedic, diagonal movement ; that is to say, sometimes a simultaneous movement of the right arm and the left leg, sometimes of the left arm and the right leg.—*Le progrès médical*, No. 17, 1882. Isaac Ott, M.D.

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c—GENERAL PATHOLOGY OF THE NERVOUS SYSTEM.

To What Extent is Syphilis the Cause of Tabes, and What are the Results of an Anti-Syphilitic Treatment of the Latter ?—Prof. Leyden, *Berlin. Zeitschrift für klin. Med.*, iv, p. 475. The author expresses his views as follow : "Although I willingly acknowledge that the theory of syphilitic tabes numbers among its adherents names of good scientific repute, yet I must declare most decidedly against this theory and refuse to recognize an etiological connection between syphilis and tabes." He then reviews the opinions of others on this subject, referring particularly to Erb's contributions. After calling attention to the fact that Erb is not a dualist respecting syphilis, and pointing out the effect of this on his statistics, upon which his whole argument rests, he says : " Statistics in medicine are valued highly by

many. I am not a great respecter of them. I claim distinctly that upon statistics alone no proof can be founded. They may support other evidence, but are not alone capable of furnishing an etiological demonstration. All considered, I am forced to the conclusion that the statistical relations of this question prove absolutely nothing. On this ground alone, however, is founded the entire theory of syphilitic tabes. * * * Respecting treatment, for my part I find that the anti-syphilitic treatment supplies nothing * * * except that I know of examples where repeated mercurial inunctions have reduced tabetic patients so low that the injury was irreparable. * * * The last point is one which Lancereaux in particular has emphasized ; namely, that the pathological anatomy of tabes is entirely different from that of the syphilitic process. This would be simply false if, as claimed, syphilis frequently transmitted diffuse changes in the substance of the central nervous system. The changes which syphilis produces are of a local nature. Accounts of the anatomical changes in syphilis of the spinal cord are not numerous in literature, being absent on account of the rarity of such affections, and the greater rarity of autopsies. We are better acquainted with syphilitic disease of the brain, and we are justified in drawing a certain parallel between the brain and the cord. In the former we recognize as syphilitic processes, circumscribed gummatous meningitis, syphilomata, and, finally, softening, which is to be attributed to syphilitic arterial disease. Of these changes we have, though rarely, analogous conditions in the cord. Circumscribed meningitis, particularly in the cervical region, has been frequently described. Wagner observed a case of syphiloma. The arterial disease has been recently investigated by Prof. Baumgarten, and a correspondence found between the brain and cord. Circumscribed myelitic softening as a result of syphilis has also been observed. I have myself described such a case (*Charite-Annalen*). Sclerosis as a result of syphilis may be spoken of, but only as circumscribed foci, as are all these lesions, which are, in the main, entirely different from that form to which tabes belongs. If, finally, it be asked, under what symptoms does syphilis of the cord develop, the reply would be, according to my experience, always with the signs of a circumscribed myelitis or myelo-meningetic affection. I have seen a not inconsiderable number of such cases involving one extremity, though, as a rule, both, and presenting, besides paresis, symptoms of rigidity, more or less marked. The syphilitic processes are established more frequently in the medulla

oblongata than in the cord itself, as apoplectiform or as subacute bulbar paralysis. For these cases foci of softening have been demonstrated in the substance of the medulla and pons, in connection with disease of the arteries (branches of the basilar). In the extraordinarily severe cases of this kind obliteration of the basilar artery occurs (Griesinger, one case; Eichhorst, one case; Leyden, two cases). These rare cases of obliteration of the basilar artery appear to depend upon syphilis.

On the Relations Between Syphilis and Tabes.—Dr. Pusinelli, Leipsic, *Arch. f. Psych. u. N.*, xii, 3.

He found in 51 cases of tabes that 16 were affected with, or gave a history of, syphilis (16 per cent.). He concludes, from the irregular relations existing between the two diseases respecting succession in time and the severity of the phenomena, that there is the possibility of an alternating action dependent on both diseases, in which, on the one hand, with an existing pre-disposition to tabes, syphilis would act as an additional factor in the development of tabes, while, on the other hand, the saturation of the system with syphilitic poison may act as a predisposing cause of tabes, particularly when added to other special causes of tabes. The question whether there is a true degeneration of the posterior columns dependent on syphilis has not yet been answered by the facts of pathological anatomy. A connection between the two diseases is not indicated in the result of treatment in his cases, for anti-syphilitic measures produced uncertain effects, and in one case mercurial inunction made the patient worse. He reaches the conclusion that all proof of a connection between tabes and syphilis is still absent, though a suspicion of such a connection is aroused by statistical facts.

The Association of Tabes Dorsalis with Syphilis.—Dr. Thomas Buzzard, London.

Tabes dorsalis is the most frequent of all the chronic affections of the cerebro-spinal axis, and the prognosis in this disease is practically hopeless. There is increasing evidence, no doubt, to show that cases may go on for a very long time without the symptoms becoming materially intensified, and even with encouraging periods of improvement. But, as matters stand, we are unable to count upon more than this in any case of a confirmed character. At first sight, therefore, it would seem to be a point

of more than ordinary importance, to discover whether the disease is so far connected with a syphilitic origin as to encourage us to hope for success by treating the patient energetically with specific remedies.

In many morbid conditions, such a discovery, by leading to appropriate treatment, produces the most triumphant results. But, as a matter of fact, in the case of tabes dorsalis, expectations that may have been formed of a similar success have not been realized. Now and then, it is true, we meet with cases which improve remarkably for a time while iodide of potassium is being administered, but in my experience I have never known a cure to result from specific measures. From the mercurial treatment, indeed, which I have had very carefully applied by inunction in a number of cases where the history of syphilis was distinct, I have seen no good whatever, but, on the contrary, as it seemed to me, a tendency to harm.

In 1871, writing upon the subject of syphilitic affections of the nervous system, I included locomotor ataxia among the nervous affections belonging to the tertiary stage of syphilis. At that time the frequency with which a syphilitic history was to be noted in these cases had long impressed me, and I was in the habit of treating my ataxic patients with iodide. But the remarkable absence of successful results appeared to throw so much doubt upon the matter that I carefully excluded the disease from consideration in my work on syphilitic nervous affections. The connection between nervous disorder and syphilis was then not generally recognized, and I was anxious to avoid weakening the force of that which was to be said on a very important subject by the introduction of debatable material.

I do not know that I am disposed to draw a very hard and fast line between tabes supposed to be of primary origin and that which is secondary to acute changes. It is certain that in inquiring into the history of many cases which, when they come before us, present all the characters of typical tabes dorsalis, we frequently hear a description of symptoms, often long past, which can only be referred to the occurrence of spinal meningitis, usually of a slight and strictly localized character. The fact that some slight thickening of the soft membrane and adhesion to the posterior surface of the cord is commonly met with in *post-mortem* examinations of tabetic cases is well recognized. Vulpian, who was at first disposed to think that this meningitis might be primary, has rejected the idea, because the change is not proportionate to

the amount of lesion in the posterior columns, and he now attributes it to a propagation into the membrane of the irritative action going on in the neuroglia. But it is not disproved that the initiatory inflammation of the pia mater might spread itself by continuity to the neuroglia. There may possibly be anatomical reasons connected with the blood-vessels, which would explain the confinement of the inflammation which has thus been started, to a certain locality of the cord. I am inclined to think, also, from certain observations, that a limited spinal meningitis may clear off without leaving traces perceptible to the naked eye in the portion of membrane which has been affected.

The hypothesis which is admitted by Vulpian as the most probable, is that in the sclerosis of tabes it is the nervous element proper, contained in the nerve-tubes, which is first affected by an irritative lesion, and that the connective tissue suffers secondarily. The difficulty of accepting this view is, to my mind, very great. One cannot conceive an atrophy of axis-cylinders without some antecedent changes in the carriers of trophic material for the axis-cylinders, *i. e.*, in the blood-vessels, and the tissue in which they lie. On the other hand, if a vascular change be the initiatory step, it does not seem difficult to understand that syphilis, which is prone to occasion meningitis, may sometimes lead to sclerosis, through inflammation of the soft membrane of the spinal cord.

If we take the statistics of Fournier, Erb, and myself we shall find in 59.0 per cent. there was a history of syphilis. It is certain that coincidence is not sufficient to establish any thing like a necessary relation. It is necessary also to bear in mind another very possible source of fallacy. There is often great difficulty in ascertaining the earliest symptoms of tabes. There may have been some slight flying pains which have left little or no mark in the recollection of the patient, and in nine cases out of ten they have been set down by him as rheumatism. Yet these pains, usually the earliest evidence of tabes, may have occurred *before* he became affected with syphilis.

The position of tabes in regard to syphilis is peculiar in another respect. Affections of the nervous system which owe their origin to syphilis are not, as such, distinguishable in any very evident manner from diseases unconnected with such affections. As a matter of experience it is certain that almost all cases of marked paralysis of the cranial nerves (I exclude here the incomplete and transitory paralysis seen in tabes) are due to syphilis.

If tabes be of syphilitic origin, how is it that females, who have

their fair share of other diseases of the nervous system of specific origin, furnish only ten per cent. to the ranks of the former disease ?

Whilst it appears to me incontestable that there is a remarkable frequency of association between syphilis and tabes dorsalis, I do not think, all things considered, that the time has yet arrived for us to draw safe inferences as to the precise nature of the relation. —*Lond. Lancet*, June 10, 1882, 391.

Cerebro-spinal Meningitis in a New-born Infant.—Bambas. A young woman became affected with cerebro-spinal meningitis at the end of her pregnancy. She died after having given birth to an apparently healthy child, which presented, two hours later, symptoms of meningitis, followed rapidly by death.—*Progrès médical*, No. 17, 1882.

Syphilis of the Spinal Cord.—D. F. Greiff, Heidelberg. *Arch. f. Psych. und N.*, xii, 3. The author calls attention to the imperfection of our knowledge on this subject, compared with that of cerebral syphilis. The anatomical changes found in the latter, consist of specific neoplasms, either as circumscribed gummata, or diffused gummatous infiltrations ; specific inflammatory processes of the meninges and adjacent cerebral substance ; and, finally, syphilitic disease of the cerebral arteries and its effects, first described by Heubner. Reviewing the literature of syphilis of the cord, he finds : (1) cases of circumscribed gummata, in some originating from the envelopes of the cord, and in others developing within the cord itself (cases of Rosenthal, MacDowell, Willis, Wagner, Hales). (2) Diffused neoplasms (cases of Zambaco, Bruberger, Westphal, Heubner). (3) Inflammatory changes in the meninges associated with further changes in the cord itself (cases of Homolle, Winge, Charcot, and Gombault, Schultze, Julliard). No description is to be found of specific diseases of the vessels of the spinal cord. The dilated vessels, with thickened walls, surrounded with cellular infiltration, described in some cases, as they appear under other circumstances also, cannot be acknowledged as specific. The same doubt must remain in all cases where inflammatory processes of the cord and membranes are unaccompanied by specific gummatous tissue, and notwithstanding many attempts, the problem of determining the characteristic anatomical relations of syphilitic myelitis re-

mains, he thinks, unsolved. He gives an abstract of 13 cases with autopsies, and refers in detail to Juillard's views, who considers that the combined presence of inflammatory processes in the meninges, of exudative processes in the vessels and their sheaths, and then hyperplasia of the neuroglia with its effects upon the neural elements, constitute the characteristics of syphilis of the spinal cord. As the pathological processes involve principally the lymphatic system of the cord, entering through the meninges, the neuroglia, and the vascular sheaths, it results that the changes may be diffuse, but they cannot constitute a "systematic disease. If the process be a rapid one, softening follows; if slow, sclerosis. The author reports very fully his own case, in which the changes consisted of an extensive inflammation of the pia—in some portions just beginning, in others at an advanced stage; decided disease of the arteries and veins, also a swelling and hyperplasia of the interstitial tissue, with inflammatory exudations around the vessels, and moderate involvement of the neural elements. The arterial changes were the same as those described by Huebner for the brain, observed in the cord for the first time. A peculiar obliteration of the veins also existed. No softening or decided "systematic" lesion was found. He concludes that the facts of this case support Juillard's views, and furnish undoubted proof of the existence of a syphilitic disease of the arteries of the cord, but while the changes in the meninges and the vessels appear to be undoubtedly of a specific character, the changes in the cord, on the contrary, exist only in connection with and dependent upon the former, which together represent the true character of syphilis of the spinal cord.

PHENOMENA PRODUCED BY THE APPLICATION OF A GALVANIC CURRENT TO THE HEAD OF AN HYPNOTIZED HYSTERICAL SUBJECT, DURING THE LETHARGIC PERIOD.—*Progr. méd.*, 1882, 2.

Charcot found that in this state an increased electro-muscular excitability existed, corresponding to the mechanical excitability of such cases. Opening and closing of the constant current (4 to 10, Leclanché), with the anode on the frontal or parietal region of the head and the cathode on the sternum, caused contractions, on the side opposed to the anode, in the face and extremities. It did not produce waking, and the same procedure produced no effect when the subject was awake.—*Deutsch. med. Woch.*, No. 21.

ON THE FAILURE OF THE KNEE-PHENOMENON.—Carl Hertzka. The author recognizes partially the diagnostic importance of the failure of the patellar tendon reflex, but advises caution respecting its pathognomonic value. He examined a patient with symptoms of tabes, in whom the patellar tendon reflex was absent, who, nevertheless, was a contortionist. This symptom is absent in children also, although they are not tabetic; here and there, however, other neuropathic tendencies are observed. The author believes that Westphal's view—that the knee-phenomenon only disappears when the outer portion of the posterior column in the lumbar region becomes involved, and remains preserved by other localizations of the disease—is the most probable one. In post-diphtheritic ataxia, this symptom disappears, to return again after recovery from the disease. He does not accept Bergius' application—"pseudo-tabes"—for such cases. He found in many individuals with absent knee-phenomenon, a high degree of abdominal plethora. An etiological factor, in that hyperæmia of the lumbar region induced by this means, may simulate the initial symptoms of tabes. Mechanical conditions also arrest or hinder the execution of the knee-phenomenon, as thick cushions of fat, short tendons, interference with the vibratory power, and diminution of the muscular tone.—*Centralblatt f. Nerv., etc.*, June, 1882, from *Pester med.-chirurg. Presse*, No. 11, 1882.

ON REFLEXES AND PSEUDO-REFLEXES.—A. De Watteville. Although pertaining more to physiology than to pathology, we present an abstract of this author's paper as an accompaniment to Wesphal's observations cited below.

"The question is still debated whether muscular contraction following the percussion of a tendon is a true reflex phenomenon or not. It is agreed on all sides that it ultimately depends upon a reflex action, since it is abolished by the destruction of the posterior roots [see Westphal's experiments in opposition to this statement. W. R. B.]. Those who do not consider the contraction to be a direct reflex, hold that its cause is the excitation of the muscular substance itself by the sudden stretching; and explain the integrity of the reflex loop necessary for its occurrence, by assuming that the excitability of muscle to this particular stimulus depends, like tonicity, upon a reflex influence from the cord, or rather a manifestation of this tonicity. The chief reason for rejecting the direct reflex theory is that the time which

elapses between the instant of percussion and that of contraction is too short to admit of a centripetal stimulus being converted in the cord into a motor impulse, on the usually adopted measurements of the rate of nervous vibration. Now measurements of the period of latent contraction following the percussion of a tendon, and of the rate of nerve vibration, present too wide discrepancies, as given by different authors, to give very accurate data for calculation ; and the process itself of calculation from one set of data to another, opens the door to too many fallacies. In order, therefore, to avoid the uncertainties attending such a method of proof, it has seemed to me desirable to obtain myographic records of the knee-jerk and the plantar reflex on the same subject and with the same method. In this way the results are at least comparable. The absolute measurement may not be correct, but, if so, the error is the same in both series of results, and thereby eliminated." He presents a tracing of the result of his experiments, after the method described by Waller ("Tendon Reflex," *Brain*, 1880), and reaches the following conclusions : "1. The latency of the plantar reflex is about three times as long as that of the so-called 'tendon reflex.' The latter, in my tracings, has the usual duration ascribed to it by most authors, viz. : about 0.3 of a second. 2. The muscular contraction following cutaneous stimulation tends to run a more protracted course than that following the percussion of the tendon. 3. In certain cases, percussion of the tendon is followed by a contraction, of which the latency and the protraction correspond exactly to those characteristic of the reflex contraction occurring later, and running a more protracted course than that due to the electric stimulus. 4. In comparing the latencies of contraction of the extensor femoris and of the gastrocnemius, following excitations at the sole of the foot, it must be borne in mind that the difference will be comparatively small, owing to the fact that the two muscles receive their nervous supply near the knee. The difference likewise between the knee-jerks following cutaneous excitation at the sole of the foot and at the patellar tendon respectively, will be equal to the time taken by the transmission of the stimulus from the sole to the knee. 5. The possibility of true reflex contractions following a galvanic shock or a tap on the tendon is one of great importance in diagnosis, and deserves further consideration and elucidation.

"I have investigated myographically the question of 'crossed tendon reflex.' The tracings show that the latency of contraction in the opposite leg is absolutely identical with that in the leg

percussed—a fact in itself sufficient to disprove the reflex nature of the phenomenon. Further, it is easily shown that a blow given over the tibia or patella of one leg with the fleshy part of the hand, or, still better, on the heel of the fully extended leg, produces little or no contraction in that leg, whilst the opposite is *adducted* vigorously; a blow given on the heel of the right bent leg causes no contraction in the opposite limb. It is plain, therefore, that the shock conveyed along the femur to the pelvis, and acting mechanically on the most favorably placed tendons, is quite sufficient to explain the facts—a view obviously forced upon us by the results of Prevost and Waller's experiments on rabbits. In conclusion, I wish to advert to one difficulty attending the 'direct muscular' or 'myotatic' theory of the knee-jerk and allied phenomena. Though its latency is too short to justify the reflex hypothesis, is it not too long to be readily reconciled with the accepted periods of latency to electrical and other direct stimuli? We know, on the other hand, that the time of latent stimulation of nerve-centres (cortical substance: Franck and Pitres, Richet, Bubnoff, and Heidenhain) is much longer than of peripheral organs; while we have in the muscles themselves organs (end plates) which stand, so to speak, midway in some of their physiological properties between a nerve cell and a nerve fibre. The solution of that difficulty (if it is one) might, therefore, be found in the assumption that the excitation produced by the sudden stretching of a muscular fibre falls primarily upon its nerve-ending. None of the known facts, at least, militates against this view, which I throw out more as a 'working hypothesis' for future investigation, than as a scientific explanation of the phenomena."—*Brit. Med. Jour.*, May 25th.

On a Source of Error in the Examination of the Knee-Phenomenon, etc.—Prof. C. Westphal, *Arch. f. Psych. und Nerv.*, Bd. xii, 3, 298.

The author calls attention to the fact that certain patients, in whom the knee-phenomenon has been positively absent for a long period, may exhibit at certain stages of the disease strong contraction of the quadriceps on percussing the patellar tendon.

Three cases are cited in which this occurred, persisting for a short time, and then disappearing. The author concludes that this is not a return of the tendon-phenomena, but is a skin reflex; for when a fold of the skin over the patellar tendon was lifted

and squeezed between the fingers, contraction of the quadriceps followed ; also pinching and percussing a fold of the skin in other parts of the leg may excite in some cases contraction limited to the quadriceps or extending to other muscles of the leg and thigh. There exists, he says, two independent phenomena : namely, a true, and a pseudo knee-phenomenon. It may be claimed that, as in tapping over the tendons, the skin is necessarily excited ; at the same time the presence of the true phenomenon in such a case could not be proven. Opposed to this are the facts that, in the first case (tendon-phenomena), the ordinary immediate and quick contraction follows percussion, while in the second (skin reflex), at least at first, a distinctly appreciable interval occurs. As a rule, also, stronger percussion is required to produce contraction in the latter than in the former case.

The author reports experiments made by himself and others to elucidate this nature of the tendon-phenomena ; in one of which, notwithstanding that sections of the fifth, sixth, and seventh lumbar, and first sacral pairs of nerves were made, the knee-phenomenon remained completely preserved. He enters into a consideration of the question whether it is a true reflex or not. Although leaving the question undecided he still favors his former view, that muscular tone and a certain degree of tension and vibratory power of the tendons are the only conditions necessary for the production of the tendon-phenomenon, the additional theory of a reflex process by means of centripetal nerves from tendons or muscles being unnecessary.

On the Muscular Atrophy Following Certain Articular Lesions.—Prof. Charcot. *Progrès méd.*, May 20, 1882.

The author in considering this question says, that the clinician must be on his guard in the presence of even a very slight inflammation of a joint, it may disappear very quickly, and yet consecutive atrophy of the muscles may last for a very long time. *There is no necessary relation between the intensity of the articular affection and that of the paralytic and atrophic phenomena.* It is the rule for the paralysis to persist after the arthritis has ceased. In such cases a more or less direct relation must exist between the cells of origin of the centripetal nerves (articular), and the cells of origin of the motor and trophic nerves of the extensors. From a physiological stand-point, it is a deuteropathic affection of the cord. The articular disease having, by means of the irritated

articular nerves, reacted on the spinal centres, modifying those centres from which depart the motor nerves, and those which preside over the nutrition of the muscles. These centres do not undergo a profound modification, the process simply consisting of a sort of inertia or stupor of the cellular neural elements. The treatment consists in the application of electricity in any of its forms. W. R. BIRDSALL, M. D.

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d.—MENTAL PATHOLOGY.

CRIMINAL LUNATICS.—Dr. Ferrier (*Brain*, April, 1882) calls attention to some peculiarities of the brain of a woman who had murdered her two children, and was in consequence confined in the Broadmoor Asylum. The case was not, strictly speaking, that of an insane criminal, and the cerebral changes, which were not teratological, were of interest only from their bearing on the localization theories of Ferrier. Dr. Charles K. Mills (*Medical and Surgical Reporter*, May 13, 1881) discusses the general subject of insane criminals incidentally, alluding to the results of investigations into the cerebral anatomy made by Benedikt, Osler, and himself. In the course of the paper he approvingly cites the conclusions of Lacassagne, Lebon, Kräpelin, and Ferri, mentioned in the January number of this JOURNAL, page 221.

THE INSANE ON CRIMINAL RESPONSIBILITY.—There was a discussion in the Hanwell Lunatic Asylum Debating Society, which consists of the patients of the asylum, on the question of the responsibility of the insane for murder. The view was pretty generally taken by the patients that the outside world was not mentally sound on this subject, and that insanity ought never to be a defence, because it is never so complete as to extinguish all sense of responsibility. To test responsibility, it was proposed to offer the lunatic committing a criminal act a red-hot poker, and by his grasping or not grasping it to determine his responsibility. One of the patients, who shot at the Queen, admitted that if the lunatic who had previously attempted the crime had been executed he would not have attempted it. During the Guiteau trial a lunatic in the New York City Asylum, who presented the same type of insanity as the assassin, whose case has already been partially described (JOURNAL OF NERVOUS AND MENTAL DISEASE, vol. vii,

page 641), who at times claimed to be inspired, but who was far more dangerous in some respects than Guiteau, as he had power of forming combinations of lunatics, was interviewed on the Guiteau case by a reporter, and said that the assassin was taking advantage of the insanity plea, and that all such lunatics should be hung. Freeman, the Pocasset lunatic murderer, has said that punishment would have no effect on other lunatics.

Athetosis in the Insane.—Dr. R. B. Mitchell (*Edinburgh Medical Journal*, May, 1882) reports two cases of athetosis and athetoid movements as occurring among the epileptic insane. The first case corresponds with Dr. Hammond's cases. There is inability to retain the fingers and toes in any position in which they may be placed, and there is almost continual motion of them, except during deep sleep. The first case is one of "secondary" dementia and double athetosis. In the second case there are grotesque motions of the fingers and also inability to retain them in a fixed position, but the movements are not continuous. The psychical features were those of the average epileptic lunatic.

Acute Dementia in an Old Man.—Dr. C. H. Hughes (*Alienist and Neurologist*, April, 1882) reports a case of what he denominates acute dementia in a man aged 64. The case is reported as having recovered, but not without straining can the case be called acute dementia, or the result recovery. The psychical phenomena related seem rather to indicate senile dementia, somewhat modified by treatment.

Psychoses after Cerebral Hemorrhage.—Mendel (*Deutsche medicinische Wochenschrift*, No. 3, 1882) claims that the most frequent form of psychical disturbance after cerebral hemorrhage, is a mental debility in all degrees, from slowly acquired haziness of intellect to the most profound dementia. In another class of cases, intelligence seems but slightly impaired, and frequently indeed exhibits no defects, but the patient becomes irritable, easily moved to tears, at times remaining unaffected under the most trying circumstances. There is a third form of physcical disturbance. Dr. Mendel has seen it but five times in patients suffering with right hemiplegia. In these cases, besides the psychical disturbances described above, there were developed hallu-

cinations. The three cases contributed by Mendel recovered, but a slightly defective memory was left. That progressive paresis may develop as the result of cerebral hemorrhage has been often affirmed, but Dr. Mendel is of opinion that no positive conclusion can be drawn with regard to the relation between these two conditions. Mendel's cases do not, however, seem to have been sufficiently long observed to enable him to pronounce so positively that progressive paresis does result; there can be no doubt but it is certainly less frequent than has generally been claimed, as in many instances the cerebral hemorrhage is either a complication or the result of pre-existent progressive paresis.

INSANITY IN CHILDREN.—Magnan (*Journal de médecine et de chirurgie pratiques*, April, 1882) describes a case of insanity in a child four years old. The child was born during the exciting scenes of the siege of 1870. The paternal grandmother had presented many mental peculiarities, and became demonstrably insane at the age of 50. The father, who entered the asylum at the same time with his son, had, at the age of 28, delusions of persecution, and made an attempt at suicide. His son, the patient in question, was liable to sudden fits of anger, and at such times would strike his head against the walls. At the age of four he became markedly melancholiac, and, like the majority of insane children, had marked casual hallucinations, and made an attempt at suicide. The melancholia was a true melancholia and not a hypochondriacal condition.

MORAL INSANITY AND IMBECILITY.—Magnan (*Journal de médecine et de chirurgie pratiques*, April, 1882) reports a case of moral insanity of a distinctly marked type, which is sufficiently distinctive and clearly outlined to dispose of the cant that "moral insanity is unknown to medical science," which, at the Guiteau trial, emanated from a physician who was made an alienist expert during the journey from New York to Washington, by being diligently coached by a lawyer. The question of moral imbecility has some light thrown upon it by certain instructions given by Voisin (*Bulletin générale de thérapeutique médicale et chirurgicale*, March 30, 1882), who claims that affection, benevolence, and shame are very frequently absent among idiots and backward children, and only to be developed by careful tuition.

GUITEAU'S INSANITY.—The vexed question of Guiteau's mental condition is still being passed under survey. Under the title, Guiteau mania, the *British Medical Journal* (June 24, 1882) discusses the psychological condition of Guiteau, or, rather, the conclusions of Dr. Hammond and Campagne. This editorial is marked by that same dilettante spirit that caused the *Journal* to make folie circulaire a variety of dementia. The animadversions against Campagne are supported, not by quotations from any one, but by eulogisms on Turner, Howe, and a few other comparative anatomists, who have never set themselves up as cerebral teratologists. The *British Medical Journal* seems to forget that "on the other side of the mountain there are men also," and that Campagne's conclusions are supported by Meynert, Schüle, Meyer, Morel, Krafft-Ebing, Sander, Jensen, Stark, Muhr, not to speak of Spitzka, the results of whose labors received the Tuke prize of the British Medico-Psychological Association.

The *Journal of Mental Science* (July, 1882) also makes some very strong assertions that the theory of insanity was not sustained by the evidence (p. 237), and then concludes by saying: "We have in these observations confined ourselves to the question of Guiteau's responsibility." Then follows: "No physiognomist can look at the outlines of the face and head depicted in the remarkable photographs which accompany Folsom's paper, without recognizing something extraordinary. They must mean something." The article patronizingly treats the able papers of Channing and Folsom as being fair, etc., but accepts the garbled extracts from the *Journal of Insanity* (April, 1882) as authority. It cannot be said that this review of the evidence in the Guiteau case is worthy the *Journal of Mental Science*. The remarks about Guiteau's head have a remarkably dilettanteish sound. The article might have been written by the deviser of the plate in the April number, who labels the same body on one side of the plate "cornua ammonis," and on the other "choroid plexus." Dr. H. P. Stearns (*Archives of Medicine*, June, 1882) also examines Guiteau's mental condition. He commences by making platitudinous assertions, and bringing into account the absurd change of character theory, which hangs like a mill-stone around the neck of so many alienists. He says: "I certainly fail to find that at any particular period of his life there was any such marked change of character as evinced a pathological condition of his brain." Dr. Stearns in the whole article failed to realize what cerebral pathology means, and he has no conception of the possibility of

lunatics feigning insanity. The article reads as if written by one who had read nothing on insanity, or had no experience. His very statements, respecting Guiteau's motives for the act, show one of two things, either that Dr. Stearns believes that Americans have sunk so low that they would condone assassination for party reasons, or else that the doctor has had considerable experience with a class of beings who committed crimes for very absurd and trivial motives. Such statements as these will be looked upon by every true alienist as absurd. "The love of notoriety has little, if any, influence with the insane. Persons whose brains are so much diseased are not in a condition to be much influenced by it." The best commentary on all these Guiteau articles is that made by Dr. N. Folsom (*New York Medical Journal*, June, 1882), that no one who is capable of judging, and who is not determined to think Guiteau sane, can do otherwise than regard him as a lunatic.

Dr. C. F. Folsom (*American Law Review*, February, 1882) discusses the question of the responsibility of Guiteau. The doctor regards Guiteau as having presented some symptoms "sufficient to create a suspicion of organic disease of the brain, which, although as yet in an early stage, may be of such an extent to create an excessive exaltation with extravagant delusions, and to involve probably as complete irresponsibility as is found in any form of insanity; a question which time alone could settle, and which the previous existence of syphilis renders more probable, as the two diseases are often associated." "From the history of the case it is not impossible that there have been at different times, with intervals of several years, recurrent attacks of mania of a form not rare in private practice; a form just severe enough to render asylum treatment desirable, but difficult to enforce." "Again, it may be maintained that a bad inherited organization, worse training in boyhood and youth, the pernicious effects of free love and communism during the six early years of manhood, extreme self-will knowing no law but self-indulgence, general moral obliquity, and entire want of sympathy with society, may have led on from one step to another a man whose ambition knew no bounds, whose love of notoriety was only equalled by his cunning and unscrupulousness, and who finally, in one desperate act, risked his worthless life on the small chance of escaping the just penalty of his deed." The statement, "that the whole manner of the man must have convinced any one familiar with insanity that the theories of inspiration and impulse were only after-

thoughts," seems a little too strongly put, for at least two of the experts looked upon the claim of inspiration as a premature explosion of a systematized delusion, and in the opinion of the two experts referred to, such delusions are of relatively slow growth, and if from such causes as occurred in the Guiteau case such explosion happened the imperfectly formed delusion would present the phenomena observed in the present case. Dr. Folsom says: "It can hardly be claimed that the act was purely the outcome of an insane mind, and that the insanity wholly caused it. I should rather place it in the same category with the deliberate murder of a hated insane asylum superintendent by a patient who hoped thereby to change the whole hospital management, secure freedom, and escape punishment. In that case the responsibility might be easily measured." Dr. Folsom's final conclusion is certainly one of the soundest which could be taken on the question. "My own opinion is very decided that Guiteau is an insane man, that he would have been thought a proper subject for detention in an insane asylum half a dozen years ago if he had been sent there, and that once committed, he would not have been discharged to entire freedom by the advice of the medical officers. His responsibility is not so easily determined. It is my opinion, without insanity the assassination would not have been attempted. With Guiteau's amount of insanity alone the crime would have been equally impossible." The autopsy seemed, in some respects, to confirm Dr. Folsom's diagnosis, but it was not made under circumstances favorable to the demonstration of all the problems involved in the case.

Dr. Channing (*Boston Medical and Surgical Journal*, March 30, 1882) gives a very exact and detailed account of the assassin's history, and in his analysis of the psychological status of Guiteau, is much more in accordance with science than Dr. Folsom. Dr. Channing says, speaking with reference to Guiteau's conception to remove the President: "It was, further, an insane belief or delusion that Guiteau entertained, that there was a 'political necessity' to destroy the President to save the country from civil war, and no sane mind would have reasoned itself into the belief that murder would have averted the crisis. The most stupid of men would have seen that the murder of the President would inflict an injury a thousand times greater to the country, than such a controversy as was going on between a small number of men in the Republican party. The strength and absurdity of this delusion are shown by the confidence that Guiteau felt that he should receive support

from the Stalwarts, and be honored as a patriot when his true motives were known.

"The conduct of Guiteau in court affords, to my mind, strong corroborative proof of his mental unsoundness. He showed himself to be quick-witted, sharp, gifted with an excellent memory, unscrupulous, uncontrolled in temper, and almost entirely lacking in judgment and discretion. His controlling idea seemed to be to guard his reputation as a man of purity, ability, high attainments, Christian virtues, and political importance. It made no difference what was said on either side; no matter whether it injured his case or helped it; whether it insulted his counsel or the other side. Hit or miss; friend or foe; with the true indifference of the lunatic he made his criticisms. The dignity of the court-room; the threats of the judge and bailiffs, of the district-attorney, or the United States marshal,—he was indifferent to all. That instinct in the human breast which makes us bow before the majesty of the Law and tremble at her bidding, was not within him. With the volubility and lack of self-control of the insane man, his voice was heard above all others; and it must be remembered that this was the case, from the beginning to the end of the trial, with everybody, and nothing could have silenced him in all probability. An exhibition in all ways so extraordinary as the conduct of Guiteau at his trial, is not, to my knowledge, on record; and it is not too much to say, that it would be a disgrace to American jurisprudence were it not explainable on the ground of insanity.

"The trial reminded me of what a trial might be, if a patient with chronic mania were brought in from an asylum, and tried for murder. Provided he were a bright, intelligent man with delusions of self-importance, of such a nature that they had had a bearing on the crime of which he had been guilty, his conduct might have been in many ways similar to that of Guiteau.

"In the way Guiteau uses his writings he resembles also many of the lunatics who possess this mania for writing, especially those who have an exalted form of mania. These persons address voluminous documents to various distinguished personages, and, though they are never answered, the writers seem perfectly satisfied. They often carry extensive petitions or letters in their pockets, and entrust them to any visitor they may see to take them to the President or other important person. For years they will continue to forward these documents, expressing but little regret at getting no response. The mere act of writing seems sufficient to satisfy the ambitious desire of the writer, and the changing under-

current of his delusion, renders him oblivious to the ordinary course followed in letter-writing. I have known lunatics who have carried numerous documents on their person, concealed them in all sorts of out-of-the-way places, and sent them out of the asylum openly and surreptitiously on every opportunity, who would not have been recognized as insane had they not possessed this writing mania. In these letters, addresses, or proclamations, their delusions would generally show themselves.

"Guiteau followed the usual course of these maniacs, and was equally ready on every available occasion to produce some document, letter, or pamphlet wherein was plainly shown the truth of all his claims. He seemed never to be more supremely happy than when he had an opportunity to show or to read from these writings. Forgetting himself for the moment, he became carried away by his own eloquence. Perhaps no better example of the insane use to which Guiteau put his documents, or his manner of so doing, can be cited, than when he left his speech with Garfield, marking 'Paris' at the end. That speech, he thought, was enough to open the doors of paradise, and a comparatively small man like the President of the United States would certainly be overawed by it. It was hardly necessary, after this proof of his ability, to say any thing more about his application for office, but he would mark 'Paris' as a delicate reminder of his preference for the French consulate."

As alienists Dr. Folsom and Dr. Channing are certainly to be congratulated upon the scientific position both have taken. There are differences between them, but the differences are those certainly allowable in the case.

Dr. Samuel Worcester (*New England Medical Gazette*, April, 1882) discusses the mental status of Guiteau, or rather his own position as alienist expert thereon. No other criticism can be passed upon this article than the French proverb "*qui s' excuse s' accuse.*"

Concerning Guiteau, Dr. Mills (*Medical and Surgical Reporter*, May 13, 1881) says that the weight of evidence is, on the whole, in favor of his insanity. He also says that the crucial question in all cases of doubtful responsibility is: "Could he help committing the crime?" The doctor is inclined to believe that Guiteau was a case of affective, or so-called moral insanity. The article, from its scientific spirit, is in delightful contrast with the cant that has emanated from many of the Philadelphia journals, noticeably the *Medical News*.

SURGERY AMONG THE INSANE.—In an article evidently suggested by that of Dr. Hagenbach (JOURNAL OF NERVOUS AND MENTAL DISEASE, January, 1881), Dr. Schüle calls attention to the tendency among the insane to self-mutilation, and the relations this has to eroticism; the anus, testicles, and penis among the males being severe sufferers. The vagina in females is, Schüle remarks, a general receptacle for stones, glass, splinters, hairpins, needles, teeth of combs, and serious surgical complications thus arise.

UNILATERAL AURAL HALLUCINATIONS.—Dr. Règis (*Annales médico-psychologiques*, May, 1882) reports a case in which unilateral hallucinations resulted in consequence, apparently, of chronic inflammation of the middle ear. The patient is said by Dr. Règis to be not truly insane, although he was at times suicidal and violent. Yet he failed temporarily to recognize the unreality of his aural hallucinations. Dr. Règis says that he was sane other than that his intelligence was diminished by an attack of typhoid fever. The patient recognized that the hallucination resulted from his aural disease, but to do this, extraneous evidence was necessary The case does not demonstrate what is claimed for it by Ball and Règis, nor is it by any means new or exceptional, and it is decidedly impure. As was remarked by Dr. Blanche, the fact that the patient had temporary attacks of violence and suicidal impulses should render the case doubtful. The doctrine of Ball and Règis is that of amateur alienists, and is likely to swell the number of homicides by leading to numerous aural operations, and thus to less surveillance of hallucinated individuals.

LEGAL RESPONSIBILITY OF THE FEEBLE-MINDED.—Dr. Foville (*Annales medico-psychologiques*, May, 1882) discusses the question of how far irresponsibility results from feeble-mindedness, and comes to the very sound conclusion that complete irresponsibility should not be extended to this class, but that each case should be judged on its merits rather than on any broad general principle. That this class is completely responsible few will be inclined to claim, but the same objection exists to their being held completely irresponsible.

PROGRESSIVE PARESIS.—Dr. Cullere (*Annales medico-psychologiques*, May, 1882), after an extended examination of progressive

paresis, or, as he prefers to call it, dementia paralytica, in its relations to arterial atheroma and yellow softening, comes to the following conclusions: First, there exists a form of progressive paresis which is characterized at one and the same time by the ordinary lesions of meningo-encephalitis, and by those of cerebral senility, atheroma, miliary aneurisms, and patches of yellow softening. It is developed at an advanced age, follows a more or less slow course, and may rapidly terminate at the end of a congestive attack accompanied by acute maniacal excitement. It may be diagnosed during life, by aid of the sphygmograph and aortic auscultation. The psychical and somatic symptoms waver between those of senile dementia and progressive paresis. Secondly, among certain senile dements there occur congestive attacks, which lead to inflammation of the cerebral cortex, and produce lesions, macroscopic at least, of progressive paresis. These fluxionary changes retrocede at times, and the symptoms of progressive paresis disappear, to give free play to those of organic dementia.

HALLUCINATIONS.—There have been of late such persistent attempts to lay too great stress on the sensorial basis of hallucinations by Ball and others, that it is pleasant to find that certain French alienists are beginning to make protests against this psychologically dangerous doctrine. Dr. V. Parant (*Annales medico-psychologiques*, May, 1882) comes to the conclusion that in certain cases the senses and intelligence play each a part in the production of hallucinations, but that there are frequent hallucinations which are of purely psychic origin. He calls attention to the fact that hallucinations are not infrequently the result of an unconscious volition.

INSANITY OF MASTURBATION.—Under this title, Dr C. B. Burr (*Transactions Michigan State Medical Society*, 1882) discusses the type of insanity which Kahlbaum calls hebephrenia, and which is really not an insanity due to masturbation, but arises from trials the mental condition of the individual is subject to during the evolution going on during puberty. Dr. Burr gives a very clear description of the symptoms, and calls attention to the fact, which was so strikingly ignored by the government experts in the Guiteau case, that sexual ideas and religious delusions are almost concomitant. He refers this, like Skae, to the influence of

remorse, an explanation which will scarcely hold water. Sexuality and religion both belong to the sphere of the emotions, and in the close relation between these is found the explanation of the religious motives of sexual lunatics. Dr. Burr gives the following symptoms of hebephrenia: 1. An intense vanity or self-love. 2. Extreme selfishness and disregard for others 3. Religious delusions and perverted moral sentiments. 4. Delusions referable to the sexual system. 5. Aural and visual hallucinations of a certain definite character. 6. Emotional disturbances. 7. Homicidal and violent impulses. 8. Physical disorders referable to an impaired nervous system. Certain of Dr. Burr's cases are not hebephrenia, but are clearly cases of original monomania (primäre Verrucktheit; manie raisonnante).

Typhoid Fever Among the Insane.—Dr. C. M. Campbell (*Journal of Mental Science*, July, 1882) has recently studied the effects of typhoid fever on twenty-two cases of insanity. The results were as follow: The mental convalescence of two patients was not unfavorably influenced by the attack of fever. In one case there had been no mental improvement up to the time of the attack of fever; decided improvement commenced during its course, and proceeded with physical convalescence to complete mental recovery. The mental recovery in a progressive paretic commenced during the latter part of the fever, and proceeded so far as to admit of her returning home. Mental recovery in two cases in which the prognosis had become unfavorable began during the attack of fever. In four cases there was marked improvement. In ten cases the fever exerted no marked influence. One case died; in this one there was marked congenital defect.

Primary Monomania.—Dr. G. Buccola (*Revista Sperimentale di Freniatria e di Medicina Legale*, Anno viii, Fascicolo 1 and 2) discusses, under the caption of primitive systematized insanity, the primäre Verrücktheit of the Germans. According to him there are four great groups of this form of insanity: First, systematized insanity of the hypochondriacal variety. Second, systematized insanity of the chronic type. Third, systematized insanity of the acute type; and fourth, systematized insanity of the peculiarly primitive or original type. The so-called acute form of primäre Verrücktheit is really a type in which the psychical phenomena are periodic or episodial in character. He is not

inclined, like Westphal, to regard katatonia as a variety of primäre Verrücktheit, and very properly, since such views tend to extend the term primäre Verrücktheit till it and insanity are synonymous. He is inclined to regard with favor the view which puts the true primäre or rather originäre Verrücktheit into the group of insanities due to teratological defect.

Prognosis in Insanity.—Dr. D. G. Thomson (*Journal of Mental Science*, July, 1882) discusses the prognosis of insanity in which he claims that the chances of recovery are much greater if the patient "be entirely removed from the causes and associations of the onset of the attack, and placed in a good asylum where discipline, enforced open-air exercise, and, above all, novelty from change of scene and faces, stimulate lethargy, or calm excitement." These statements are too positive; there is a large number of acute cases where asylum treatment is imperatively indicated, but there are also cases where it is imperatively contra-indicated as being positively injurious. The indications will be found in the persons by whom the patient is surrounded. Dr. Thomson seems to be unaware that it frequently happens that acute attacks of insanity occurring in hereditarily predisposed cases have an excellent prognosis as regards the immediate attack. The influence of sex on the prognosis of insanity is, he thinks, not very decided. The classification adopted by him is the crude ætiological one of Skae. Under melancholia Dr. Thomson includes many different states. He is inclined to believe that simple melancholia should recover in from six to twelve weeks, and that the prognosis is favorable.

Partial Mania of Persecution.—Under this title Dr. Géné (*Revista Frenopatica Barcelonesa*, May, 1882) describes two well-marked cases of monomonia (primäre Verrücktheit) with ideas of persecution evidently resulting from pre-existing grandiose delusions. These delusions of persecution were more or less systematized, and had produced an actual melancholia which might well be termed an instance of one psychosis complicating another.

Homœopathic Treatment of Insanity.—Dr. S. H. Talcott (*New England Medical Gazette*, May, 1882) claims that of the 1,100 patients who have been treated at the Homœopathic Insane Asylum at Middletown since 1874, 45 persons have been re-

stored to health, and the death-rate has been but 4½ per cent. As Dr. Earle has shown, ordinary asylum statistics of recovery contain enormous elements of error, and how great these must be in the present case may be easily imagined when it is recollected that the first superintendent of this asylum was appointed, despite the law to the contrary, without previous experience with insanity. Dr. Talcott informed one of the experts at Washington that he *tried* to use only homœopathic treatment in the asylum in order to comply with the law. The article of Dr. Talcott gives no details other than the statistics cited. In contrast with Dr. Talcott's claims are the results of homœopathic treatment in the Camden County Insane Asylum. After six months' trial the treatment was decided to be a failure, and was so admitted by the homœopathic superintendent (*Boston Medical & Surgical Journal*, March 18, 1880), who said that a case of epilepsy had 1,000 fits in six weeks under homœopathic treatment. In this connection it should be remembered that Hahnemann was at one time in charge of an insane asylum for six months, and curiously enough was somewhat in advance of his time in using restraint but very moderately, and treating the insane kindly.

INSANITY CURED BY ERYSIPELAS.—Dr. Fritsch (*Jahrbücher fur Psychiatrie*, Band iii, Heft 3) reports two cases of what seem to be melancholia, which recovered after being attacked by a delirium resulting from erysipelas. The first case had markedly depressing delusions but no hallucinations. The second case had both hallucinations of hearing voices through a telephone and depressing delusions. The second case seemed to have systematized hallucinations, and although Fritsch says she was cured, she continued to be "nervous." It is probable that she was a case of monomania, and the supposed recovery, a remission due to the erysipelas. He also reports a case of progressive paresis, which was markedly improved by erysipelas. Fritsch's cases are not exceptional, as similar ones have been reported by Esquirol, Sponholz, Nasse, and Macleod. That acute febrile disturbances sometimes exert a favorable influence on insanity has long been known. Cases of insanity which were improved by the fever from rheumatism have been reported in the JOURNAL OF NERVOUS AND MENTAL DISEASE, vol. viii, p. 241.

HYOSCYAMINE IN PSYCHIATRY is discussed by Dr. Charles Hughes (*Alienist and Neurologist*, April, 1882), who comes to

the conclusion that hyoscyamine is especially indicated in delirium, and more particularly in the young and middle-aged rather than the aged.

Melancholia Cured by Quinine.—Dr. Baillarger (*Annales medico-psychologiques*, May, 1882) reports a case in which melancholia, coming on at the time of menstruation, and therefore displaying an intermittent type, was cured by 75 centigrammes of quinine. That the drug might be of value there can be but little doubt; its effects are somewhat opposed to those of melancholia. That, however, an indication was found for its use in the intermittent type of the disease, seems to indicate, in view of the complex nature of the psychoses, a very narrow way of reasoning respecting therapeusis.

Curability of Insanity.—Dr. Géné (*Revista Frenopatica Barcelonesa*, May, 1882) says that ecstasy, by which he understands not only the ecstasy which ordinarily receives that designation, but also various psychoses of which ecstasy (or what from his description is melancholia attonita) forms a part, mania, and melancholia are the only curable forms of insanity. Ecstasy is as curable as mania, and much more curable than melancholia. Uncomplicated ecstasy is by far the most curable of all the types of ecstasy. Simple melancholia is much more curable than with delusions and with aberrations of the will. Acute mania with agitation is more curable than the other types of mania, especially than mania with delusions. It is obvious from this that the various types of insanity are not clearly demarcated by Dr. Géné. In a general way his conclusions support those of others previously recorded.

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J. G. KIERNAN, M. D.

e.—THERAPEUTICS OF THE NERVOUS SYSTEM.

PILOCARPINE IN HYSTERICAL HEMIANÆSTHESIA.—*Journ. de méd. et de chirurg.* (*Lond. Med. Record*, June 15, 1882.)

Huchard reports two cases of hemianæsthesia cured, and one case of general anæsthesia changed to a hemianæsthesia, by the use of pilocarpine. No return of the anæsthesia was noted after the lapse of two weeks. The nitrate was used hypodermically at intervals of two days; the dose not stated.

PILOCARPINE IN HYDROPHOBIA.—*Prog. méd.*, June 17, 1882. Denis-Dumont (de Caen) reports a case of undoubted rabies apparently cured by subcutaneous injection of nitrate of pilocarpine. Dose not given.

ARTIFICIAL FEEDING IN NERVOUS VOMITING.—*Prog. méd.*, June 17, 1882. Ballet reports two cases of nervous vomiting thus treated and cured. He found that while very small quantities of milk, when swallowed, were immediately vomited, a litre or more when introduced by the œsophageal tube was retained. After a while the stomach became tolerant of milk when swallowed, and the recovery was speedy.

NITRITE OF SODIUM IN THE TREATMENT OF EPILEPSY.—*Practitioner*, June, 1882. W. T. Law treated a bad case of epilepsy with the following results:

No. of weeks.	No. of attacks.	Treatment.
14½	28	Bromides of potassium, sodium, and ammonium.
4½	9	Borax.
23	26	Bromides, with alternations of iron and aloes.
22	15	Bromides, with belladonna.
14	3	Nitrite of sodium in 1.20 doses; frequency not stated.

CURARE IN EPILEPSY.—*Neurologisches Centralblatt*, Jan., 1882. (*Practitioner*, June, 1882.) Kunze has before reported thirty-five cases of epilepsy treated with curare, of which nine are reported cured. Now Edlefsen has been using Kunze's formula which is:

Curare, 0.5.
Distilled water, 5.0.
Hydrochloric acid, one drop.

Digest for twenty-four hours and filter. One third of this is given hypodermically every five days. The solution causes no pain, reflex or toxic phenomena. Two cases of hystero-epilepsy did not improve under the treatment. Six cases of epilepsy were not permanently improved; three were improved, and three permanently cured (time elapsing not stated).

Kunze recommends abandonment of the treatment if four or five injections are not beneficial.

AN INVESTIGATION OF THE ACTION OF CERTAIN MEDICINES UPON THE EXCITABILITY OF THE CEREBRUM; WITH CONTRIBUTIONS TO THE THERAPY OF EPILEPSY.—*Lo Sperimentale*, 1881. (*Revista Sper. di Fren. e di Med. Leg.*, Fascic. iii, 1881, p. 362; *Arch. f. exp. Path. u. Pharm.*, Bd. 15, Heft 384.) Albertoni.

The author concludes, from experiments upon dogs, by trephining and exciting the cortex with the faradic current, before and after the administration of the drugs to be tested:

That potassium bromide will decidedly diminish the electric excitability of the cerebrum, and removes entirely the possibility of exciting epileptic attacks.

That, neither in single doses, nor by continued administration is it possible with atropine to prevent the epileptic attacks produced by exciting the cortex with electricity. In fact, single doses increase the excitability of the cortex to a considerable degree.

That cinchona bark and its active principles act injuriously with epileptics, and is contra-indicated. The latter conclusion was reached after the administration of 0.5 to 1.0 gramme doses daily upon eleven cases of chronic epilepsy, with the effect of increasing the number of attacks during the use of the drug.

R. W. AMIDON, M.D.

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MYELITIS FOLLOWING ACUTE ARSENICAL POISONING (BY PARIS OR SCHWEINFURTH GREEN.)*

By E. C. SEGUIN, M.D.,

CORRESPONDING MEMBER OF THE VEREINS FUR INNERE MEDICIN OF BERLIN, ETC.

THE physician who, meeting with a case of arsenical paralysis, would seek for information on the subject in the accessible and contemporary treatises upon disease of the nervous system, would be grievously disappointed. Such writers as Grasset, Ross, Wilks, Bauduy, Hamilton, do not mention the affection at all; the illustrious Romberg, and Erb merely give it a passing reference. Prof. Hammond (1881), in the last edition of his treatise, says nothing of paralysis following acute arsenical poisoning, and refers to paralysis and anæsthesia as results of slow poisoning. Apparently, he has seen no cases of arsenical paralysis. Rosenthal (1875) devotes only a short paragraph to arsenical nervous symptoms; refers to paralysis in the course of chronic poisoning. In a case which he saw there were paralysis, partial anæsthesia, and diminished elec-

* Read at the meeting of the Medical Section of the New York Academy of Medicine, October 17, 1882. (The original cases alone had already been read before the American Neurological Association, at its Eighth Annual Meeting, June 21, 1882.)

tro-muscular contractility. Leyden (1875), in his classical work on diseases of the spinal cord,[1] gives a *résumé* chiefly after Leroy D' Étiolles. He does not appear to have had cases of his own, and considers the disease a neuritis.

A little more extended research in older books, and in periodicals brings to light numerous observations and some valuable experimental studies upon the subject.

Indeed, arsenical paralysis seems to have been very early noticed, and to have attracted considerable attention until within the last twenty years. As early as the thirteenth century, P. Abano[2] refers to paralysis and contractures after arsenical poisoning. These symptoms are also mentioned by Forestus[3] (about 1560–70); and Zacchias[4] (1630) mentions paralysis, spasms, contractures, and anæsthesia as following poisoning. From that time arsenical paralysis is frequently mentioned by medical writers. Hahnemann,[5] in one of his earlier works (1786), relates several cases.

In 1812, Sir Benjamin Brodie, in an interesting communication to the London Royal Society, entitled "Observations and experiments on the actions of poisons on the animal system," devotes a section to the effects of arsenic, and relates how in several of his animals (rabbits and dogs) the hinder extremities became paralyzed. He considered the brain to be affected in these cases.

The following interesting case was published, in 1809, by Dr. G. Thilenius.[6]

A young lady having observed a hard lump in her left breast, neglected it until the ensuing spring, when it became very painful. A miserably ignorant barber who was consulted, applied a prepa-

[1] Klinik der Rückenmarks-Krankheiten, Bd. ii, p. 296.

[2] De venenis eorumque remediis, cited by Imbert-Gourbeyre, *l. c.*

[3] Cited by Imbert-Gourbeyre, *l. c.*

[4] Quaestiones medico-legales, Romæ, 1621–50, cited by Imbert-Gourbeyre.

[5] Ueber das Arsenik-Vergiftung, Leipzig, 1786, cited by Imbert-Gourbeyre.

[6] Medic.-chirurgische Bemerkungen, Frankfurt, 1809, in Leroy D' Étiolles, p. 63.

ration of arsenic. This was followed by ulceration and increased pain, and, according to the father's statement, three days later her arms and legs became insensible, and so much paralyzed that she could neither walk nor feed herself. The limbs were also cold. In the course of two months the arms recovered, and the legs improved steadily. Electricity was used; the tumor removed by the knife. At various times there occurred prickling and jerking in the legs. Anæsthesia and atrophy not mentioned.

In about a year after the attack the patient was able to walk without a cane; her limbs were warm, and the wound in the breast well healed.

In 1793 (three years after the attack) patient was perfectly well, married, and had a child.—(Obs. No. 80 of Leroy D' Étiolles.)

Orfila,[1] the great French chemist and toxicologist, in experiments upon dogs, made prior to 1840, noticed paralysis of the hinder extremities in dogs which survived arsenical poisoning (also in fatal experiments).

Prof. Christison,[2] of Edinburgh, in his classical work on poisons, treats of symptoms of arsenical poisoning in a masterly way. He makes three categories of cases of arsenical poisoning. In a first class of cases, in which, with symptoms of violent inflammation of the gastro-intestinal tract, death results in from twenty-four hours to three days; nervous symptoms not present. In a second class of cases, with little evidence of inflammation, extreme prostration and syncope are the chief symptoms, death occurring within six hours; no paralysis observed. Convulsions may close the scene. In the third category, that of subacute cases, there is moderate gastro-intestinal inflammation; symptoms are same as in other classes, but milder. In the later stage these cases are apt to show marked nervous symptoms: coma, epileptoid attacks, mania, tetanus, hysterical seizures, partial paralysis resembling lead paralysis in affecting the extremities; contractures may exist. In speaking of symptoms con-

[1] Traité de Toxicologie, Paris, 1852.

[2] A Treatise on Poisons, Phila., 1845, p. 244, *et seq.*

nected with irritation of the *primæ viæ*, Christison makes this shrewd remark, which applies critically to many of the older cases of arsenical paralysis: "Cramps in the legs and arms (occur in arsenical poisoning), a possible concomitant of every kind of diarrhœa."

The father of modern clinical medicine, Graves[1] (1842), after speaking of paraplegia from inflammation of the bowels, refers to Orfila's experiments in which all (?) the dogs which survived arsenical poisoning were paralyzed in their hinder limbs, and states that in his opinion in cases of arsenical as well as of lead poisoning, the poison acts directly on the central nervous system (spinal cord), and that the palsy is not due to the intestinal irritation.

Huss,[2] of Stockholm, in his work on alcoholism (1852), mentions several cases of arsenical poisoning with severe nervous symptoms. He gives one which is instructive as regards its etiology.

For the cure of intermittent fever, a large teaspoonful of Fowler's solution was given at one dose (equivalent to $\frac{7}{12}$ grain, or .035 gramme, of arsenious acid). After the usual symptoms of acute intoxication, there gradually ensued an almost complete paralysis of the extremities, with anæsthesia of the hands and feet, severe pains and cramps in the lumbar region and lower extremities.

In 1857 we meet with quite an important contribution to this subject. Leroy D' Étiolles,[3] in his work on paralysis of the lower limbs, devotes a chapter to arsenical paralysis, and relates the following three cases (in addition to the case of Thilenius already quoted).

Obs. 79.—Poisoning from external application of arsenious acid; general paralysis; recovery of upper extremities first.

[1] Clinical Lectures, Gerhard's edition, Phila., 1842, p. 94.

[2] Cited by Imbert-Gourbeyre.

[3] Des paralysies des membres inférieurs, deuxième partie, p. 28, *et seq.*, Paris, 1857.

Male patient . . . age. Dr. Trochon, of the hospital at Pornic, amputated his leg for cancer. In the cicatrix cancerous buds appeared. Arsenical paste, made one hundred times too strong by druggist's error, was applied, and very soon symptoms of acute intoxication appeared; life saved with difficulty. At the end of ten days patient convalescent, but with well-marked paraplegia and paresis of the arms.

Seen five months later by Leroy: Arms weak and not adroit; tendency to drop-wrist. Marked paralysis in remaining lower extremity, with emaciation, but not positive atrophy of muscles; contracture in semi-flexion; foot hyperextended (pes equinus); toes flexed. Sensibility to touch and pain much impaired on limbs. Electrical tests not used.

Gradual improvement of paralysis in spite of progressive cancerous infection.

This case bears a certain resemblance to my own cases. Although it is stated that the muscles were not atrophied as in lead paralysis, yet from the contractures and the degree of emaciation present, it seems to me highly probable that there was atrophy, widely distributed, as in mild cases of poliomyelitis. It is a pity that electricity was not used, although at the time when this observation was recorded, 1855, only the bare fact of diminution or loss of faradic contractility could have been determined.

The contracture in flexion with pes equinus is strikingly like what existed in my own Case 3.

Obs. 81.—Poisoning by the ingestion of arsenious acid: paresis of arms; paraplegia lasting fourteen months.

A female patient aged thirty-seven years, was admitted to the service of Dr. Bouvier, Hospital Beaujon, January 22, 1850, suffering from severe toxic symptoms produced by eating cakes charged with arsenious acid.

As soon as the urgent symptoms had subsided (time not noted), it was discovered that the patient was paralyzed in her lower limbs, and that they were the seat of painful jerking (reflex movements?) Her arms were weak. On 18th February, on leaving the hospital, she was unable to stand, and said that she could not feel the floor under her feet. In September of the same year she

was readmitted with pleurisy; and it was noted that while her arms had recovered, her legs were just as weak, and as insensible to touch. At no time was there interference with the functions of the rectum or bladder. Later some improvement took place, but the patient finally died of exhaustion caused by a profuse diarrhœa. No autopsy.

Obs. 82.—Case of Aran in *Union Médicale*, July 6, 1852. On June 9, M. Aran presented to the Société Médicale des Hôpitaux, one of two young men who had, two months previously, been poisoned by arseniate of sodium. The victims had swallowed this salt, supposing it to be tartrate of sodium. One died in twenty-four hours; and a lady to whom they had given some of the poison, is not yet perfectly well.

In the surviving male patient interesting nervous symptoms have appeared. In about fifteen days after the ingestion of the drug, symptoms of paralysis appeared in the lower limbs, more marked in the right leg. The upper extremities have also been weak. The paralysis has remained very much in *statu quo*. The paralyzed parts are somewhat anæsthetic. The lower limbs are the seat of tingling below the knees; and the upper extremities in the finger-tips. At one time the paretic extremities showed diminished calorification. General health good.

M. Duchenne examined the young man and found slight diminution of electrical irritability, and the skin showed diminished sensibility to the current.

Later, on 8th September, M. Aran reported to the Society that the patient had recovered, apparently in consequence of forty-six baths and forty-six douches at Bagnères de Luchon (hot sulphur springs). Improvement showed itself distinctly after the thirty-sixth bath.

Leroy makes these general statements: In lead paralysis the forearms are usually affected (sometimes only one); arsenical paralysis tends to involve all the limbs; the lower limbs are more affected; often there is well marked paraplegia; the action of the bladder remains normal. Sensibility is usually much impaired (nearly as much as motility). He refers to wasting of muscles, but states that it contrasts with the positive atrophy of lead paralysis. Electro-muscular contractility persists, but is diminished. Treatment is

efficacious, and the duration of the paralysis is usually less than one year.

Shortly after the appearance of Leroy D'Étiolles' work, a learned French physician, Imbert-Gourbeyre,[1] professor at the medical school of Clermont-Ferrand, published a series of articles in the *Gazette Médicale* (1858), in which he gave an elaborate account of our previous knowledge of arsenical paralysis. I am indebted to this essay for bibliographical data. The articles contain nothing original. In 1863, Smoler[2] published a case of paralysis after acute arsenical paralysis, which is referred to by Rosenthal (1875).

Jaccoud[3] (1864) devotes several paragraphs to arsenical paralysis (paraplegia), and expresses his belief that the palsy is caused by the direct action of the metal or its compounds upon the tissue of the spinal cord. He does not, however, appear to have seen a case.

In 1881, Seeligmüller[4] placed on record four cases; two after acute poisoning, and two after chronic intoxication. In his acute cases he noted paralysis, numbness, and anæsthesia (in toes), contractures, wasting of the extensors especially. The paretic and wasted muscles showed fibrillary contractions; the nails were gradually lost. Electro-muscular contractility was diminished or even lost.

He gives the following points for differential diagnosis from lead palsy: the acute origin of the paralysis, disorder of sensation as well as of motion, rapid muscular wasting, absence of blue line on the gums, and of cachexia.

In the same year appeared the essay of Popow,[5] of St.

[1] Études sur la paralysie arsénicale. *Gazette Médicale*, 1858, pp. 5, 19, 59, 94.

[2] Lähmung nach Arsenikvergiftung. *Œsterreich Zeitschr. für pract. Heilkunde*, 1863.

[3] Les paraplégies et l'ataxie du mouvement, Paris, 1864, p. 323, *et seq.*

[4] Ueber Arseniklähmung. *Deutsche med. Wochenschrift*, 1881, No. 14, *et seq.*

[5] Ueber die Veränderungen im Rückenmarke nach Vergiftung mit Arsen und Blei. *St. Petersburger med. Wochenschrift*, 1881, No. 36.

Petersburg, upon the pathological anatomy of arsenical paralysis as produced artificially in animals. Popow carried on his experiments under the guidance of Prof. Mierzejewski; giving arsenious acid to dogs in doses ranging from $\frac{1}{20}$ to 2 grains at a dose, producing acute and chronic intoxication.

In cases where death ensued in four to five hours after ingestion of the poison, the spinal cord showed both macroscopic and microscopic lesions. The gray matter appeared swollen, intensely red, more especially in its two enlargements. Microscopic examination revealed enlargement and congestion of the small blood-vessels, and accumulations of lymph corpuscles in the lymph-spaces.

There were also abundant extravasations of blood-corpuscles and plasma around the vessels, especially in the central portions of the gray matter, The walls of the blood-vessels were in a state of fatty degeneration.

The ganglion cells exhibited three degrees of change. A first degree of alteration showed cells well stained by carmine, and containing vacuoles of variable sizes, some of which could be traced into the cell-processes. A second form of cells had no processes, were feebly colored by carmine and exhibited a punctate granular infiltration. Lastly, here and there were cells in a third state of change, consisting only of a nucleus surrounded by dark brick-red pigment. The white substance only showed pigment masses here and there, more especially about the blood-vessels.

In cases of acute intoxication in which a fatal result ensued in the course of three, five, or six days, the spinal cord ,presented very much the same appearances. The distinction between the white and gray substances was less defined. The vascular injection and the exudation of plasma were less marked, but on the other hand the changes in the ganglion cells were more distinct, the

vacuoles larger, and the granular state more pronounced. There were more cells, or properly remains of cells, of the third category above described. The white substance was normal, except some enlargement of blood-vessels, and considerable accumulations of pigment.

In the chronic cases, those in which death occurred in the course of three months (one animal had paresis of the hind legs not long before death), the spinal cord appeared less firm, and the microscopic appearances differed noticeably from those observed in the acute cases.

The walls of the blood-vessels were much thickened, and showed a distinct fibrillary structure, with diminution of the calibre of the vessels, and exudation of blood in the perivascular spaces. In the meshes of the perivascular spaces were extensive hyaloid masses. The number of ganglion cells was much diminished; those remaining showed large vacuoles, and belonged to the first group described. In these cases the white substance was much more affected, especially in the postero-lateral columns. The cylinder-axes exhibited points of swelling here and there; they were granular; in many preparations they were merely represented by groups of fine granulations. The septa of the white substance likewise exhibited a granular change; and the periphery of the white and gray substances was thickly strewn with small masses of black pigment.

The spinal nerves, carefully examined at their origin, and at various points of their course and distribution, presented no pathological alterations.

From these *post-mortem* observations Dr. Popow concludes that:

1. Arsenic, even in a few hours after its ingestion, may cause distinct lesions of the spinal cord, of the type known as acute central myelitis, or acute poliomyelitis.

2. In the more chronic cases the pathological changes are found in the white as well as in the gray substance, constituting a diffused myelitis.

3. The peripheral nerves remain normal, even three months after intoxication.

4. The paralysis of arsenical poisoning is of central origin.

It might be added that in three guinea-pigs poisoned by lead, and dying on the sixth, seventh, and tenth days, similar lesions were found, *i. e.*, evidences of more or less diffused myelitis, and no lesions of peripheral nerves.

This essay, issued under the supervision of so distinguished a neurologist and microscopist as Prof. Mierzejewski, is in many respects the most important contribution to the subject. Connecting its conclusions with inductions which can be legitimately drawn from the cases of Leroy, Seeligmüller, Smoler, and Rosenthal, and my own, we are able, I think, to form a definite conception of the true nature and relations of arsenical paralysis.

In last year's *Philadelphia Medical Times* Prof. J. M. Da Costa[1] relates a case of subacute myelitis which occurred in a man who had been taking "small pinches" of arsenic (arsenious acid?) for three months. The general features of this case and the paralytic phenomena are so unlike what has been observed in the other cases referred to in this paper, that I entertain a doubt as to its having been an "arsenical paralysis." The rapid improvement under very large doses of iodide of potassium, and the history of a venereal sore one year before admission, would seem to furnish a better clue to the nature of the myelitis.

The cases which have fallen under my own observation are three in number. The subjects were all would-be

[1] Clinical Lecture on Arsenical Paralysis, *Phila. Med Times*, March, 1881.

suicides with Paris green,[1] and they presented remarkably similar symptoms. In many respects the cases resembled those already related.

CASE 1.—Samuel L., hostler, seen March 21, 1879, in consultation with Dr. M. Burke.

At the end of January, while in good health, swallowed a large quantity of pulverized Paris green. Had much difficulty in swallowing it, and very soon was led to a drug store, where emetics were given ; and later he was taken to Bellevue Hospital, where the stomach-pump was thoroughly used. Vomiting, gastric pain and irritation, extreme prostration, lasted four or five days.

Soon after he began to go about his room, he noticed numbness in his fingers and hands, followed in two or three days by similar sensations in his feet. Paresis appeared about the same time in all the extremities, and had steadily progressed to extreme paralysis below the knees, with wasting of the muscles there. Has had much burning, gnawing pain in soles and insteps ; a little in the hands. Ten days ago became unable to stand. No cerebral symptoms, or palsy of bladder, or jerking of legs.

Examination.—Hands and forearms only weak ; no positive paralysis or atrophy ; no anæsthesia.

Legs completely paralyzed below the knees ; cannot move feet or toes. Thigh muscles are weak. Marked atrophy of calves and of anterior tibial muscles. No anæsthesia of soles, unless it be a slight tactile dulness.

Test with faradic current ; no reaction in right leg, nerves, or muscles. In left leg no reaction in anterior tibial muscles or nerves, but a feeble contraction can be produced in the calf.

Patient is at times hysterical.

At fifteen had a chancre, not followed by secondary symptoms.

I have no further notes of the case ; but some sort of galvanic treatment was carried out. A few months afterward I learned that the patient was well, and some time in the winter of 1880–81 he came to my office and exhibited a vigorous pair of legs. He

[1] Paris or Schweinfurth green is a compound substance which is best designated as aceto-arsenite of copper.

In looking up this point I was astonished to find that such a popular and so constantly used a term as Paris green, was not to be found in the indexes of any of our dispensatories, treatises on materia medica, and, stranger still, not in works on toxicology.

Prof. Chas. F. Chandler, in reply to a note, very kindly gave me all necessary chemical information on the subject.

had completely recovered and was at work again as a hostler at Jerome Park.

CASE 2.—Mary N., aged sixteen years, was admitted to the New York Hospital on December 11, 1878, in the service of Dr. Woolsey Johnson. To Dr. R. W. Amidon, then house physician of the hospital, I am indebted for notes of the case and for the opportunity of studying the case in its later stages. Dr. Johnson has kindly given me permission to use the case.

The patient was a strong, rosy-cheeked girl of German parentage. She had never suffered from rheumatism or malaria. Thirteen days before admission she swallowed five cents' worth of Paris green. In five minutes she vomited, and after an emetic had been given she vomited again, rejecting all (?) that had been swallowed. Probably had some gastro-enteritis, as she vomited and was purged for two or three days.

It is reported (by patient and her friends) that on the first night she had fever. Second day, no fever or pain. Third day, at 3 P.M., had fever for one hour and a half; burning pain in toes; hands felt stiff. On the fifth day, at 9 A.M., fever returned, with slight headache, but no chill. The burning pain extended up to the knees. One week after taking the poison her legs became stiff, and she lost power in her arms; had "cramps" in her hands. These symptoms continued, but the headache ceased; tried to walk, but found that she was partially paralyzed in her legs; needed help to walk, and suffered pain in her knees (in the attempt). Three days later (tenth day) loss of power increased; had cramps in hands; had tightening sensations in hands and feet, and they began to peel and showed a mottled red and white appearance. Bowels and bladder normal.

Has not been unwell for twelve weeks; previously regular.

Condition on admission, thirteen days after taking poison: Patient complains only of headache, and of inability to walk, because "cords of knees are stiff." Appetite, bowels, bladder, and eyes normal.

Hands are cold and moist. The extensor muscles of both hands are weak, those of right hand weaker. Some twitching of long flexors and of interossei.

The skin is lax. The small muscles of the region of the right little finger are completely paralyzed and wasted. The right thenar eminence is smaller than it should be. The hypothenar group on the left side is in the same condition. Grasp very weak. On dynamometer each hand shows about 20° (on outer circle).

There is hyperidrosis. No anæsthesia is present, but she complains of a burning pain when pricked with a pin.

The legs are semi-flexed, showing mostly palsy of the extensors of both feet. The left foot is more inverted than the right. Legs and thighs smaller and colder than normal. Toes are red ; the circulation is sluggish. The muscles of the legs are not flabby, but the anterior tibial regions are flattened. Hamstrings rigid on both sides.

Circumference of right thigh, 30.5 ; right leg, 23.5.
" " left " 30.5 ; left " 24.5.

There is complete paralysis of the anterior tibial muscles. The peroneal and posterior tibial groups are somewhat atrophied and paretic. Great toes are motionless. Flexion of thighs is moderately good ; extension complete. No increased reflex actions. Is rather hyperæsthetic (in legs).

Dec. 14th. A tendency to retention of urine is noted (but is not again referred to). Examination with the faradic current showed good contractions in left thenar and hypothenar eminences, but none in the right. In the right leg there is slight reaction in the anterior tibial muscles ; none in the peronei.

Dec. 26th. It is noted that there is no faradic reaction in the anterior tibials and peronei. Sensibility is good. Hamstrings less rigid. Patient has plaster apparatus for legs, and the application of the faradic current.

Jan. 11, 1879. Walks with some support, and has done so for a week. Left leg nearly straight.

Jan. 15th. Circumference of right thigh, 34.0 ; right leg, 24.
" left " 34.5 ; left " 26.

Toes always cold and moist ; tender to slight pressure. Less contraction of hamstrings. No reflex actions in legs. Interossei of hands do not improve, and remain as flaccid, atrophied, and weak as on admission (faradism not used on upper extremities).

Jan. 24th. Galvanism tried for first time ; ten cells cause contraction of tibialis and peronei ; eight cells (Stohrer battery) cause contraction of quadriceps, sartorius, and muscles of calf. Some atrophy of extensors of the right forearm and hand ; good reactions (current not stated) in ulnar distribution, but not in wasted extensors. On the left side good reaction in forearm and hand, except abductor pollicis, to both galvanism and faradism.

Jan. 27th. Menses appeared with great pain.

Feb. 4th. Electrical applications omitted because of *malaise*. Patient doing nicely; muscles react with small amounts of electricity.

Feb. 9th. Some trophic changes in feet; nail of big toe coming off. The skin is rough, and there is vaso-motor disturbance. Reactions improving (in legs).

March 10th. Walks quite well. Some remaining weakness of anterior tibial muscles.

Discharged improved.

This patient at once began to be treated as an out-patient at the Manhattan Hospital, and after several weeks of treatment by galvanism mostly was completely cured.

The notes taken at this time have been misplaced, but our recollection is clear that her upper extremities were about well, though perspiring, and that the lower limbs exhibited paresis, a sluggish circulation, and a peculiar sensitiveness and tenderness. She was able to walk alone, but lame. Her general health was quite good.

It seems certain that this was a case of subacute polio-myelitis chiefly. The inflammatory action must have extended to deeper parts of the gray matter, as shown by continued hyperalgesia and by the contractures.

CASE 3.—Ellen R., aged twenty-six years, admitted to Manhattan Hospital May 10, 1881. In September, 1880, took a large dose of Paris green. Was exceedingly ill; vomiting and diarrhœa. In a week nearly complete paralysis developed. Legs completely paralyzed; forearms the same.

A gradual recovery began in the course of a few weeks (no treatment).

Three weeks before admission to the hospital, Dr. J. B. Emerson, who visited her in the country, found her fingers and the soles of her feet nearly insensible to pricking. I examined the patient May 9, 1881, and the following notes were taken. Can walk with a little aid, impeded by moderate contracture of right knee, and tenderness of feet. No voluntary power (motion) below ankles. Complete anæsthesia to contact on soles of feet and on finger-tips. Feels cold and heat, however, and pricking quite well. The upper extremities simply present a slight paresis with moderate wasting of the hand muscles, some interossei quite

wasted, and some large fibrillary movements in the same. No cutaneous trophic changes. Thighs moderately wasted, with some contracture of right hamstrings. No patellar tendon reflex. Calves and anterior tibial muscles are much wasted; legs and feet bluish and cold; slight tactile anæsthesia of feet.

Patient is thin and in poor health; has been using an unknown quantity of morphia.

She was ordered a mixture containing diminishing amounts of morphia; and Dr. Adam, assistant physician of the hospital, applied galvanism and faradism very faithfully to her for weeks. He also gave her passive movements and massage. The improvement was steady, and in a few weeks patient left the hospital almost perfectly cured as regards paralysis, and in good general health. She was forty-eight days in the hospital. The day after admission Dr. Adam made a thorough testing of the affected muscles with the galvanic and faradic currents, which may be summed up by saying that most of the paralyzed parts exhibited the degeneration reactions, viz.: 1, diminished or wholly lost faradic reaction in muscles and nerves; 2, sluggish contractions to galvanism, with ancc=cacc in many muscles, and ancc > cacc in some. For example, in the muscles of the legs below knees a very strong faradic current caused no reaction. In the right gastrocnemius ancc > cacc. In other muscles cacc = ancc. In some interossei of hands ancc > cacc.

This patient is again under my care at the Manhattan Eye and Ear Hospital (October, 1882,), for the cure of the only remaining weakness, viz.: paralysis of both anterior tibial muscles causing pes valgus. This is the only muscle which does not respond to the will, but all the muscles of the legs show a most astonishing quantitative reduction in electrical reactions: no reaction in muscles or nerves to full strength of faradic secondary current, and few small reactions in nerves and muscles to fifty good Leclanché elements. Reactions obtained are of normal quality.

In this case, besides the contracture of the hamstrings, as in Case 2, we have distinct though slight anæsthesia to indicate a certain extension backward of the lesion, in the spinal gray matter.

To sum up, these three cases presented evidences of slight subacute, diffused myelitis, more distributed in the

anterior cornua. In Case 1 the symptoms were more purely those of poliomyelitis.

In all cases the symptoms of myelitis followed within a week after the ingestion of the poison.

If we compare the symptoms present in the various human cases related and quoted, and the pathological appearances found by Popow in his animals, it is, it seems to me, legitimate to reach the following conclusions:

1. Arsenical paralysis is the expression of a myelitis.

2. This myelitis approximates the type known as poliomyelitis in so far as the symptoms are chiefly motor; that the paralyzed muscles undergo some atrophy, and exhibit the degeneration reactions to electrical currents; that the bladder is never palsied; and that in animals the ganglion cells of the anterior horns are extensively diseased.

3. There is usually more than poliomyelitis, as shown by Popow's *post-mortem* findings, and by the presence in living human subjects of pains in the nerves and muscles of the affected limbs, and by the occurrence of actual anæsthesia.

4. Consequently it might be better to speak of arsenical paralysis as due to diffused central myelitis with special involvement of the anterior gray matter.

5. Whether this myelitis is strictly arsenical, *i. e.*, caused by the direct effect of the arsenic on the tissue of the spinal cord, or whether it is produced (as are many forms of myelitis) by the irritation of peripheral nerves (cutaneous, intestinal and gastric nerve-endings), is a question which cannot at present be definitely solved, but which presents an interesting field for future research and speculation.

EPILEPTOID VARIETIES OF HYSTERO-EPILEPSY.

By CHARLES K. MILLS, M.D.,

LECTURER ON MENTAL DISEASES AND ELECTRO-THERAPEUTICS IN THE UNIVERSITY OF PENNSYLVANIA, NEUROLOGIST TO THE PHILADELPHIA HOSPITAL, ETC.

IN the *American Journal of the Medical Sciences* for October, 1881, in a paper on *Hystero-Epilepsy*, after presenting the details of two cases, I gave a full description of this disease as known and studied in France, much of my material being drawn from the works of Charcot, Bourneville, and Richer. The term hystero-epilepsy should be restricted in its application, as there advised, to a disorder in which hysterical and epileptic symptoms are commingled in the same attack,—what is spoken of by the French as hystero-epilepsy with combined crises. It cannot too often be insisted upon that the disease is, in its essence, hysteria and not epilepsy. In the affection known as hystero-epilepsy with separate crisis, the same patient is the victim of two distinct diseases, hysteria and epilepsy, the symptoms of which appear independent of each other.

The curious, grotesque, or outrageous manifestations known as hysterical, have been discussed with more or less minuteness by authors from the time of Sydenham to the present; but usually, and more especially in all countries but France, these manifestations have been studied as isolated phenomena. Charcot and Richer, however, present

a comprehensive view of hysteria as a disease of a certain typical form, but often manifesting itself in an imperfect or irregular manner. This regular type is characterized particularly by a frequently or infrequently recurring "grave attack," which is divided into distinct periods, and these periods into phases. Richer divides the attack into four periods. The first is the epileptoid period, in which loss of consciousness, arrest of respiration, muscular tetanization in various positions, followed by clonic spasms, and, finally, muscular resolution, are the successive phenomena, usually lasting several minutes. The second period is that of contortions and great movements, in which extraordinary attitudes are assumed, the backward arched position of the body being the most common; and in which also rapid and grotesque movements are performed by the entire body or by a part of the body. The third period is known as that of emotional attitudes or statuesque positions, in which the patient is a prey to strange hallucinations, and may make use of expressions and assume attitudes illustrating various emotions, such as menace, appeal, amorousness, mockery, etc. The fourth period, that of delirium, is one in which the patient converses and recites, sometimes recounting her past history, sometimes reproaching, entreating, or working herself into a fury, sometimes making astounding statements and accusations.

This regular type of grave hysteria once understood, a place of advantage is gained from which to study the disease in its imperfect, irregular, and abortive forms. We have presented by Charcot and Richer a disease with an undoubted cerebral pathology. Whatever that pathology may be, such striking symptoms as loss of consciousness with spasm, hallucinations, and illusion, show, at least, a temporary disturbance of the integrity of the cerebrum; and, in addition, the more or less permanent symptoms of

paralysis, contracture, anæsthesia, etc., indicate cerebral involvement. Apparently, according to the extent of the cerebral cortex involved, will be the range of the hysterical phenomena. Hystero-epilepsy of imperfectly developed or irregular type is, therefore, a not uncommon affection. In this country the disease in its regular type is comparatively rare; but the first case described in the *American Journal of Medical Sciences* was one of this type, and a few others have been reported by American authors. Formerly I was inclined to regard hystero-epilepsy of any type as of somewhat rare occurrence in the United States; but in the light of a larger experience, I have come to believe that irregular forms are to be met with somewhat frequently.

Let me here give some idea of the way in which hystero-epilepsy may be modified, by quoting from my former paper. "According to Charcot the attack of hystero-epilepsy can be modified according to two principal methods: 1. By extension or predominance of one period at the expense of the others, which become lessened or even effaced, thus producing, *a*, the *epileptoid attack; b, the demoniacal attack; c, the attack of ecstasy; d, the attack of delirium.* 2. By the blending of elements foreign to the fundamental constitution of the attack, such, for instance, as *somnambulism, lethargy*, and *catalepsy*."

The epileptoid attack, so far as my experience has gone, is the most prevalent American variety of hystero-epilepsy; although I have seen illustrations of almost every form described by Charcot and Richer.

"When the varieties are the result of the predominance and modification of the first period, *epileptoid attacks* are produced. The last three periods are to a greater or less extent suppressed. Sometimes the epileptoid attack will be isolated like a paroxysm of true epilepsy. Sometimes

attacks will succeed each other in rapid succession, constituting the *epileptoid state* (*état de mal épileptoide*). Epileptoid varieties of the hystero-epileptic attack could, of course, be multiplied indefinitely. Richer contents himself with a study of four varieties: *a.* The *epileptoid status*, in which the tonic and clonic phases, and the phase of resolution and stertor occur, and these are repeated again and again for hours, days, and even weeks and months. Charcot speaks of a case in which this state actually persisted for two months. *b. Incomplete epileptoid fits*, which closely resemble the epileptic vertigo, which accompany certain rapid and localized muscular contractions. Herpin has well described these seizures under the name of epileptic commotions. A jerking or convulsive movement shakes the body like an electric shock; the trunk may be bent, the arms elevated, or the legs flexed, or a single limb or the face or head may be jerked. Sometimes the patients fall, more frequently they do not. Sometimes sight is dimmed; intelligence and consciousness sometimes are and sometimes are not affected. A cry, dyspnœa, nausea, precordial pain, and palpitations sometimes occur. To the above may be added such hysterical phenomena as ovaralgia, strangulation, palpitations, whistlings in the ears, beatings in the temples, swelling of the neck, tympanites, borborygmi, etc. The epileptoid commotion may repeat itself in a series of seizures. *c. Attacks of visceral spasm.* Visceral spasm may be so great, as shown by hiccough, lifting of the chest, contraction of the muscles of the neck, and terribly irregular respiration, that the patient will appear to be dying; but ovarian compression interrupts the attack, and a little chloroform causes it to cease entirely. The appearance of great gravity is far from being real. *d. Epileptoid attacks with general and permanent contracture.* A limb or limbs, or the face may be violently contracted, with or without loss of consciousness. Ovarian

pain, thoracic oppression, sensations of strangulation, palpitations, cyanosis of the face, etc., may be present. Sometimes the general contraction is accompanied by loss of consciousness and a lethargic sleep which may be prolonged for hours."

I have seen a number of cases of hystero-epilepsy of the epileptoid variety. These cases have presented a few or many of the symptoms of grave hysteria, such as anæsthesia, analgesia, hyperæsthesia, blindness, aphonia, paralysis, contracture, etc., and have also been the subjects of attacks of tonic and clonic spasm, with complete or partial loss of consciousness. The phenomena of the periods of contortions and great movements, of emotional attitudes, and of delirium, have been, however, altogether or almost entirely absent. These epileptoid attacks have varied somewhat in different cases. I will give in some detail the notes of three cases:

CASE I.—M., æt 27, a widow, was admitted to the Philadelphia Hospital, February 4, 1882. She was married thirteen years before, when only fourteen years of age. She remained in comparatively good health for four years after her marriage, during which time she had three children, all of whom died in early infancy. Nine years before admission to the hospital, and therefore four years after her marriage, while carriage-riding, she, for the first time, had a spasm. According to her story, the seizure was very severe; she lost consciousness, and passed from one spell into another for an hour or more. She had a second attack within two weeks; and since has had others at intervals of from one week to three or four months. Four years ago she passed into a condition of unconsciousness or lethargy, in which she remained for three days. On coming out of this state, she found that the left half of her body was paralyzed, and that she was speechless. In two weeks she recovered her speech, and the paralysis disappeared. On June 15, 1881, she gave birth to a male child. On the night of the 16th she became delirious, and on the 17th she again lost her speech and had a paralytic seizure, the paralysis now affecting both legs. She recovered her speech in a few days, but

the paralysis remained. Her babe lived, and with her was admitted to the hospital. He had had seven attacks of spasm at intervals of about a month.

The above history was obtained from the patient, who was intelligent. She also stated that her mother was for a time insane, and that she had been an inmate of an insane asylum for some months since her first epileptiform attack.

She was carefully examined on the day of her admission. She was bright, shrewd, and observant. She gave an account of her case in detail, and said she was a "puzzle to the doctors." Both legs were entirely helpless; the feet were contractured in abduction and extension, assuming the position of talipes equino-varus; the legs and thighs were strongly extended, the latter being drawn together firmly. The left upper extremity was distinctly weaker than the right; but all movements were retained. She had no grasping power in the left hand. She was completely anæsthetic and analgesic below the knees, and incompletely so over the entire left half of her body. Pain was elicited on pressure over the left ovary, and over the lower dorsal and lumbo-sacral region of the spine. Both patellar reflexes were exaggerated.

On March 19, 1882, I lectured on this patient at my "clinic" at the hospital, stating that I believed the case to be one of hystero-epilepsy, and that I only needed to see an attack of spasm to confirm the diagnosis. Up to this time she had not had a seizure since admission. She had, however, been complaining for several days of peculiar sensations in the head and of severe headache. She had also been more irritable than usual, and said that she felt as if something was going to happen to her. On the afternoon of the 19th Dr. Rohrer, the resident-physician in charge of the patient, was sent for, and found her in a semi-conscious state. She did not seem to know what was going on around her, but was not in a stupor. Her pulse was 114 to 120; respirations were 20 to 22, regular. The corneæ responded on being touched Some twitching movements of the eyeballs and eyelids were noticed; the thumb and forefinger of the left hand also moved, as if rubbing something between them.

In a few moments an epileptoid paroxysm ensued. She became unconscious and rigid. The lower extremities were strongly extended in the equino-varus position already described. The arms were extended at her sides, the wrist being partly flexed and rotated outward, the hands clenched. Her face, at first pale, became deeply congested. Her trunk became rigid in a position of

partial opisthotonos. Brief clonic spasms followed, then resolution, the whole seizure not lasting more than from two to three minutes. She lay for a minute or two unmindful of any thing or any body, and then sat up and looked around wildly. She dropped back again and began to mumble, as if she wished to speak, but could not. Paper and pencil were given to her, and she wrote that she was conscious, but could not speak. Her temperature, taken at this time, was 99.8° F.

Attacks similar to the one just described occurred at irregular intervals for two days. On their cessation she was speechless, and the permanent symptoms already detailed—the anæsthesia, paralysis, etc.—were deepened. During the attacks but little treatment was employed; hypodermic injections of morphia and potassium bromide by the mouth were, however, administered. After the attack the valerianate of iron by the mouth, faradization of the tongue, and galvanization of the legs below the knees, with weak currents, were ordered. Her speech returned in a week. For about a month she showed no other signs of improvement; then she began to mend slowly, gradually using her limbs more and more. On May 11, 1882, she was discharged, and walked out of the hospital with her child in her arms, apparently perfectly well. During the last month of her stay no treatment was used but mild galvanization every other day.

CASE 2.—Mrs. A., æt. 45, a lady, noted for her common-sense and firmness of character, was seen by me in consultation. For some months at her menstrual period she had been "out of sorts." At times she had had hallucinations of sight. On one occasion, for instance, she had seen a man with a pistol shooting at people in a church. For several weeks she had been troubled more or less with a feeling of numbness and heaviness in the left arm and leg, particularly in the latter; and also with diffused pain in the head, and a sensation of aching and dragging in the back of the neck. For three weeks, off and on, she had had diarrhœa, which had weakened her considerably.

She awoke one morning feeling badly and yawning every few minutes. She passed into a condition of unconsciousness with attacks of spasm. I did not see her on this, the first day of her severe illness, but obtained from the physician in attendance some particulars as to the character of her seizures. Evidently the condition was similar to that presented by Case 1, that described by Richer as the *epileptoid status*, in which tonic and clonic spasm and resolution are repeated again and again. Attack after

attack occurred for nine or ten hours, sometimes one immediately following another, sometimes an interval of several minutes or of half an hour or more intervening. Respiration was partially arrested. Tonic spasm predominated; the limbs became rigid in various positions; sometimes the neck and trunk were strongly bent backward, producing partial opisthotonos. While the body and limbs remained tetanized they were thrown into various positions (clonic phase of an epileptoid attack). Although she answered questions addressed to her by her physician between the spells, she did not recognize him until evening, after the spasms had ceased, and then was not aware that he had been in attendance during the day, although he had been with her almost constantly. Leeching and dry cupping to the back of the neck were employed; and potassium bromide and tincture of valerianate of ammonia were given.

Early on the morning of the next day she had another attack of unconsciousness and spasm, in which I had the opportunity of seeing her. The spasm amounted only to a slight general muscular tetanization. The whole attack lasted probably from half a minute to a minute. The following day, at about the same hour, another paroxysm occurred, having a distinct but brief tonic, followed by a clonic, phase, in which both the head and body were moved. The next day, also at nearly the same hour, she had an attack of unconsciousness, or perverted consciousness, without spasm. She had a similar seizure at 4 P.M. For two days succeeding she had no attacks; then came a spell of unconsiousness. After this she had one or two slight attacks, at intervals of a few days, for about two weeks.

Between the attacks the condition of the patient was carefully investigated. On lifting her head suddenly she had strange sensations of sinking, and sometimes would partially lose consciousness. She complained greatly of pain in the head and along the spine. Her mental condition, so far as ability to talk, reason, etc., was concerned, was good, but any exertion in this direction easily fatigued her and rendered her restless. She had at times hallucinations of animals, which she thought she saw passing before her from left to right. The left upper and lower extremities showed marked loss of power. The paralysis of the left leg was quite positive, and a slight tendency to contracture at the knee was exhibited. She was for two weeks entirely unable to stand. The patellar reflexes were well marked. Left unilateral sweating was several times observed.

A zone of tenderness was discovered in the occipital region and nape of the neck; and there was also left ovarian hyperæsthesia. Left hemianæsthesia was present; head, trunk, and limbs being affected. She complained of dimness of vision in the left eye; and examination by the attending physician and myself showed both amblyopia and achromatopsia; she was unable to read print of any size, or to distinguish any colors with the left eye, although she could tell that objects were being moved before the eye. A distinguished ophthalmologist was called in consultation. An ophthalmoscopic examination showed a normal fundus. Each eye was tested for near vision. It was found that she could read quite well with the right eye, and not at all with the left. While reading at about sixteen inches, a convex glass of three inches focus was placed in front of the right eye, but she still continued to read fluently. A few minutes later, however, on re-testing, she could not read or distinguish colors with the left eye.

Sometimes toward evening her feet would become slightly œdematous. Examination of the urine showed neither albumen nor sugar. The heart-sounds were normal.

Owing to the apparent periodicity of the attacks, quinine in large doses was administered, and seemed to act beneficially. In addition, valerianate of zinc, and iron, strychnia, and other nerve-tonics were used in her subsequent treatment. Applications of faradic electricity, both with the metallic brush and the moist sponges, were made every other day. She was persistently and strongly encouraged as to the certainty of her recovery. Her paralysis, anæsthesia, etc., gradually disappeared, and in little more than two months she was able to leave home and go to the country. She has since remained well, but is more easily fatigued than formerly, and does not feel as strong in the left side of her body as she did when in perfect health. At her menstrual period she becomes very nervous.

CASE 3.—This patient was for a long time under the professional care of Dr. George McClellan, of Philadelphia, who has kindly furnished me with some notes. I shall simply give an outline sketch of the case, describing particularly her epileptoid attack, as Dr. McClellan will probably publish the case in greater detail at some future time. For several weeks, during the absence of Dr. McClellan from the city, she was attended by Dr. M. O'Hara, and with him, I saw her frequently in consultation.

Miss M., æt. twenty-three, was a well-educated young lady, fond of reading and æsthetic pursuits. In the autumn of

1880 she had nursed her mother faithfully through a serious illness. She became anæmic and nervous. Choreic twitchings and occasional slight spasms were the first symptoms that alarmed her family. The spasms came on apparently from any over-exertion. Gradually they became a little more severe in character. Under rest treatment, with gentle massage, tonics, and steady feeding, in six weeks she greatly improved. A few weeks later, however, she again relapsed, and became worse than she had ever been. The spasms returned with greater force and frequency. She became unable to walk, or could only walk a few steps with the greatest difficulty, although she could stand still quite well. On attempting to step either forward or backward, her head, shoulders, hips, and trunk would jerk spasmodically, and she would appear to give way at the knees. No true paralysis or ataxia seemed to be present, but locomotion was impossible, apparently because of irregular clonic spasms affecting various parts of her body.

Eventually she became extremely hyperæsthetic in various regions (hysterogenic zones), along the spine, beneath the breasts, in the ovarian area, etc. The slightest pressure, or any applications of heat or cold, electricity, etc., would generally bring on an attack of spasm.

I had several opportunities of witnessing the attacks. While trying to apply galvanism on one occasion, she suddenly complained of nausea, and her expression changed, becoming somewhat fixed. Her face became flushed, her limbs and body rigid. The head and body were thrown backward to a moderate extent. Next, the shoulders were drawn upward, the head appearing to be sunk between them ; the arms were found to be rigidly extended at her sides, the wrists partly flexed, and the fingers clenched ; the legs also were spasmodically extended, the thighs drawn together, and the feet in the equino-varus, or "hysterical club-foot" position. Phenomena like those described above as visceral spasm now were observed. The chest, and even the abdomen, were lifted up and down rapidly, and the respiration became quick, irregular, and apparently very difficult. Consciousness seemed to be impaired, but not absolutely lost. The symptoms just described took about one minute for their exhibition. Muscular relaxation now occurred, and an interval of calm, lasting about two minutes, followed, during which the patient spoke, answering one or two questions addressed to her. After the brief period of repose, however, another phase of the attack

came on. In this, the heaving movements of the body, and what appeared to be intense respiratory spasms, were the chief features. This portion of the attack endured scarcely a minute; the patient came to quickly, and was able to converse. In general, her attacks were of a similar character.

I will not go into wearisome details with reference to the drugs and methods of treatment employed. The drugs used included bromides, iodides, strychnia, chloride of sodium and gold, zinc salts, iron, etc., etc.; her condition vacillating, sometimes better, sometimes worse. She was finally placed in bed by Dr. McClellan, and an extension apparatus was employed, under which treatment, in a little more than one year from the time she was first attacked with spasm, she recovered.

A few words in conclusion with reference to the diagnosis of hystero-epileptic attacks from paroxysms of epilepsy may be of value to the general practitioner, if not to the neurologist. As the prognosis in hystero-epilepsy is much less grave than in epilepsy, the importance of a recognition of the true character of the seizures is too evident to need discussion. In the first place, let me repeat the diagnostic signs between hystero-epilepsy and true epilepsy, as summarized by Richer:

"(*a*) Arrest of the attacks by ovarian compression, by the application of inverted electric currents, and by irritation of the hysterogenic zones, can be brought about in hystero-epilepsy and not in epilepsy.

"(*b*) The course of the temperature in the epileptic state and in the hystero-epileptic state differs. This point of capital importance has been indicated by Charcot and Bourneville. An elevated temperature of 40° C. (104° F.) or more, belongs to the epileptic state; while in hystero-epilepsy the temperature remains nearly normal, and only under exceptional circumstances passes above 38° C (100⅖° F.).

"(*c*) The mode of action of potassium bromide, a drug frequently used in both affections, favors the opinion that the

two diseases are distinct. Potassium bromide, so salutary in epilepsy, is without efficacy in hystero-epilepsy.

"The service of Charcot at Salpêtrière contains a number of types of epileptic insanity truly startling. These form a strong contrast to the 'veterans' of hystero-epilepsy."

It is important that the hysterical or hystero-epileptic contortion should not be confounded with the opisthotonos of tetanus. This might be thought to be a highly improbable occurrence, and perhaps it is, but it has happened to me to see the mistake made quite recently in a case in which I was called in consultation. The patient had had a series of hystero-epileptic seizures, in which muscular tetanization was a prominent feature. The chief points of distinction, as given in my former paper, are as follows:

"In the opisthotonos of tetanus, the contraction of the face, and the peculiar grin, are distinguishing points. In the hysterical arched position, while the jaws may be strongly forced together, the features are most often without expression. The contracture of the face and the distortion of the features will be met with more often in the other varieties of contortion. The curvature of the trunk differs but little in the two cases, but the abdominal depression, observed in the sketch of Bell, is far removed from the tympanites present in the majority of the hystero-epileptics. In the tetanic cases the patients rest only on the heels, while in the hysterical cases the knees are slightly flexed, and the patients are usually supported on the bed by the soles of the feet."

These distinguishing marks, it will be seen, have more particular reference to those cases of hystero-epilepsy in which the period of contortions and great movements is not suppressed; but even in epileptoid varieties, such as have been described in this article, the absence of the sardonic grin and the position of the feet are noteworthy points.

Ross ("Diseases of the Nervous System," vol. ii, p. 895) speaks as follows, with reference to this question of differential diagnosis:

"Hysterical convulsions may be distinguished from epilepsy by negative characters. The loss of consciousness in the former is not complete, nor is it sudden in its onset; there is no asphyxia; the tongue is not bitten; the attacks last longer than in epilepsy; the patient does not, on the cessation of the attack, fall into a profound stupor, but only appears exhausted, and there is much sobbing and crying."

These are all strong points, and can be accepted without comment except the first, namely, the incomplete loss of consciousness. I find that the fact of consciousness or unconsciousness is often the stumbling-block to the physician in trying to arrive at a diagnosis. In not a few of our text-books and colleges complete loss of consciousness is laid down as the strongest evidence of the existence of true epilepsy. So far is this from being true, that, on the one hand, as Hughlings Jackson has pointed out, in some cases which can be best classed with epilepsies, consciousness is not lost; and, on the other, in hystero-epilepsy, particularly in the epileptoid varieties, or in the epileptoid period of the typical attack, loss of consciousness is often complete. According to Richer, loss of consciousness is complete during the entire epileptoid period in a case of the regular type.

The question of consciousness or unconsciousness is not always as easy of decision as at first blush one might suppose. Varying degrees of consciousness may be present. Sensibility may be for a time abolished, and yet a patient may preserve some liberty of movement, and subsequently may remember what has occurred during the time, as is said to be the case in the period of emotional attitudes of

hystero-epilepsy. During some stages of hystero-epileptic attacks, the patients may be accessible to some external influences and not to others. In the epileptoid varieties of hystero-epilepsy, as illustrated in the cases just detailed, either the loss of consciousness is manifestly complete, the patient not responding to any outside irritants or influences; or we have a condition of what might, perhaps, best be termed altered or perverted consciousness, where it is hard to determine whether the patient is totally oblivious to her surroundings. While, however, loss of consciousness is sometimes to all intents and purposes complete in hystero-epilepsy, the careful clinical observer will not fail to notice a difference in the appearance presented by the patient and that exhibited in the paroxysm of grave epilepsy.

HEREDITARY TENDENCY.

By WILLIAM A. HAMMOND, M.D.,

(*A chapter from a forthcoming "Treatise on Insanity."*)

THE hereditary transmission of peculiarities of form, mental character, manner, idiosyncrasies, habits, and proclivity to disease, is no longer a matter of doubt with those best qualified to form an opinion on the subject. In fact, to this tendency of like to beget like we owe the perpetuation of the different species of animals and plants, as well as the great number of varieties produced by the will of man, or by combinations of circumstances.

We see on every side numerous instances of the existence of the law to which reference is made. The different varieties of the dog, of the ox, and other domestic animals; the several kinds of roses, apples, strawberries, and other plants, are all the results of hereditary transmission.

Resemblances in features to parents are extremely common in the progeny. A child looks like its father, its mother, or, perhaps, some collateral relation. The hereditary upper lip of the members of the house of Hapsburg is an example of this fact, and others must be familiar to most persons. In the lower animals the same law applies with equal, if not greater, force. A whole litter of pupies, for instance, will be marked like the father or mother, or, perhaps, some like one, and the remainder like the other.

Certain qualities can also be transmitted. Thus, the setter and pointer possess their peculiar accomplishments by hereditary descent from ancestors which were taught to indicate the presence of game by the actions they employ. I knew a lady who could always tell twenty-four hours in advance that rain or snow was at hand. She felt a cold sensation in both ears. Her mother had the same faculty, as has also her daughter. I have already given instances of the hereditary transmission of habits, but the following, which has recently come to my knowledge, will not be out of place:

A lady informed me that her grandmother, who had some affection of the right eye that rendered the accession of light to it unpleasant, always worked at her embroidery or sewing with that eye closed. Her daughter had no ocular disorder, but in doing any kind of needle-work, always shut the right eye. Her daughter, my informant, has a similar habit, which she acquired when quite young, although constant efforts were made to break her of the "trick." She came to me for advice relative to her little girl, eight years old, who, when given some sewing to do a few days previously, had at once closed the right eye on beginning her task. Here we have a habit descending through four generations. Instances like this almost lead us to the belief that it would be entirely practicable to form a variety of the human race the women of which would always sew with the right eye closed.

Certain natural deformities or organic deviations are likewise sometimes indubitably transmitted to the progeny. It is, therefore, by no means rare to find that the immediate ancestors of individuals with superfluous fingers or toes, club-feet, or hare-lip, were similarly affected.

Accidental anomalies or mutilations are also the subjects

of hereditary transmission. Thus, Grognier[1] states that he has observed that the colts whose ancestors had for many ascending generations been branded on a particular part of the body were born with marks corresponding in situation and appearance to those made by the hot iron. According to Blumenbach,[2] a man had the little finger of his right hand badly injured, so that it became crooked. He subsequently had several sons, each of whom had the little finger of the right hand twisted like that of their father.

Among the Esquimaux and Kamtchatkans it is the custom to cut off the tails of the dogs used in drawing the sledges. It is frequently the case that the puppies come into the world without a tail, or with the appendage very much abbreviated.[3] Other instances of the same kind are cited by Lucas.

But the most important part of the subject of hereditary influence which we have at present to consider is in relation to the transmission of diseases or predispositions to disease. Like the transmission of the physical and mental qualities, the transfer of pathological tendencies from parents to offspring must be accepted as a fact amply capable of demonstration, but not susceptible of explanation. When we say that the seminal fluid, being derived from the blood, must possess the abnormal impress of the blood, we assert a proposition just as difficult of demonstration, and in no way an elucidation of the question. Besides, admitting that the seminal fluid of a phthisical person may contain, in an inappre ciable form, the germs of tubercles, we could not explain why the offspring of such a person should remain all their lives free from phthisis, and the next generation exhibit une-

[1] Cited by Lucas, "Traité philosophique et physiologique de l' hérédité naturelle," Paris, 1850, t. ii, p. 492.

[2] Blumenbach, cited from Treviranus by Lucas, *op. cit.*, p. 493.

[3] Langsdorff, cited by Lucas, *op. cit.*, p, 493 , also Quatrefages, cited by Ribot, "L' hérédité psychologique," Paris, 1882, p. 9.

quivocal evidence of the presence of tubercular deposits in the lungs. That the tendency to certain diseases is derived from the seminal fluid of the male, and in an equal or perhaps greater degree from the ovaries of the female, does not admit of a reasonable doubt; but that there are other agencies at work capable of influencing the child while yet unborn is quite as certain. And this fact demands that a distinction shall be made between those diseases or other peculiarities which are connate and those which are purely hereditary. By a connate disease we understand one which the child possesses when born, not necessarily the result of any similar taint or impression received from the system either of the father or mother, but due to accidents or mental influences operating through the mother. For instance, a child may be born idiotic, not because either of the parents or other ancestors were similarly affected, but through the influence of some severe mental or physical shock received by the mother during her pregnancy. Another may be epileptic—when neither parent has ever been subject to epilepsy or any other disease of the nervous system—if one or other is intoxicated at the time of the intercourse resulting in conception.

Such cases are, of course, not due to hereditary transmission, for a disease cannot be communicated hereditarily which has not affected either of the parents or any other ancestor.

Many interesting cases showing the influence of the maternal mind over the offspring before birth are cited by M. de Frarieré[1] and the elder Séguin.[2] There is no doubt that idiocy, and other forms of disorder of the mind, may be induced in the unborn infant by strong emotional or other mental disturbance in the mother.

[1] "Education antérieure. Influences maternelles pendant la gestation," Paris, 1862.

[2] "Idiocy and its Treatment by the Physiological Method," New York, 1866.

A singular fact connected with the transmission of diseases, and also of deformities or resemblances, is that a whole generation, or one or more members of it, are passed over, the disease or other peculiarity appearing in the next; or a child, instead of resembling either of his parents, has the appearance or peculiarities of one of his grandparents. This is called atavism. Its existence was known to the ancients. Aristotle, Galen, Pliny, and Plutarch refer to it, and the latter gives the case of a Greek woman who, having given birth to a black child, was tried for adultery, when it was discovered that she was the fourth generation of an Ethiopian.

A distinction must be made between those diseases which, though hereditary, are congenital, and those which appear after a lapse of time, often considerable. Thus, for example, cataract, deafness, and several kinds of deformities, belong to the first-named class, but the great majority belong to the second, and arise as a consequence of the predisposition which has been transmitted. They are, thus, of very great importance to the physician, because, as the tendency only is conveyed, and this may not be very strong, it is altogether possible frequently to prevent the predisposition being developed into positive disease.

Thus, Voltaire[1] says:

"I have almost with my own eyes seen a suicide whose case deserves the attention of physicians. A man of serious turn of mind, of mature age, and of irreproachable conduct, free from strong passions, and above want, killed himself on the 17th of October, 1769, and left a written explanation of his act, addressed to the council of the city in which he was born. This it was thought best not to publish, for fear of encouraging others to quit a life of which so much evil is spoken. In all this there was nothing astonishing; such

[1] "Dictionnaire philosophique," art. "Caton du suicide."

cases are met with every day. But the sequel is more remarkable. His father and his brother had each committed suicide at the same age as himself. What hidden disposition of the organs, what sympathy, what combination of physical laws, caused the father and his two children to perish by their own hands, by the same method, and at the same age? Was it a disease which had long previously been developed in their family, as parents and children are often seen to die of the small-pox, of pneumonia, or of some other disease? Three or four generations become blind, or deaf, or gouty, or scrofulous, at a certain age." Many similar cases have been cited by writers on the subject. The following is within my own knowledge:

A gentleman, well to do in the world, but with a slight hereditary tendency to insanity, killed himself in the thirty-fifth year of his age by cutting his throat while in a warm bath. No cause could be assigned for the act. He had two sons and a daughter—all under age at the time of his death. The family separated, the daughter marrying. On arriving at the age of thirty-five, the eldest son cut his throat while in a warm bath, but was rescued ere life was extinct. At about the same age the second son succeeded in killing himself in the same way. The daughter, in her thirty-fourth year, was found dead in a bath-tub with her throat cut. Her son, at the age of twenty-seven, attempted to kill himself by cutting his throat while in a bath at his hotel in Paris, but did not succeed. Subsequently, at the age of thirty, he made a similar unsuccessful attempt, but was again saved. A year afterward he was found in his bath by his servant with his throat cut from ear to ear.

A very striking physiological fact is not without influence upon the laws of hereditary transmission. It is well known that the children of a woman by her second husband may resemble physically and mentally her first husband, provided

she has had children by the latter. The blood of the *fœtus in utero* circulates through the system of the mother. This blood has the impress of the father derived through the seminal fluid. It must, therefore, in a greater or less degree, exert an influence upon the organism of the mother. Perhaps this is in accordance with Darwin's provisional theory of pangenesis; but whether or not, the fact exists. Now the husband, dying, and the mother marrying again and having children, is the medium for transmitting to this second set of offspring the peculiarities of mind and person which she has received from her first husband through his children before they were born. In this way the diseases of a man may be transmitted to children which are not his. In the lower animals, instances of this species of transmission are far from being rare. A bitch will have a litter one half of which will resemble in their markings their progenitor, and the other half a dog by which she has previously had offspring. In the horse the like fact has been noticed, and it doubtless prevails to some extent throughout the entire vertebrate class of animals. Breeders of domestic animals are fully aware of its existence, and are careful that the females used for raising fine stock are not approached by males of bad qualities.

That insanity is often transmitted by hereditary influence is a fact scarcely requiring discussion, but for the circumstance that it has been recently denied, by certain medical witnesses in a criminal trial, that such was ever its origin. Nevertheless, these gentlemen were by no means the first to advance the hypothesis that insanity is limited in its influence to the individual in whom it first appears, and that it never has heredity for its cause. Its author is Heinroth.[1] He says:

[1] See the German translation of Esquirol's works by Hille, of Dresden, with notes by Heinroth, Leipsic, 1837, cited bv Lélut, "Du traitement moral de la folie," Paris, 1840, p. 146; and also by Lemoine, "L' aliéné devant la philosophie, la morale et la société," Paris, 1865, p. 55; also by Ribot, *op. cit.*, p. 140; also by Lucas, *op. cit.*, t. ii, p. 756.

"Insanity is the loss of moral liberty; it never depends on a physical cause; it is not a disease of the body, but of the mind; it is a sin. It is not, and it cannot be, hereditary, for the thinking ego, the soul, is not hereditary. The only things transmitted by generation are temperament and constitution, against which he who has insane ancestors should protect himself if he would escape lunacy. The man who has, during his whole life, before his eyes and in his heart, the image of God, has no fear of ever losing his reason. It is as clear as the light of day that the torments of those wretches called bewitched and possessed are the consequences of the development of remorse of conscience. Man has not only received reason; he has, besides, a certain moral power which cannot be conquered by any physical power, and which never succumbs except under the weight of its own sins."

Commenting on this extraordinary system of mental pathology, M. Lelut [1] says:

"This passage from M. Heinroth contains as many errors as it does phrases. To say that a man who has all his life kept the image of God in his heart will never become insane, is to refuse to recognize the innumerable cases of insanity developed by superstition and an ascetic life; to impute the torments of the bewitched and the possessed of the devil to remorse of conscience, is to calumniate those unfortunate persons who often have only exaggerated their sins, or have even accused themselves of crimes they never committed; to affirm that man has a moral power which cannot be overcome by any physical force, is to ignore the influence of wounds of the head, the ingestion of certain poisonous substances, inflammation of the meninges, etc., in the production of insanity. To refuse to admit that insanity may be transmitted by the process of generation, is

[1] *Op. cit.*, p. 147.

to refuse to accept the evidence of that which we see every day."

Lucas[1] asserts that Rush expresses a doubt in regard to the hereditary transmission of insanity, and the witnesses in question may have entertained a like opinion relative to his views. But this is an error, for the great American physician is emphatic enough when he declares his opinion in the affirmative, and adduces numerous examples in its support. He says:[2]

"A peculiar and hereditary sameness of organization of the nerves, brain, and blood-vessels, on which I said formerly the predisposition to madness depended, sometimes pervades whole families, and renders them liable to this disease from a transient or feeble operation of its causes."

He then states that application was made on one day for the admission of three members of the same family into the Pennsylvania Hospital, and that he had attended two ladies, one of whom was the fourth, and the other the ninth, of their respective families who had been affected with insanity in two generations. Moreover, he declares that when there is an hereditary predisposition to mental aberration, it is induced by feebler exciting causes than when no such tendency exists. And, again, that it generally attacks in those stages of life in which it has appeared in the patient's ancestors, and that children born previously to the attack of madness in their parents are less liable to inherit it than those who are born subsequently.

Without entering at this time into the full consideration of the question, I will adduce the authority of a few of the most eminent writers on mental derangement, premising that, with the exception of Heinroth, already cited, and

[1] *Op. cit.*, t. ii, p. 756.

[2] "Medical Inquiries and Observations upon the Diseases of the Mind," fourth edition, Philadelphia, 1830, p. 46.

the modified view of Lordat,[1] I would not know where to find a single negative opinion from any writer on psychological medicine who had received a medical education. Esquirol[2] says:

"Hereditary influence is the most ordinary predisposing cause of insanity, especially with the rich. . . . Insanity is more frequently transmitted by the mothers than by the fathers."

Burrows[3] states that:

"There certainly is no physical error in accounting insanity hereditary. Had the knowledge of this fact merely led to a closer inquiry respecting those with whom a connubial union is contemplated, it would be a commendable foresight, often conducing to the preservation of domestic bliss now too frequently interrupted by the development of this dreadful affliction in the object perhaps of our tenderest affections."

Griesinger[4] says:

"Statistical investigations strengthen very remarkably the opinion generally held by physicians and the laity, that in the greater number of cases of insanity an hereditary predisposition lies at the bottom of the malady; and I believe that we might, without hesitation, affirm that there is really no circumstance more powerful than this."

Leidesdorf,[5] in speaking of the hereditary character of many cases of insanity, says:

"All alienists have established the importance of this cause, to which an average of one quarter of the cases of

[1] "Les lois de l' hérédité physiologique sont-elles les mêmes chez les bêtes et chez l 'homme ?" Montpelier, 1842, p. 19.

[2] "Des maladies mentales," Paris, 1838, t. i, p. 33.

[3] "An Inquiry into Certain Errors Relative to Insanity, and their Consequences, Moral and Physical," London, 1820, p. 9.

[4] "Mental Pathology and Therapeutics," Sydenham Society Translation, p. 150.

[5] "Lehrbuch der psychischen Krankheiten," Erlangen, 1865, p. 128.

insanity is due, though individual statements on this point differ greatly. Marcé goes so far as to assert that in nine tenths of all the cases of insanity hereditary antecedents will be found."

Luys,[1] under the heading of "hereditary cerebral states," says:

"Heredity governs all the phenomena of mental pathology with the same results and the same energy as we see it control moral and physical resemblances in the offspring.

"The individual who comes into the world is not an isolated being separated from his kindred. He is one link in a long chain which is unrolled by time, and of which the first links are lost in the past. He is bound to those who follow him and to the atavic influences which he possesses; he serves for their temporary resting-place, and he transmits them to his descendants. If he comes from a race well-endowed and well-formed, he possesses the characters of organization which his ancestors have given him. He is ready for the combat of life, and to pursue his way by his own virtues and energies.

"But inversely, if he springs from a stock which is already marked with an hereditary blemish, and in which the development of the nervous system is incomplete, he comes into existence with a badly balanced organization; and his natural defects, existing as germs, and in a measure latent, are ready to be developed when some accidental cause arises to start them into activity."

One other authority, and I am done with this question for the present. All admit the ability and knowledge with which the late Dr. Ray discussed all points connected with insanity. Relative to heredity, he says:[2]

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[1] Traité clinique et pratique des maladies mentales," Paris, 1881, p. 214.

[2] "Contributions to Mental Pathology," Boston, 1873, p. 45.

"The course of our inquiry, then, leads us to this conclusion—that in the production of insanity there is generally the concurrence of two classes of agencies, one consisting in some congenital imperfection of the brain, and the other in accidental outward events. I do not say that mental disease is never produced by the latter class of cases exclusively. The present limited state of our knowledge forbids so sweeping a conclusion. Cases sometimes occur where the closest investigation discloses, apparently, no cause of cerebral disorder within the patient himself. There is good reason to believe that the number of such cases would be lessened by a deeper insight into the inner life, and a minuter knowledge of those organic movements which lead to disease. We know that, even in those cases in which, to all appearance, the casual incident was most competent of itself to produce the disease, the constitutional infirmity may be often discovered. Drunkenness, epilepsy, blows on the head, sunstroke, would seem capable, if any thing outward could, of producing insanity; but, as a matter of fact, we find not unfrequently behind these casual events, firmly seated in the inmost constitution of the brain, the hereditary infirmity. Can we believe that it took no part in the morbid process?"

If it be alleged that the disease insanity is not transmitted, but only the tendency to the disease, the same might be said of every other morbid condition regarded as hereditary, except those existing at the time of birth, in the parents and offspring.

Phthisis, gout, progressive muscular atrophy, and other indubitable hereditary affections, would from that point of view be non-hereditary. Besides, how would it be known, in the young infant, whether insanity existed at birth or not? Where there is so little mind as the new-born child possesses, the manifestions of insanity must be so slight as

to escape our observation. Not including cases of idiocy, there is, however, abundant evidence to show that children do occasionally exhibit some of the most intense phases of insanity at very early periods of their lives. Romberg[1] has seen the case of a child, six years of age, in which there was a blind impulse to destroy every thing upon which it could lay its hands. It rushed through the street with a knife in its hand, and was restrained with difficulty. Griesinger[2] states that children of three to four years of age often have attacks of crying, of wild restlessness, striking, biting, and endeavoring to destroy, which last only for a time, and which ought to be regarded as true mania.

Dr. Rush[3] saw a case of insanity in a boy of seven years of age, and subsequently one in a child two years, that had been affected with cholera infantum, and another in a child of the same age, that was "affected with internal dropsy of the brain." "They both discovered the countenance of madness, and they both attempted to bite, first their mothers and afterward their own flesh."

Insanity, as a rule, makes its appearance, when hereditary, at the period of life in which the mind is most active; and often the inherent condition is so strong that it develops into more intense forms of mental derangement upon exceedingly slight cause, or even, so far as can be perceived, spontaneously. It cannot, in such cases, be prevented by any means we may employ.

It is a peculiarity of nervous affections that they are not necessarily transmitted to descendants in the same form in which they appear in the ancestors. Thus, the latter may have epilepsy and the progeny neuralgia, migraine, or some variety of mental alienation, or the reverse may occur. Neither when insanity itself is clearly due to hereditary influence is it always the case that a like type of disease is

[1] "Deutsche Klinik," 1851, p. 178. [2] *Op. cit.*, p. 142. [3] *Op. cit.*, p. 55.

transmitted. The ancestors, for instance, may have had general paralysis, and the descendants will exhibit the several forms of mania or melancholia.

A discussion of the subject of hereditary influence would manifestly be incomplete without reference to that of consanguinity, in regard to which there is, I think, a good deal of misunderstanding.

In the early history of mankind, marriages among blood relations were common. The Persians, Tartars, Scythians, Medes, Phœnicians, Egyptians, and Peruvians, not only married their sisters, but their daughters and their mothers. Instances of such marriages among members of the royal families of antiquity are well known.

The laws of the ancient Germans allowed consanguineous marriages, as did also those of the Arabs up to the period of Mahomet,[1] and the Jews, notwithstanding the prohibitions of Moses, continue them up to the present day. All civilized nations allow them within certain degrees. In the State of New York, for instance, first cousins may marry, as may also uncle and niece, or aunt and nephew. The State of Kentucky, however, prohibits the marriage of first cousins, and of all nearer degrees of relationship.

The dangers of consanguineous marriages have been pointed out by many authors.

M. Rilliet[2] contends that all such marriages are in themselves pernicious, and tend with great certainty to a lowering of the vital force. The effects he divides into two categories:

1. Those which relate to the parents, under which head are:

a. Failure of conception.

[1] "La consanguinité et les effets de l'hérédité," par V. La Perre Roo, Paris, 1881, p. 4.

[2] "Lettre sur l'influence de la consanguinité sur les produits du mariage," *Bulletin de l'Académie de Médecine*, t. xxi, p. 746.

b. Retardation of conception.

c. Imperfect conception.

2. Those which relate to the progeny:

a. Imperfections of various kinds.

b. Monstrosities.

c. Imperfect physical and mental organization.

d. Tendency to diseases of the nervous system, such as epilepsy, imbecility, idiocy, deaf-mutism, paralysis, and various cerebral affections.

e. Tendency to strumous diseases.

f. Tendency to die young.

g. Tendency to succumb to diseases which others would easily resist.

It is easy to see that Rilliet has made several tendencies out of one. Thus, the categories under *b* and *c* are manifestly included in *a*, and those under *f* and *g* in *d* and *e*.

After a full consideration of all that Rilliet has to advance, I feel bound to agree in the main with De Roo[1] in the opinion that common-sense teaches us that all these ills do not proceed from consanguineous marriages, and that it would be very difficult for Rilliet to prove the half of what he has advanced.

Among the opponents of such marriages are Devay,[2] Helliot,[3] and Boudin, in France; Mitchell,[5] in Great Britain; and Bemis,[6] in the United States. It was mainly through the exertions of the latter that the State of Kentucky enacted a law prohibiting the marriage of blood-relations nearer than second cousins.

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[1] *Op. cit.*, p. 9.

[2] "Du danger des mariages consanguines," Paris, 1862.

[3] "Contribution à l' étude de la consanguinité," Paris, 1875.

[4] "Dangers des unions consanguines," etc., Paris, 1862.

[5] "On the Influence of Blood Relationships in Marriage," *Memoirs of the Anthropological Society of London*, vol. ii, 1866.

[6] "On the Evil Effects of Marriages of Consanguinity," *North American Medico-Chirurgical Review*, vol. i, 1857, p. 97.

It is undoubtedly true that consanguineous marriages often result in the birth of children who are malformed, idiotic, deaf-mutes, or who become in after years the subjects of epilepsy, insanity, and other affections of the nervous system.

On the other hand, it is undoubtedly true that many such marriages take place, the results of which are as perfect in every respect as could be desired. Dr. Bourgeois[1] wrote the history of his own family, which was the issue of a union in the third degree of consanguinity. During the ensuing one hundred and sixty years there were ninety-one marriages, of which sixteen were consanguineous. Of these latter, all were productive, and there was not a single case of malformation or other physical or mental disease in the offspring.

Huth[2] cites from Dr. Thibault the case of a slave-dealer who died in the year 1849, at Widah, Dahomey, leaving behind him four hundred disconsolate widows, and about one hundred children. By order of the king, the whole of this family was interned in a particular part of the country, where reigned the most complete promiscuosity. In 1863 there were children of the third generation, and Dr. Thibault, who verified the fact himself, asserts that at that time, although all these people were born from all degrees of incestuous unions, there was not a single case of deaf-mutism, blindness, cretinism, or any congenital malformation. Huth cites many other instances of isolated communities intermarrying continually without detriment to the offspring.

The truth appears to be found in the fact that consanguineous marriages are not in themselves productive of evil results, either to the parents or offspring; and that the ill

[1] Cited by Ribot, "De l' hérédité," Paris, 1882.

[2] "The Marriage of Near Kin," etc., London, 1875, p. 161.

consequences are to be ascribed to the operation of the law of hereditary influence, which, of course, is doubled so far as the progeny is concerned. If it is absolutely certain that a family is free from all taint of any kind whatever, there is no physiological reason why a man should not marry any female relative, however near; but, as that can never be positively assumed, it is better to prohibit such marriages down to, or even including, second cousins. There are few persons who cannot call to mind one or more consanguineous marriages which have resulted in idiocy, epilepsy, insanity, or other mental or nervous diseases in the children. I am quite sure that there is a greater tendency to the production of such affections than of any other, many striking examples of the fact having come under my observation.

THE ACTION OF DRUGS ON PLANT-GROWTH.

By ISAAC OTT, M. D.

THE action of medicines on the growth of vegetable tissues is a subject which has received but little attention. That plants have periods in which their growth is hastened and inhibited has been known for some time. Plant-growth generally takes place between 6 P. M. to 10 A. M. the next day, after which it is partially arrested till 4 P. M., when activity again ensues.

There are two well-marked epochs in the period of plant-growth, one from 7 P. M. to 3 A. M.; the other from 7 A. M. to 10 A. M. These intermissions in growth are due to the effects of light and heat. The light inhibits growth, whilst heat accelerates it. To more accurately measure the growth I used Stöhrer's apparatus, fig. 1. *A* is a clock into whose side fits the cog-wheel *B*. The movement of a wheel within the clock moves the wheel *B*, upon whose axis is a disc which holds a paper ruled in divisions corresponding to the twenty-four hours of a day, each half representing twelve hours. Each hour-division is moved past the pen on the lever *D* as the hand on the dial of the clock moves through its hour-division, that is, when the hand on the dial of the clock points to a certain hour, the lever *D* points to the same hour on the disc *C*. In Stöhrer's arrangement a point of lead projected against the paper by a spiral spring marked the breaks on the disc. As the spring did not always act, not making a mark on the paper at times, I put

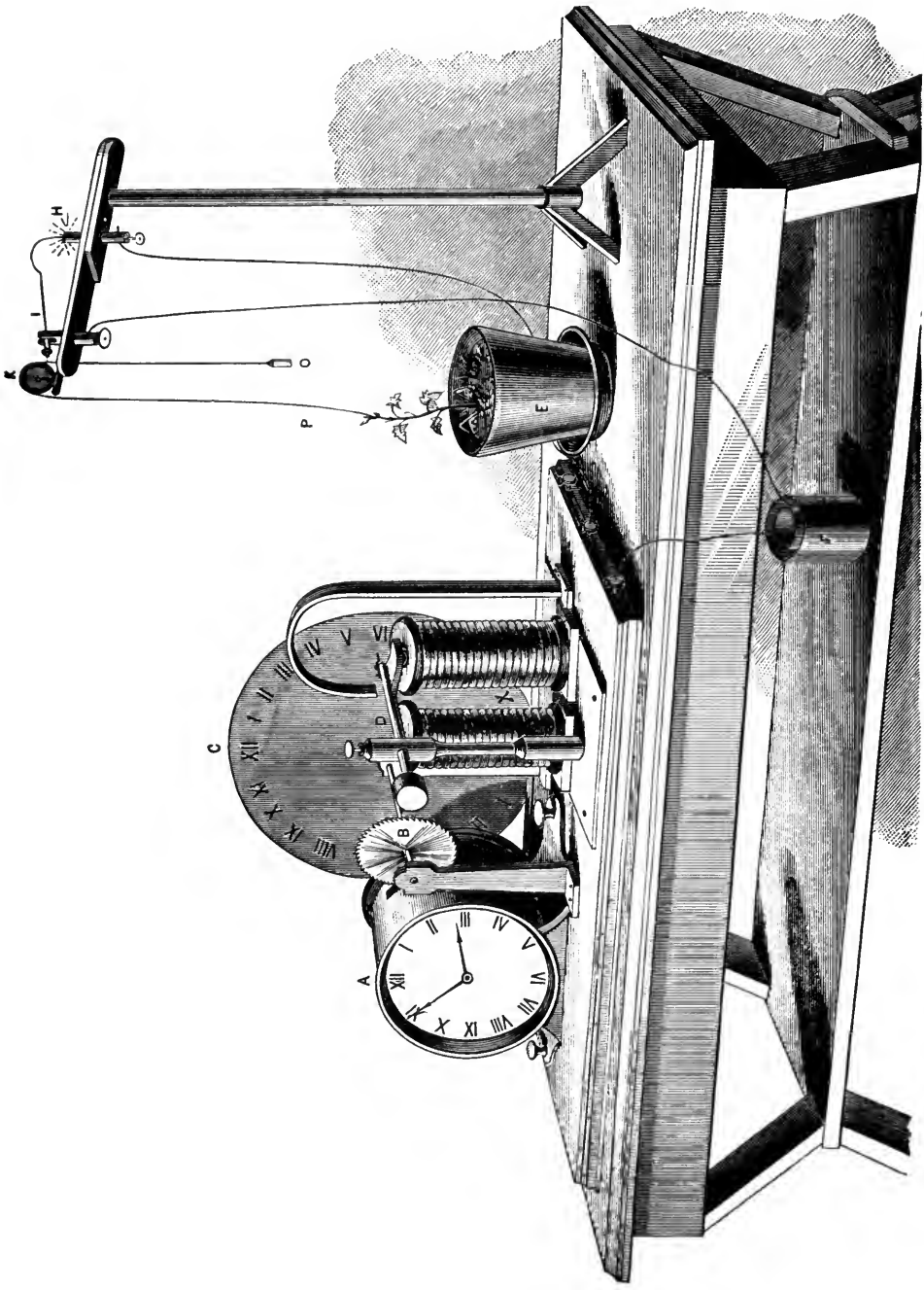

FIG. I.

on the end of the lever *D* a pen of aluminum, which moved over the smoked paper on the disc *C* and made a quite legible tracing. This smoking of the paper does not prevent one from reading the hour-numbers lithographed on the paper fastened to the disc. It was found that smoking the paper made it roll up at its edges. To obviate this I had a grooved ring surround the disc, the paper and metallic edge of the disc being in the groove. This ring was made so that it could be easily detached, and when on was held together by a metal clasp. The plant in the pot *E* had its tip attached to the thread *P* by means of adhesive plaster. Now, as the plant grows upward, the counter-poise *O* causes by its descent the wheel *K* to revolve. As this wheel *K* revolves, the notches on its side move the lever *I* and lift its point out of the mercury cup *H*, which breaks the current coming from the battery *F* and demagnetizes the magnets, which causes the lever to move and inscribe a break on the smoked disc *C*. Further revolution of the wheel *K* by the growth of the plant closes the current, and another break is made on the smoked disc. After a normal day has its tracing made, another tracing is made inside of it, on the next day, by simply changing the wires connecting with the screws and magnets. The window in which the plant was placed was directed toward the north, and received the sun's rays only during the afternoon.

The plant selected was an ivy, the Senecio Scandens. The apparatus was attached to the plant by means of a strip of adhesive plaster, doubled over near the tip of the plant. Then a thin silk thread was passed through the plaster to prevent it spreading, and a small hole afterward cut into it so as to admit a hook. The plaster compresses the stem but little, for the compressing force is distributed over a quarter of an inch. Then the upward growth of the plant was allowed to automatically register its increase on the

smoked disc. In making the experiment, I have kept the following points in view so as to avoid errors: 1. The moisture of the air may influence the length of the thread. 2. The moistening of the ground has an influence on the amount of growth, making it greater than it is. 3. The plant's stem must be erect, and the plant should be fixed in the earth for some weeks. 4. The tip of the plant must have the adhesive plaster as near it as possible on each day of the observation. If the plant grows rapidly, the adhesive plaster is placed nearer the tip each day.

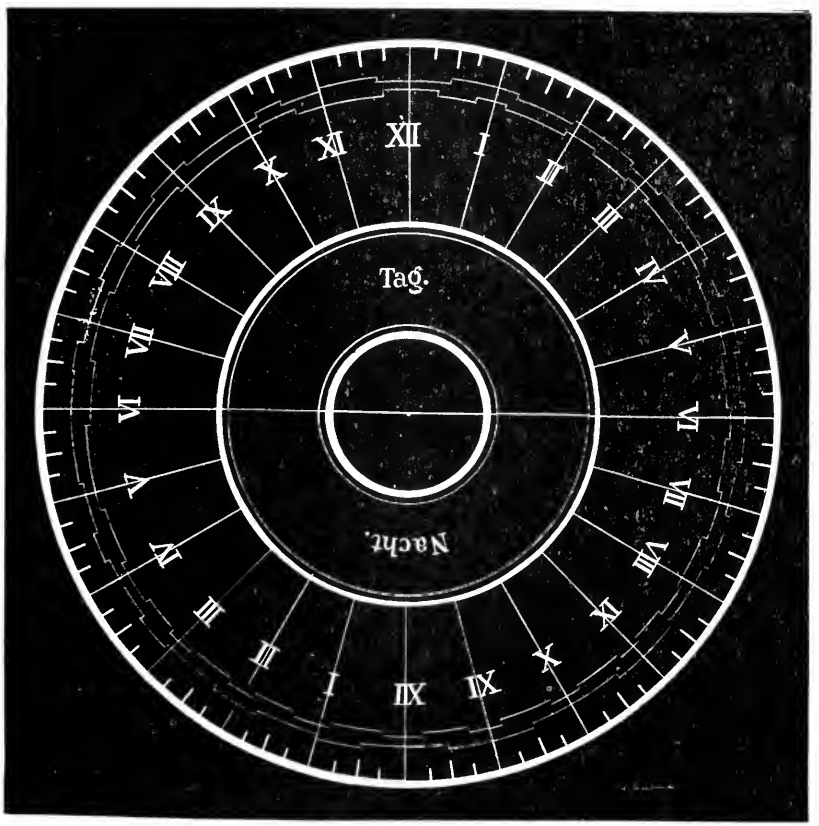

FIG. 2.

1st day.—Temp. 83° F.
2d day.—Temp. 84° F.
Inner circle. Morphia action—xxx grs.

During the experiments the temperature was noted on each day. The circummutation was overcome by the weight. The earth about the plant was watered on each day with the same amount of water, except on the drug-day it contained the medicinal substance in solution. All the conditions of the plant were kept as nearly similar as possible. When the sulphate of morphia in ten- and thirty-grain doses was added to the water moistening the earth about the plant, it was found that the growth of the plant was ac-

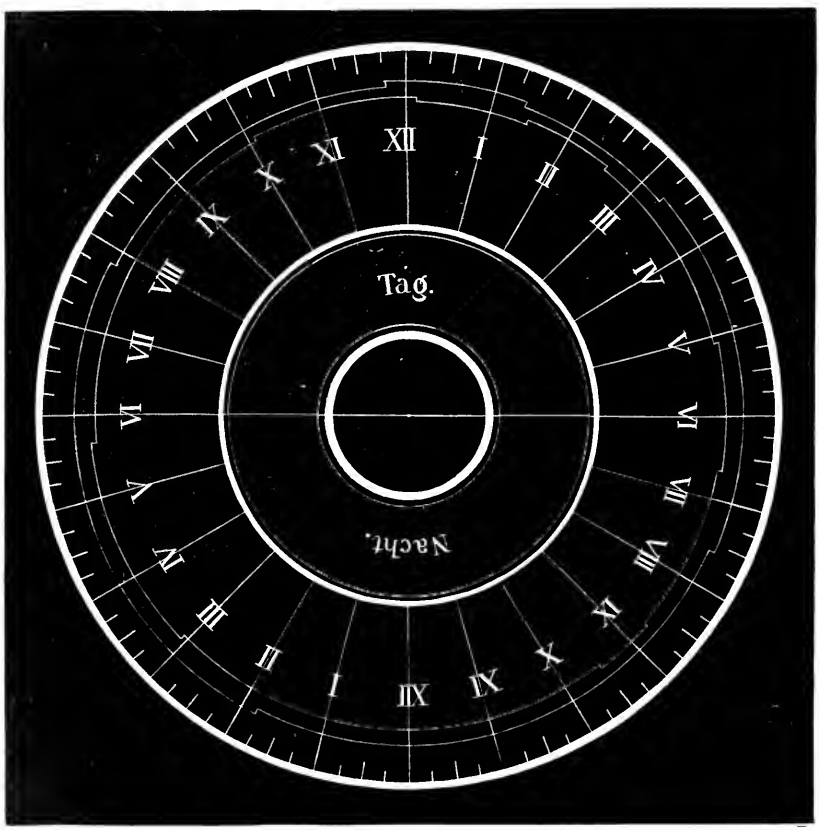

FIG. 3.

1st day.—Temp. 86° F.—Inside line normal.
2d day.—Temp. 84° F.—xxx grs. of chloral hydrate.
The attachment changed on the second day nearer the point.
Plant dying on the second day.

celerated, as is seen in fig. 2, where the breaks are more numerous in the inner circle than in the normal outer circle, the excess of breaks being three. Subsequently the plant retained its growth and vitality. When thirty-grain doses of hydrate of chloral were added to the soil, the arrest of growth was considerable, as is seen in fig. 3, the outer circle representing the stoppage of growth by the chloral. The plant began to die on the day after the chloral had been administered. When chloroform was added to the soil to the extent of three drachms, the growth of the plant was greatly arrested.

Ether to the amount of three drachms, when added to the soil about the plant, also caused an arrest of growth, but much more slowly than chloroform did. The death of the plant took place much more slowly.

These experiments on vegetable protoplasm still further confirm the toxic power of chloral and chloroform. The action here is not on any nervous system, as plants have not been found with any. It is to be inferred that the use of chloral and chloroform have a direct action on protoplasm in general, as well as on nerve protoplasm. The less-marked effect of ether compared with chloroform confirms the views now generally held, that the latter is far in excess in toxic activity compared with ether. That morphia should stimulate vegetable protoplasm is a rather unlooked-for result. It certainly shows that its effect on protoplasmic activity is not to rob it of its vitality so readily as chloral does. In another article I propose to take up other drugs and their relations to vegetable protoplasm.

SIMON MORIN: A BIOGRAPHICAL AND PSYCHOLOGICAL STUDY.

By CLARA LANZA.

SO far back as we can go in the annals of history, we find two particular influences constantly at work in the world of thought. We see the spirit of reason seeking to assert itself, while on the other hand injustice and oppression have endeavored to crush it. Only within the past few years, we might say, have the right of private judgment and the freedom of expression been tolerated. That those who have exhibited striking originality of intellect in one special direction have also been found mentally deficient in other respects, does not make them any the less victims and martyrs to the cruelty of their opponents. The conservation of their lives and doctrines would in many cases have bestowed inestimable benefit upon humanity, but humanity, unfortunately, is endowed with but faint penetration, and often only becomes aware of all that it has lost when the opportunities for development and greater usefulness are gone past recall.

One of the most notable fanatics of the seventeenth century was Simon Morin,[1] who was born at Richemont,

[1] " Un imposteur, un téméraire,
Un malheureux visionnaire
Qui, par des profanations
Et sottes explications,
A Dieu même faisait injure,
S' appliquait la Sainte Écriture

in Normandy, in the year 1623. His family was poor and obscure, but Simon, who at an early age gave evidence of the keen ambition only to be found in minds of a unique cast, and which does good service as a stepping-stone from one achievement to another, left his native place and came to Paris. He felt that a field more vast in resources was there open to him than could be found anywhere else. He thought himself possessed of wonderful literary ability which by means of proper cultivation might ultimately develop into genius, and after some difficulty he succeeded in obtaining a situation as clerk to a M. Charron, Treasurer of the Army Fund. Morin had ample opportunities here for promoting his literary tastes, but he soon discovered to his surprise that he had mistaken the bent of his capacity. He was a man of no education to speak of, and his character was rough and unrefined. He had, however, sufficient insight to see that a literary life must be based upon qualifications which he lacked and upon discipline which it was too late for him to acquire. A restless dissatisfaction overcame him, and he began to neglect his work to such an extent that his employer was obliged to discharge him. Morin at this time would have liked nothing better than to sit idle and indulge the peculiar fancies which filled his mind, but unfortunately such an occupation would neither feed nor clothe him, so he obtained

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Par maint argument abusif,
Mercredi fut brûlé tout vif
En la Grève, place publique,
Où, l' on voit mainte fin tragique.
Toutefois avant de mourir,
Oyant sagement-discourir
Le charitable sorboniste
Qui de tels patients assiste,
Il conçut de saintes horreurs
De ses ridicules erreurs,
De remords eut l' âme saisié,
Abjura son apostasie,
Et souffrait au dernier moment
Son supplice assez constamment."

LORET, 17th March, 1663.

a situation as copyist, setting himself to work for a short period with a resolution that was almost heroic. He was little fitted, however, for any steady labor, and soon chafed under it. It seemed to him unjust that he should be forced by circumstances to occupy his present position. He wished to become famous and astonish the world, hardly caring in his zeal whether the notoriety which he craved would be productive of pleasure or misery.

Fanatics, just then, were gaining considerable influence in Paris by spreading their doctrines wherever they could do so with safety. A sudden inspiration seized Morin. He was sure that his proper place at that moment was with this society. He gave up copying, and, associating himself with a number of religious enthusiasts, soon shared all their views. Either he had not sufficient *savoir faire* to conceal his true thoughts or else was independent enough to rise above public opinion and accept the consequences; but before any length of time had elapsed, his sentiments were well known to everybody, and he was seized and thrown into prison. His conduct, however, during his confinement was so exemplary that his enemies came to the conclusion that his peculiarities were due to a weak mind rather than a malicious one; so he was soon set at liberty.

Once free again, he placed himself at the head of a particular sect, and held meetings at his lodgings, where he preached sermons to all who would consent to listen to him. A few feeble intellects succumbed at once to his eloquence, which, as may be supposed, was not of the highest order, and gradually the number of his partisans and disciples increased. But these meetings, naturally, began to excite comment, and Morin was arrested for the second time and placed in the Bastile, where he remained nearly two years. His behavior during his imprisonment was resigned, and he gave no evidence of the true character of his

thoughts. So soon as he was set free, however, as on the first occasion, he spread his opinions boldly, and that the public might obtain a better idea of his doctrines, he printed secretly a book entitled "Pensées de Morin."

This book, of course, displays much ignorance and contains many principles which since then have been condemned by the Quietists. The first page reads as follows: *In the name of the Father, the Son, and the Holy Ghost. Morin's Thoughts, dedicated to the King. A naïve and simple deposition of Morin's thoughts at the feet of Almighty God. He submits them to the judgment of God's Holy Church, for which he professes the most profound respect and obedience, declaring that should the book contain evil, Morin alone is responsible for it, but should it contain aught that is good, God has inspired it, and may retain all the glory and renown which may be forthcoming. Morin further begs all persons to show him the utmost consideration for the sake of God, whose truth he is demonstrating, for his silence would have been rewarded by eternal punishment.*

The *Curé* of St. Germain l' Auxerrois, who had received a copy of this work from the author, with the assurance that it had been inspired by God and served to open wide the gates of heaven to sinners according to God's commands, sent for Morin and asked him what constituted his mission and from whom he had obtained it.

"My mission," replied Morin, "is more fully established than yours, for men have called you to yours, while mine comes direct from Jesus Christ, who has incorporated himself with me for the good of humanity."

The *Curé* was convinced from these words that Morin was a dangerous lunatic. "Have you never," he inquired, "reflected upon the punishment which your pernicious opinions are likely to call forth?"

"I fear neither threats, persecution, nor punishment," replied Morin. Then after a pause he added:

"*Transeat a me calix iste.*"

The *Curé* highly indignant at what he termed Morin's blasphemy, turned him out of the house, and made all possible haste to inform the authorities of what had occurred. On the following day, accordingly, a warrant was issued for his arrest, but, to the astonishment of everybody, he could not be found.[1]

One evening shortly after, M. Picart, a police commissioner was walking in the street, followed by his valet, when his attention was attracted by a little boy who carried a lighted candle with a sheet of paper wrapped about it in such a manner that it formed a sort of lantern. This in itself was nothing remarkable, but Picart's keen glance had detected the words *Pensées de Morin*, printed in large letters upon the sheet of paper, which was indeed a leaf torn from the book of that name. He knew that search was being made everywhere for Morin, so he approached the child and questioned him, saying that he had important news to communicate to Morin, who was a friend of his, and begged to learn his whereabouts.

"In that case, monsieur," replied the child frankly, "follow me. I am his son and will take you to him with pleasure. If you are Morin's friend, you will not betray us."

Picart, greatly delighted at the success of his *ruse*, accompanied the child to the house in which Morin was living under an assumed name. He talked pleasantly to Morin, representing himself as one of his disciples, while the valet hurried away to procure assistance. Morin was intensely vain, and when Picart flattered him and expressed the conviction that the Holy Ghost had dictated his book, he listened with the utmost delight. So confident was he of his visitor's honesty, and so overcome by his compliments, that he produced a roll of closely written manuscript wrapped

[1] "Mémoires du Père Nicéron," vol. xxvii.

carefully in a cloth, and exhibited it unhesitatingly as his latest work. Picart seemed much interested, and entertained Morin with appreciative remarks, until the arrival of the valet and several men in authority. Then the mask was thrown aside. Poor Morin finding himself discovered turned pale with rage. He was unable to defend himself however, so all his writings were seized, and he was sent again to the Bastile, where he remained until he asserted his readiness to renounce all his errors.[1]

Morin had certainly gained experience from previous misfortunes, and had come to the conclusion that it was far better policy to pander to the prejudices of mankind, irrespective of his own private views, than to be in danger of constant imprisonment, and perhaps worse than that. On the 9th of February, 1649, a few days after recovering his liberty, he published the following declaration:

"I, Simon Morin, after conversing with the Abbé de Teresse de Montmorency concerning my book which has been published, my opinions upon religion, my own sentiments, and the purport of my works, am now fully convinced that heretofore I have labored under a mistake, and have been influenced by the wiles and malice of God's enemy. Nothing good has remained in me except that submission with which I have always received the truth when it has been made manifest to me. I agree with the abbé, that a praiseworthy intention can never excuse a bad action, and that a bad action cannot inspire any thing good. Upon the strength of this truth and several others which have been demonstrated to me, I now revoke the book which I gave to the world; I curse the doctrines it contains; recognizing the fact that I have distorted and corrupted the words and sentiments of the Holy Scriptures, and submitted to the Catholic, Apostolic, and Roman Church, the opinions which degraded my own mind. Moreover, I entreat all those persons who have adhered to my ideas and accepted my theories either by means of my book or by my personal instruction, to cast them aside as quickly as pos-

[1] "Nouveaux mémoires d' histoire, de critique, et de litterature," par M. l' Abbé d' Artigny, Paris, 1750.

sible, and to learn to detest them as I do, seeking the way to repentance through God's mercy. I desire that this declaration be published, and I protest before God, whom I call to witness, that now and always I shall reverently follow the universal doctrines of the Holy Church, and I pledge myself to observe the commandments of God, partake of the sacraments according to necessity, and lead a pure life.

"*Written and signed in the presence of witnesses, this 7th day of February*, 1649. "MORIN."

This declaration was followed four months later by another, evincing even greater submission, and filled with many expressions derogatory to the author, but at the same time showing that he was fully alive to the sense of the injustice that had been done him. "During the five years that I have endured persecution," he writes, "I have humbly asked to be informed in regard to the errors attributed to me, and through which I have been denounced as a heretic. I have also requested a charitable correction of these same faults. Neither the one nor the other has been granted to me. I have sworn to submit to just censure with humility, affection, and modesty, such as become a true Christian. I implore God's grace to the accomplishment of this end, and I humbly entreat the prayers of all good people, renouncing every thing that I have hitherto said or written against God and his Holy Church. I further assert that it was never my intention to speak or write in opposition to the will of either, but merely to disclose my thoughts and the means of discerning the wolves among the sheep, and the true shepherds among mercenary men. This, however, I submit to correction with every thing else, swearing that hereafter I will refrain from speaking or writing any thing unless sanctioned by the consent of the Holy Church."

On the margin of this declaration was written: "The reader will kindly observe that this is the second time my enemies have accused me of holding meetings of thirty or

forty persons in my house. I have never thought of such a thing, and I am astonished that the jealousy of others should be so great in regard to me and those who love me, that a visit from three or four friends should be magnified into such a horrible falsehood, and expose me to severe persecution. But God will pardon them, as I do with all my heart."

It is evident from this, that with all his boasted submission Morin considered himself unjustly treated. He was carefully watched and often accused of holding assemblies in his house, but he always defended himself in such a manner that nothing definite could be brought against him. Several years passed by and nothing more was heard of Morin. Finally, however, he became involved in fresh difficulties, and was arrested by act of Parliament. After being held a prisoner at the Conciergerie for some time, he was ordered to pass the remainder of his days at Petites Maisons. But Morin had no intention of sacrificing his liberty for the sake of his opinions. His disposition was too restless to admit of close confinement, and he felt that time was of vital importance. During his incarceration, therefore, he amused himself by writing another declaration, which he published on the 26th of March, 1656. It was read aloud before an assembly of priests, guards, and others, and its effect was such that at its conclusion the *Te Deum* was solemnly chanted, and Morin, after having publicly burnt several recently written manuscripts, was set at liberty.

This declaration was, however, no more sincere than the others which preceded it. No sooner did Morin find himself free again than he openly denied its honesty, saying it had been extracted from him forcibly. He began at once to resume his teachings, and his opinions constantly increased in eccentricity. Fresh theories of the most startling character were added daily to those he already possessed.

Finally he became impressed with the idea, not of Christ's incorporation with him as heretofore, but that he, Morin, was Christ. He called himself the Son of Man, and composed a document entitled "Evidence of the second dwelling on earth of the Son of Man," which he was bold enough to throw into the king's carriage one day. "The king," said Morin, "must recognize me as the Son of Man, else he must die."

His recklessness was such that there could be no reasonable expectation of his being left undisturbed much longer. He seemed quite unmindful of what he said or to whom he imparted his opinions. Always open to flattery, easily impressed by even an assumption of interest, and endowed with an insatiable vanity, it was not difficult for an enemy to impose upon him.

Morin, at that time, gained a new disciple, named Desmarets. Desmarets was a visionary whose intellect was naturally far from pronounced, but whose ideas flowed in the same channel as Morin's. He was jealous of the latter's independence, to the requirement of which his own courage was far from sufficient, and he hated Morin for other reasons which it would be difficult to specify. He was cunning enough, however, to hide his sentiments for some time, and professed the utmost admiration for Morin, expressing his desire to learn from him with such earnestness that the latter was delighted and gave him his entire confidence.

Morin had conceived a new system of religion which he declared was far in advance of any thing that had ever been thought of, and this he revealed unhesitatingly to Desmarets, little knowing or little caring whither his imprudence would lead him.

Desmarets did not look upon Morin as a lunatic, but as a furious fanatic, from whom any thing might be expected. His intention to betray Morin's confidence had been upper-

most from the beginning; but was put into action sooner than he meant, owing to the immense hold he had gained over Morin in the space of so short a time. He accordingly took an early opportunity of informing the authorities of all that had occurred, and revealed the contemplated system of religion. When arrested, Morin was discovered finishing a discourse which he intended to present to the king, and beginning in these words: *The Son of Man to the King of France:*

He had little hope of escape this time. The public was beginning to lose faith in his declarations, and it is doubtful if another, no matter in what terms it might have been couched, could have saved him. He was imprisoned with his wife and son in the Bastile, upon the accusation of Desmarets. While the trial was being prepared the king's lawyer published the following declaration:

"*By order of His Majesty, the King, the arrest and trial is commanded of Simon Morin, native of Richemont, François Rondon, Curé de la Madeleine lès-Amiens, Marin Thouret, vicar of S. Marcel lès-Paris, the wife and son of the aforesaid Morin, the Demoiselle Malherbe,*[1] *and others, their accomplices.*

"The king, whose chief aim is to banish all vicious sects from the state, having recently been informed, that one Simon Morin has for twenty years past preached errors and committed the most abominable actions, inciting many souls to rebel against the Church, the law, and morality, and for which Morin has already been punished several times by means of imprisonment, commands that the said Morin and his accomplices be arrested and tried. Morin has heretofore escaped from justice by means of abjurations, which were retracted by him on regaining his liberty. He has even placed his pernicious writings for the destruction of religion in the king's own hands, and said that in case the king refused to be guided by him, he would resort to violent measures in re-

[1] A woman who for some years formed a member of Morin's household, and was said to be under Satanic influence.

gard to the royal person. His majesty, being under divine protection, fears nothing from Morin, but in God's interest and in the interest of the Holy Church, which he is bound to protect, and for the welfare of the countless souls which this demon has sought to corrupt, Morin has been seized and placed in the Bastile along with his accomplices. He will be tried at the earliest moment. The guilty parties and the witnesses will be heard, and the sentence promptly pronounced.

"Beforehand, however, it has been deemed advisable to familarize the judges and the public with the enormity of the crimes with which Morin and his accomplices are charged, that the judges may form a more correct estimate, and the public be shown the danger and significance of this vile sect.

"By his writings and the testimony of his accusers, it has been found that Morin has been guilty of teaching a pernicious doctrine, by means of which he has sought to show that there are three kingdoms and reigns. That of God the Father, which is the reign of law; that of God the Son, which is the reign of grace; and, finally, that of God the Holy Ghost, during which God governs souls in such a manner that churches and priests are quite unnecessary, together with the sacraments, masses, sacrifices, and all exterior forms. He has further asserted that it suffices to adore God in spirit and in truth without the aid of prayers, and that those whose natures feel the assurance of God's love independently of forms of worship, arrive ultimately at the perfection of glory and are incapable of sin. The acts of homicide, theft, and all kinds of impurity may be actually committed by these persons, but they do not constitute sins, because it is God's will working within them. It has been also shown that this same Morin has numbers of followers, priests, martyrs, and others who are willing to obey him implicitly, and suffer any thing for his sake.

"He wishes to abolish every ecclesiastical office, from the pope to the priesthood, secular or religious, banish all sacred orders, and do away with celibacy, He desires the king to take possession of the church goods, which belong to him by right. He calls himself the Son of Man, which means Son of God, declaring that the spirit of Christ is incorporated with him, and will judge the world in him.

"In January, 1661, he composed a piece of writing entitled: 'Proof of the Second Coming of the Son of Man,' which was signed by the afore-mentioned Rondon and Thouret, priests who

are attached to him. They sought to imply that the Son of God resides and is manifested in the person of Simon Morin. * * *

"The king, having regarded this declaration as a piece of madness, Morin persisted in his infamy to such an extent that he used every possible means to obtain from others blind submission and obedience, and had the insolence to say that no earthly power could exist except in so far as it recognized God's interests contained in him, finally proclaiming the following: *Point de Roi, si je ne le couronne; point de force, si ce n'est de mon bras.* * * *

"He has furthermore asserted that no power could control him, no doctrine disconcert him, no king destroy him. He has said likewise that he merited greater adoration than did the Holy Sacrament, because Jesus Christ in him is more worthy of regard than Jesus Christ could possibly be in a piece of bread.

"By his writings and declared opinions, therefore, it seems that Morin wishes to annihilate the Church, the sacraments, and all holy offices,—every thing, in fact, which is likely to stand counter to his designs. Further, that he desires to establish a universal religion, composed of promiscuous nations and sects, saying that God has his elected in Jews, magicians, and sorcerers. He has even stated that it is wrong to curse the devil; that we must, in fact, endeavor to reconcile ourselves with him, for we cannot become reconciled to an enemy unless also to the devil who inspires the enemy. Morin wrote that were the Ecclesiastics abolished each man could be his own priest, worshipping God in spirit, and not by forms and ceremonies. * * *

"In spite of all these pernicious maxims, it is well known that the Holy Church is indestructible, that hell itself cannot prevail against it, and that none can have access to the Eternal Father, except through the medium of Jesus Christ His Son; that the Holy Sacrament will endure to the end of the world; that we must regard His Holiness the Pope as the only true lieutenant of God upon earth, and our King as Christ's Anointed to whom we owe life, respect, fidelity, and obedience. * * *

"The writings of Morin, this demon incarnate, show that he has no settled opinions, but that finding himself influenced by supernatural power, persuaded himself that the said power was Christ, while in reality it was the devil. His disciples adhering to his belief submitted willingly to his evil teaching as though it were the essence of perfection, and have adored him as they should have adored the sovereign of heaven and earth."

Morin's trial having been prepared, he was finally sentenced on the 20th of December, 1662, to make the *amende honorable*, and afterward to be burned alive with his *Pensées*, and the remainder of his writings. He and his accomplices were transferred to the Conciergerie. He appealed to Parliament to revoke the decision, and he was given the benefit of a new trial, but the sentence was confirmed on the 13th of March, 1663.

On the following day, the 14th of March, his decree of arrest was read aloud before him and his accomplices. That his crimes might be expiated he was condemned to make the *amende honorable* naked, in front of the main entrance of the Church of Notre Dame de Paris, where he should be taken in a dust-cart, and there naked, kneeling and holding in his hands a wax taper weighing two pounds, proclaim loudly and intelligibly, that he wickedly, impiously, and falsely pretended to be the Son of God, and that he was the author of a damnable doctrine, by means of which he sought to corrupt numerous persons to the end that the Holy Catholic Church might be overthrown. He should further implore God's pardon, the king's, and the judges'. This done he should be carried to the Place de Grève, attached to a stake, and burned alive with his books, and the ashes scattered to the wind.

As for Rondon and Thouret, the priests, and Mademoiselle Malherbe, who had been arrested as accomplices of Morin, it was decided that they should share the *amende honorable*, and witness Morin's execution, after which, the said Malherbe should be beaten with rods by the executioner, branded with a hot iron with two *fleurs-de-lis*, and then banished for life. The said Rondon and Thouret should serve as the king's galley-slaves during the remainder of their days, and Morin's wife and son should be banished from the city for the space of five years.

So Simon Morin perished before he had reached the age of forty years. We find in his character but little that can command our sincere admiration. His personal well-being was always uppermost, even when its maintenance involved the sacrifice of his most cherished principles. His lack of sincerity is evident, and while much that he wrote and said bears the impress of truth and right reasoning, it may be doubted whether it was instigated by a mind whose processes were well-formed and lasting. Morin from the very beginning of intellectual consciousness evinced a marked irregularity of thought, and his progress was of the kind attained only by a disordered mentality. The truths which he grasped were more the result of chance than conviction. The opinions he expressed were such as flashed rapidly through his mind and disappeared as quickly, to give rise to others no more stable. Nothing that he said or wrote gives evidence of a single earnest reflection. There is a want of depth everywhere. His utterances bear the impress of having originated in a mind too confused to admit of profound reasoning, but which by pure accident sometimes approaches truthful expression.

Morin was not intellectual. He had never attempted to study the question of religion. The abstract analyses of God, faith, and future existence he had never contemplated, save in a manner purely superficial, and even then his opinions were indefinite and thrown aside at an early opportunity to make way for others. In every act we see but one aim: the desire for notoriety and gratified vanity, which throughout the world's history has influenced minds of a nobler and stronger cast than his. It was not the action itself or its significance which he regarded, but the effect it would produce. Labor, carried on unflinchingly, prompted by honest ambition and the desire for self-improvement, was quite beyond his limited capacity. To gain

the utmost with the least possible expenditure was the basis of the stimulus which moved him. For such natures there is always a certain amount of success in store. People of vague and unreflecting tendencies greet with sincere admiration the vagaries of any lunatic which branch out in a new direction as a controlling power. No so-called reformer, however disconnected and incongruous his views may be, is without followers. And at the time in which Morin lived, the position occupied by thought was not elevated except in one or two directions.

It seems astonishing that a king who could patronize such men as Descartes, Corneille, Pascal, Molière, Racine, Boileau, Bossuet, Rochefoucauld, and La Bruyère, should be too narrow-minded to appreciate the genius of Fenelon, and too bigoted in his religion to pardon the erratic fancies of Morin, who was little better than a madman. To give vent to one's opinions upon popular or unfamiliar topics was regarded as harmless, and even encouraged to a certain extent, if the views expressed were within range of the king's comprehension, but the subject of religion was beyond the pale of discussion. Unhappy, indeed, has always been the position of the person who dared to think and to disclose his ideas in opposition to the faith professed by his nation. The world will overlook much that does not clash with its own short-sighted vision, but that a man should endeavor to discover the truth in his own way is an unpardonable sin. To Morin, certainly, we cannot attribute the praiseworthy intentions which animated Servetus or Giordano Bruno. It was not the truth which he sought, but renown. A purely intellectual motive was unknown to him. He had, however, dared to express opinions which ran counter to the Roman Faith. The Church has always commanded belief. Faith in the Unknown, in the Unknowable, is even now considered essential to salvation. Morin's mind was disordered, but

not to such an extent that he could not distinguish ignorance from the promptings of reason. He ventured to doubt the truth of revealed religion, he expressed his disapproval of all forms of worship, but his intellect was not strong enough to carry the investigation so laudably begun to a rational end. In the search for truth, however, the inability to throw great light upon the point in question, is no disgrace. It is the motive rather than the result which must be regarded.

It would be safe to say that in the beginning an honest intention stimulated Morin, which his rapidly decreasing mental force prevented from growth. He was led into reckless extravagance of opinion, which his many weaknesses served to bring forward prominently. He was insincere and inconsistent, but for these faults he should be pitied rather than condemned. No punishment was too severe for him who lacked faith in religion. The crime of heresy was rewarded by every possible suffering, and finally with death. "Express your honest doubts," cried the Church, "and I will burn you alive!" Morin gave his opinions to the extent permitted by his limited discernment, and for this a greater crime was committed than any of which he was accused.

The shedding of blood, even in the name of all that is generally held sacred, can never make a truth any the less a truth, neither can it by force of example implant in superior or original minds the advantage of silence over expression. The memory of a martyr has never prevented thought from asserting itself. A life indeed is easy to destroy, but the grand intellectual achievements upon which rests the actual progress of the world are not so lightly overthrown. Thought, like matter, is indestructible. So Morin, though he may have given nothing of value to posterity, still lives in the mere fact of his independence. Far

better, indeed, to be a fanatic of even imperfect views than one afraid to assert a single idea in opposition to prescribed forms of belief.

Even at the time of his execution it was generally thought that his punishment was excessive, and that imprisonment in a lunatic asylum would have been the proper way to deal with him. The infamous conduct of Desmarets[1] excited unmitigated disgust and indignation even among Morin's most bitter enemies, while the dignified manner in which the latter met his fate raised him somewhat to the position of a martyr. So great was the feeling developed by the circumstances of the case, that his execution was the last of its kind which occurred in France. Thenceforth unorthodoxy and heresy were not expiated either at the stake or on the scaffold. He did not, therefore, live or die in vain.

To unprejudiced minds of the present day also, Morin must be regarded as having been unjustly and cruelly treated. Nevertheless, the system of reasoning which appeared in him and others in embryo has slowly and surely grown into worthy proportions. Who shall say where the limit to its evolution is to be found?

[1] Jean Desmarets de Saint Salin, the spy who betrayed Morin, was born in Paris in 1595, and died there in 1676, at the age of eighty-one years. He was somewhat distinguished as a poet during his early years. His comedy of *Les Visionnaires* secured his election as a member of the Academy, and his poem *La Violette* is still read and admired. His report, embodying all he had ascertained in relation to Morin and his coadjutors, is a very long document. According to his own confession he had much more to do with the Demoiselle Malherbe than with Morin, although he seems to be fully acquainted with the latter's views and movements.

Histoire de la decouverte du faux Christ nommé Morin, Archives de la Bastile, Documents inédits, recueillis et publiés par François Ravaisson, Paris, 1868, *t. iii, p.* 227.

NOTE ON ACUTE NEURATROPHIC INSANITY IN THE AGED.

By C. H. HUGHES, M.D.,

ST. LOUIS.

WHEN insanity falls upon the advanced in years we are apt, at first view, if our experience in clinical psychiatry be not various and discriminating, to conclude that we have under observation a mania of senility. This is especially the case if the insanity displays itself in the psychical failure and loss of power, rather than perversion of the faculties, which characterize dementia. In short, when the mind of an old man gives way, senile dementia suggests itself, *prima facie*, to the alienist and to the general practitioner alike, as the proper classification, and, in the majority of cases, it is the conclusion *a fortiori* which the history and all the facts sustain. But, either because of defective observation in former years, or in consequence of a difference in the character of the patients with whom we were familiar up to within a little more than a decade past, we had encountered few cases, if any, in persons of very advanced age in whom the senility was not the essential and adequate causative factor of the mental overthrow.

Similar experience, not corrected by later and wider observation, probably prompted the following criticism:

"ACUTE DEMENTIA IN AN OLD MAN.—Dr. C. H. Hughes (*Alienist and Neurologist*, April, 1882) reports a case of what he

denominates acute dementia in a man aged sixty-four. The case is reported as having recovered, but not without straining can the case be called acute dementia or the result recovery. The psychical phenomena related seem rather to indicate senile dementia, somewhat modified by treatment."—*Vide* JOURNAL OF NERVOUS AND MENTAL DISEASE, July, p. 44.

Here is plainly apparent the bias of the prejudice of the experience of the past. The dementia is conceded but the impossibility of its being acute doubted, and the result as announced in recovery, is questioned.

A scepticism based on past records concerning the possibility of acute dementia occurring in old persons (as it is often observed in the young), is liable to lead us to those hasty and ill-considered conclusions of the reason which vitiate diagnosis, and cause us to sometimes deliver prognostications greatly damaging to the most vital interests of old men engaged in active business pursuits, for it is upon such men, engaged "in enterprises of great pith and moment," and temporarily overstrained by some pressing and unavoidable emergency of business, that neuratrophic cerebrasthenia and consequent psychical prostration are peculiarly liable to fall. They are as liable to psychical as they are to physical exhaustion and their consequences, and more prone, notwithstanding they are supposed to be more prudent than the young, to the disastrous psychical consequences of sudden over-mental strain.

Before the multiplication of cities that characterizes the present age, when husbandry and pastoral pursuits possessed a greater charm than now for men of enterprise and energy in the thickly settled States, fewer old men then precipitately broke down in mind. Telegraphs, telephones, railroads, electric lights, and the many new mental motor influences and stimuli, unheard of in the days of our grandfathers and great-grandfathers, now cause the old as well as the young to fail prematurely; and amid the hastened mental

decay, apparent usually in irretrievable gradations accompanied with those never-failing signs of irreparable decline which the experienced may certainly discover, we occasionally see in old men (and more often than our predecessors in clinical psychiatry saw them, or at least have recorded them), cases of sudden mental collapse unaccompanied by those physical evidences of marked senility, and unpreceded by those gradually unfolding evidences of mental failure which betoken and foreshadow the final failure and collapse of the mental powers.

There is an insanity of vigorous as well as of decrepid senescence, and when the psychical symptomatology forms a picture of dementia the diagnosis is most apt to be, if not most circumspectly made, senile dementia, and the prognosis hopeless; yet it is this very form in which there is the greatest possibility of mistake in diagnosis, and the most hope of a possible recovery, *if the accession of the mental disorder be sudden.*

An old brain as well as a young one may yield to overwhelming causes of sudden exhaustion. Its nutrition may be inadequate to repair its daily waste, in consequence of some temporary over-strain, and it may fail in its normal functions before the time when Nature's fiat wills it in inevitable and irreparable degenerative changes.

The case referred to in the above-quoted criticism was of this character. The gentleman is old but yet he is young, with an ancestral life-warrant of lengthened days beyond the average, and an antecedent personal early life history of vigorous developing influences. He has neither failure of memory nor presents evidence, psychical or physical, of the decline of life.

He has resumed his labors, more temperately than before and wiser for his experience, but not less efficiently for his pecuniary interests, which are daily being promoted by his attentions and services.

Another case in another state not quite similar but much like it has since fallen under our observation. The old man was much older—over seventy years—and the sequel was a recovery of the dementia symptoms with persistence of some morbid peculiarities due to the lasting cerebral degenerate changes of age. At the same time a young man stricken with neuratrophic prostration of brain (he was a physician, and both reside in the same place). The young man completely recovers, because trophic restoration was possible, and the equilibrium between cerebral waste and repair is balanced. The old man's recovery is only partial, because something more than neuratrophia and exhaustion constitute the pathology of his malady. But in the old man reported in my journal for April he recovered as a young man would.

Dr. H., of N., Ill., may some day give a complete history of the old and young man here referred to. But such records only encumber the literature of psychiatry.

The facts about senile aberration are these, so far as we have been enabled to discern them:

1. The characteristic of natural senility is gradual decline of the powers. Morbid senility may be more rapid than natural, but a *precipitate prostration of the mental powers, all of them simultaneously, is a suspicious circumstance that should be looked upon with prognostic favor.*

2. The mental changes of the predestined to senile insanity come on, like the atheromatous and other degenerative changes, slowly and insidiously: a few evidences of silly emotion or "words sounding to folly" are first displayed or uttered by these patients, then more words and more displays of causeless feeling, or folly, until finally delusion becomes unmistakable; or the causeless aversion which is finally to alienate him from his family begins in childish dislike, or, if dementia is impending, the memory fails in

specials, increasing gradually in regard to number of near objects, events, and friends, till the registered impressions of the past are soon obliterated from the brain, and the mind is "*sans* every thing." These changes come more rapidly in the alienated than they come in the normal decline of life, *pari passu* with the failure of sight and taste and hearing, etc., but they never come precipitately, in consequence of some sudden overpowering mental strain, as is the case in that form of acute dementia in the aged which is sometimes curable and especially so if our search for evidences of the inroads of age reveals none of those recognizable signs of irreparable physical degeneracy which are incompatible with normal cerebral function under ordinary mental strain.

Clinical Notes.

ORTHOPÆDIC NEUROSES AND MYELITIS.

By V. P. GIBNEY, M.D.,

PROFESSOR OF ORTHOPÆDIC SURGERY IN THE NEW YORK POLYCLINIC.

CASE 1.—*Tailor-legged deformity of several weeks' standing, without joint or bone lesion; relieved in three days by a fly blister and poultices to the spine.*

Eugene L., a hearty, robust-looking boy, eight years of age, was referred to the hospital,[1] Aug. 23, 1881, by the directors of the Mt. Sinai Hospital. The boy had but recently arrived from Texas, at the hands of two merchants who, out of sympathy, had assumed the responsibility of that long journey. They came armed with a long certificate and petition from the town officers and citizens. The father was a Jewish clergyman, and friends had borne the boy's expense to the Hot Springs, and no relief had come. In the petition sent, it was affirmed that the boy had fallen and broken his back. The history, however, as obtained from the boy, was that he had a fall of no very great moment in the early part of April; that two weeks later he began to experience a sense of pain or weariness in his back, and that two weeks after this the lower limbs began to "draw a little" as he walked. No tremors and no fever. Thinks that when the night would be cold his limbs would twitch a little. On going to sleep, he was told, the contractions at first would yield, but on awaking in the morning the limbs would "draw again." It was so difficult to get his pantaloons off that no change in this vestment had been made for a fortnight or more. They bore him into the office and set him down on a sofa—his limbs being locked, as it were, in the

[1] Hospital for the Ruptured and Crippled.

exact position tailors assume on the bench. I saw immediately, from the facility with which he moved his body and spine, that there was neither "broken back" nor spinal caries. There was apparently no elevation of temperature. The spinal column was to all appearances normal. Considerable suasion had to be employed to get him to make the attempt even of removing his clothing. It was a task. The legs were acutely flexed, the left with its calf lying against the posterior surface of the right, and its heel resting in the perineum; the right was strongly flexed, yet did not impinge upon corresponding parts by reason of the other leg being in the way. The joints presented nothing abnormal to the eye; the functions not tested, however, because of the tonic spasm of the leg flexors. The muscles of both lower extremities were firm to one's feel, and there did not appear to be any wasting. No disturbances of sensation. The more force employed to overcome the contracted muscles, the greater the resistance. The pain was so great that the attempt was not persisted in. The bowels reported as regular, and no difficulty in micturition.

The spinous processes and transverse processes too of the vertebræ included between the fourth dorsal and coccyx were very tender—those in mid-dorsal being the most sensitive.

There was also a moderate degree of hyperæsthesia about the pelvis anteriorly and posteriorly. The heart-sounds were normal. No electrical examination made.

On the evening of the 23d, the day of his admission, a blister $2\frac{1}{2} \times 6$ inches was applied to the dorso-lumbar spine. Through the night, while he was asleep, his limbs were found almost as much deformed as by day. Poultices were begun next morning, and on the night of the 25th the heel was found at least eight inches from the perineum. On the morning of the 26th, after getting into a rolling-chair, he began to remove his foot from the seat of the chair. By eight o'clock he had both heels on the upper round of the chair; by nine, both were six inches lower, on the little foot-board. By noon he voluntarily extended the right leg to 180°, the left to 135°.

In the afternoon he stood up by a table, and took a step or two.

On the 27th, next day, it was recorded that the improvement continued and that it was very difficult to keep him in a rolling-chair.

On the 30th there remained a small area of spinal tenderness, and the blistering was renewed, the same process as before being resorted to.

On the 4th of Sept. and on the 8th I have notes of gaining strength, etc., but on the 10th all contraction disappeared, and on the 11th he was very active, only a slight halt being observable. This limp was an object of a little concern, and careful examinations were made without satisfactorily explaining it.

By the 14th of Oct. this lameness had nearly disappeared. It was found on further examination that the left calf was a half inch smaller than the right, and this fact—probably a fact before he was lame at all—was seized upon as furnishing a clue to this unpleasant remnant of a brilliant recovery. I made it explain a localized myelitis in the anterior column. As there was a little dorsal tenderness yet remaining, a third blister was applied, and electricity was applied daily to the calf-group.

Nov. 1st he was finally discharged, and soon thereafter returned to his home. It was very hard to detect any lameness. The atrophy had not progressed; the faradic reaction was normal; there were no joint symptoms: the case was cured.

CASE 2.—*Hysterical joint, left hip; lameness four months; then inability to walk six weeks; cured in six weeks.* Katie F., æt. nineteen, was admitted to the hospital June 22, 1880. She came from one of the towns on the Hudson, and was on crutches when she appeared for treatment. The family history could not be obtained; the patient reported, that as a child she was delicate, but had been in fair health up to January, 1880, when she had a fall, which was soon followed by great pain in the knee. This shifted to the hip two weeks later, and she walked lame, suffering much from fatigue. For the past six weeks she has not been able to walk unless with crutches. She is very restless nights, and has lost flesh.

She stands resting all of her weight on the right limb, the left foot not even touching the floor. The left limb is advanced and rotated outward, while the pelvis is tilted to this side. No infiltration about the joint; thighs equal in size. The pain is referred to the left loin, the spine, and anterior surface of the knee. Absence of joint-tenderness, but muscular tenderness, with pain on pressure along sciatic nerve. The thigh can be almost completely flexed without pain or resistance. Indeed all the movements are normal, save extension, which aggravates the pain. There is formication about the sole and ankle and a moderate degree of dorso-lumbar tenderness.

Joint disease was excluded in the diagnosis, and a fly blister was applied to the spine the same night. There was a little relief after

two or three days, but nothing very marked until the morning of July 2d—ten days after admission,—when she got up from a rolling-chair and walked across the floor with very little lameness and very little exertion. The pain had completely subsided and the deformity no longer existed. She was then put upon cod-liver oil and an iron mixture.

By Aug. 1st all signs of disease had disappeared, and on Sept. 3d she was discharged. No signs present, and general health excellent. She continued free from lameness or any symptoms until about two or three months ago. She had become a little anæmic, and complained of pain about her hip again. She came to the hospital, had similar treatment, and returned to her home in two or three weeks fully restored. She had, in fact, no joint-symptoms at this last visit, July 18, 1882.

Notes of three cases of myelitis. The following cases were interesting to me, although the first two came under my observation after convalescence had begun. The first had a peculiar alopecia areata occur after apparent recovery, and from its location I was not able to explain satisfactorily the connection between it and the original lesion.

The second case seemed to have exacerbations, most likely brought on by injudicious exercise. The notes, however, taken from our hospital case-books will be more instructive I think than any remarks I can make.

Case 1.—Wm. G M.,[1] æt. thirty-five, applied at the hospital outdoor department for advice, March 23, 1880. The family history gives on mother's side a case of insanity with suicide ; otherwise it is clear. The patient is a mechanic, and has always been regarded as a healthy man prior to the summer of 1879. Then he began to have what were recognized as bilious attacks relieved generally very promptly by a brisk purge. In October, however, of that year, after one of these attacks he suffered for two weeks with shooting pains in both lower limbs below the knees, and in the left forearm. He tired very easily. He never had such pains in his life ; could n't describe them and could n't localize very well. There was nothing like formication, and there was no hyperæsthesia.

This annoyance increased, and on November 1st he took to his bed. After ten days a high fever came on without vomiting and without delirium, but with complete subsidence of the pain.

[1] I am especially indebted to Dr. Jas. Knight, to whom this case was referred, for the opportunity of making my observations.—G.

The bowels were constipated; the bladder was not affected. He had about this time a distinct girdle-sensation around the loins, not attended with pain of any severity. There was, he says, absolute loss of sensation in both hands, symmetrically distributed, and partial loss in the feet and legs. There was only the faintest co-ordinating power left in the hands and feet. The confinement to bed extended over a period of five weeks, and he was unable to feed himself or to help himself in any way. If he attempted to read, the letters seemed blurred. He had no double vision. At the end of the five weeks on getting out of bed he was unable to stand by a chair even. Three or four weeks elapsed before he could do this. Then he began to improve rather rapidly, and was soon walking around by a chair, though he experienced much difficulty in co-ordinating his movements. Going down stairs was peculiarly difficult, while he mounted stairs with more facility. He was unable for several weeks to dress himself, and was very awkward in buttoning clothing. He made more rapid progress toward recovery in the lower limbs. Has never had any tremor. Even now drops things often, he says, simply from weakness.

About two months ago began to experience a feeling of formication in the lower extremities, perhaps an hour in the course of the day. Feels, he says, "as though bugs were creeping over me," and the sensation always descends, never ascends. His general health is now good, and he is well nourished. There is no history of rheumatism, and there is no heart-murmur. The spine, examined by hot sponges, pressure, and so forth, gives negative results. No signs about penis or groin of venereal disease. He had, he says, a gonorrhœa eight years ago, and one four years later, which was followed by falling of the moustache. There is now an area of coppery discoloration of good size about the umbilicus, and it is reported as following a poultice.

The power in hands (flexors) about one half the normal power. The extensors are weaker still. No inco-ordination in the upper extremities.

Pronators are also very weak, symmetrically so. There has been a little nocturnal incontinence, but this has been corrected. The lower extremities are not ataxic and seem normal in power. He came to the city, referred as a case of locomotor ataxia. He is advised to employ electricity, if practicable; but is assured, however, that he will recover in time. He returned encouraged to his home in the country, and was not seen again at the hospital

until Dec. 2, 1881, when he called to report himself as relieved, with the exception of a degree of anæsthesia at the tips of his fingers, a dryness about lips in damp weather, and a plaque of alopecia areata in left parieto-occipital region four and a half by two and a half inches in size. He reports that he had a daily application of faradism to the forearms and hands from March to July, 1880, with no other treatment. He recovered the ability to read in the summer after going up into the Catskill Mountains. A year later a bald spot appeared over the chin, left side; his hair began to fall in the temporal region, same side, and the baldness extended to the occipital region. The alopecia occurred in the distribution of the mental branches of the inferior dental cutaneous branches of the auriculo-temporal and of the occipitales major and minor.

CASE 2.—A gentleman, aged twenty-nine, consulted me early in August for a loss of power in the forearms and feet. I found him very unsteady in his gait, falling easily, yet able to walk fairly with a heavy cane. He was very averse to going down stairs, mounted stairs much better, but with quite an effort. There was diminution apparently in the reflexes, and very good reaction in all the muscles of the lower extremities to a strong faradic current as used from the static machine. There was a moderate degree of anæsthesia of the legs. The grasp was feeble, and there was inability to extend the thumb of either hand. It was with great difficulty that he could extend the little finger. There was diminution of sexual appetite. He was thin and generally "broken up," to use his pet expression. I could find no spinal tenderness, and no deformity of any kind. In giving me his history he denied venereal disease, and in fact I could not satisfy myself that any existed.

On the father's side of the house there was rheumatic gout—a matter of some pride ; on the mother's side, nothing.

The patient had been healthy and active from infancy fo February, 1882, with the exception of a subacute pleurisy in 1874.

On the 14th of February last, after a drive of fifteen miles through a heavy rain, he was very chilly. This was in South America. The chill was followed by profuse perspiration during the night, and in the morning there was high fever which did not abate for several days. On its abatement he realized a feeling of numbness in the legs and feet, particularly the latter. This he thought simply the result of lying abed so long, and attached to it no importance until, a few days after being out of bed, he at-

tempted to go horseback riding, when he found himself unable to jump into the saddle. There was no appreciable loss of power, he thought, in the upper extremities. He was lifted into the saddle, and rode slowly a distance of about a mile, but found great difficulty in retaining his seat, and was taken to bed again after this effort, where he was confined for two weeks. The treatment was anti-rheumatic.

On getting up he was unable to go about without speedy fatigue, and was quite unable to ride horseback—a favorite pastime. He was from this time forth very weak in the knees. The loss of power increased slowly, and in the latter part of April he was unable to use either upper or lower extremities, and was compelled to take to his bed for the third time, four weeks passing before he was able to sit up in a carriage. There was great irritability of the muscles of the calf, with almost complete loss of sensation in legs and feet.

There was much severe and prolonged headache, but no pain in the spine. The power returned very slowly, and was about equally slow in upper and lower extremities. He lost flesh rapidly. In June had another relapse more severe than the preceding, and during this attack he lost the power of speech at one time for twenty-six hours. Finally, rallying, he set sail for New York in the beginning of July, it being necessary to carry him to the ship. Improvement on board was very marked. He had begun taking potass. iodide gr. x, t. i. d.

When I saw him I ordered the iodide in gr. xxx. doses t. i. d., and applied static electricity daily. His body was simply charged on the insulating table from the negative pole, and the electrode from the positive pole was applied in rapid succession to the spine and to the paretic groups of muscles. This treatment was continued four weeks, with improvement, almost daily. The iodide was continued in the doses above mentioned until the middle of September, when the patient regarded himself as cured. At present writing he has regained normal power, has gained thirty-four pounds in weight, and can walk at a fair rate of speed without any fatigue. A few days since he walked ten miles without any inconvenience. The hands are equally strong, and his restoration seems complete.

Case 3.—Frank W., æt. four, was admitted to hospital Oct. 18, 1881. The family history was devoid of interest. Five months prior to his admission there was observed a waddling gait, and two months later the feet dragged as he walked. A history is given

of monthly or bimonthly febrile attacks of two or three days' standing, accompanied by constipation, loss of appetite, and slightly jaundiced skin. There are neither, however, periodicity nor regularity in these attacks. He lives in a malarial locality, and many in the house are reported as often sick with malarial fever.

The patient is thin and badly nourished, unable to stand alone or even when assisted, unable to extend the wrists or the fingers, and the paralysis is about symmetrical.

There is marked diminution of power in the flexors of the fingers and adductors of the thumbs. The same is true of both flexors and extensors of the forearms. The thigh flexors and extensors act with about one fifth the normal power. The ab- and ad-ductors seem equally deficient in power. He cannot extend in the slightest degree either leg, and indeed the power of flexion is very much diminished. The floors of the left are not so weak as those of the right side. Is quite unable to flex or extend the feet or the toes. There appears to be some hyperæsthesia of both limbs, and they feel cold to one's hand. Reflexes at knee and foot, both sides, abolished. The prepuce is rather long, and there are some agglutinations about corona glandis, easily overcome, but the act is attended with a little pain.

Measurements taken throughout, and the limbs found equal in size. There does not seem to be any atrophy.

The muscles do not react to faradism, at least to a current which is almost intolerable. He cries so that a thorough galvanic examination is postponed, and by way of treatment a mild current is ordered for daily application. Ergot is ordered in half-drachm doses, and a mixture of iron and quinine as a tonic. He is very helpless, and it is not until Nov. 12th that any improvement is discernible. We find very fair contraction to the galvanic current, normal formula, in the flexors of the wrist.

Nov. 14th.—Reaction in anterior tibials and extensors of wrist, both sides, to a strong galvanic current of the normal formula.

Nov. 24th.—The same muscles respond now to a feeble current, those on left side contracting more vigorously. No reaction whatever to a strong faradic current. He continued to improve, and by Jan. 5, 1882, he was walking a few steps alone, and was feeding himself without any difficulty. On the 7th he walked thirty feet without much of an effort. On Feb. 15th the reflexes were about normal, and on the 19th his recovery was nearly complete, Owing to a bronchitis he was retained in the hospital until April 6th, when he was discharged cured.

He is quite robust in appearance, is able to lift a large chair above his head, can walk and run with ease on a level or up and down stairs, and the muscles feel firm and normally consistent.

It requires a strong faradic current to get responses. He continued well, making a visit or two to the hospital after his discharge, and on May 30th the father sent me a note saying that the little fellow had died on the 17th inst. of "congestion of the lungs" following scarlatina. Of course there was no report of an autopsy.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, October 6, 1882.

Dr. E. C. SPITZKA, President, in the chair.

Dr. SPITZKA exhibited a patient (female), aged nine, whose history was briefly, that after an attack of scarlatina, supervening on intense emotional excitement produced by her brother's death by the same disease, and an intense joint affection preceded by an epileptiform attack, she had become maniacal for twenty-one days, then aphasic and demented. She also exhibited from five to thirty epileptiform attacks, latterly with conjugate deviation, daily; these yielded to nitro-glycerine, and her intelligence improved, while she manifested increasing signs of moral perversion. Latterly a novel kind of imperfect epileptiform attack had been noticed, preceded by an epigastric pain, and marked by great fright without loss of consciousness. An interesting feature was that six months after her first attack of insanity, a second death in the family produced a violent outbreak of screaming, destructiveness, and grief, which left the girl in a state of stupor. The relater believed that the joint affection could be excluded as a cause. The problem was as to the insanity being post-scarlatinal or post-epileptic; he believed in the former nature of the trouble.

Dr. L. C. GRAY read a paper on "Laryngeal epilepsy," the laryngeal vertigo of Charcot.

He related the histories of Charcot's four cases, also one of Dr. Gasquet's, and one of Dr. Sommerbrodt's. The characteristic symptoms in all cases were: a spasmodic cough, accompanied by a tickling or burning sensation at about the level of the larynx; then a sudden loss of consciousness, occasionally with slight convulsive movements. In all but two of the six cases the patients had an epileptic history. In these two the histories had not been carefully inquired into.

The reader contended, therefore, that the disease was essentially of an epileptic nature ; the attacks ceased promptly under treatment by counter-irritation to the skin over the larynx and the internal use of the bromides, but the reader did not regard this as a valid argument against the epileptic basis of this disease. In many of the cases the duration of treatment was not mentioned; and in Sommerbrodt's patient, who was unquestionably of convulsive tendency, there was no return of symptoms during nine months' observation. Dr. Gray then gave an account of the violent spasmodic cough occasionally seen in locomotor ataxia, as described by MM. Féréol and Jean, and also of an autopsy made by the latter author, when atrophy of laryngeal muscles and of the pneumogastric and recurrent laryngeal nerves was found; he claimed that this went to show that organic alterations leading to violent cough did not necessitate unconsciousness. Dr. Gray then completed his paper by alluding to the researches of Dr. S. Weir Mitchell during the civil war, as showing how great a direct injury of a nerve was needed to produce unconsciousness. Of fifty-six cases of gunshot wound of the brachial plexus, ten fell unconscious, seventeen fell without losing consciousness, and twenty-nine walked away.

NEW YORK MEDICO-LEGAL SOCIETY.

Stated Meeting, September 27, 1882.

The regular meeting of the Society was held at Mott Memorial Hall Sept. 27th, the President, Mr. CLARK BELL, in the chair. The attendance was large. Minutes of previous meeting were read and approved. Eleven new members were elected, and donations to the library announced.

The paper of the evening was read by Dr. GRAEME M. HAMMOND. It was entitled : " On the proper method of executing the sentence of death by hanging."

On every occasion, said Dr. Hammond, that the executioner performs his duty upon criminals sentenced to be hanged by the neck until they are dead, the newpapers teem with sensational accounts, headed by the most agonizing phrases in large letters, of the terrible sufferings the executed individual is supposed to have undergone.

Much ingenuity is expended in devising means for ensuring dislocation of the neck, the idea being entertained that if this is accomplished the executed person does not writhe or suffer, but dies without muscular contraction and without pain. The object of this paper is to enquire into the facts connected with the questions alluded to, and to suggest the proper method of executing the death penalty by hanging.

There are two distinct ways of causing death by the execution of individuals, according to our present methods.

In the first, which is by far the oldest, the subject is strangled. The air is cut off from entering his lungs. The vessels of the neck, which carry the blood to the brain, are violently and suddenly compressed. This was effected in early times by pulling the victim off of the ground by a rope, one end of which was fastened about his neck and the other thrown over the limb of a tree. At

a later period he was pushed off of a ladder placed immediately under the gallows, or placed on a cart which at a given signal was driven away, leaving him dangling in the air. In Turkey and other Eastern countries the bowstring is used.

Two methods are employed to break the neck of the criminal. In the one he is lifted suddenly and with force from the ground. In the other he falls through a trap suddenly sprung. Death usually ensues by strangulation, but the process is a bungling and a tedious one.

In the author's opinion, it is neither necessary nor desirable that the neck should be dislocated, as efforts in that direction always lead to imperfections in securing rapid and certain strangulation, which is not only the speediest and most certain method of inflicting capital punishment, but is at the same time totally painless.

For the support of these views Dr. Hammond advanced the opinions and investigations of Bacon, Montegnac, Fleischman Taylor, and Tardieu.

The author's experience of strangulation may be stated as follows: After being placed in a sitting position in a chair, a towel was passed around his neck and the ends twisted together. Of course with every twist of the towel very forcible compression was made on the entire circumference of the neck. There were no sensations of pain whatever, and in eighty seconds sensibility was completely abolished. On a second attempt sensibility ceased in fifty-five seconds.

Dr. Hammond believes, from the consideration of his own symptoms and the investigations of others, that the proper and orderly way to execute the law in a person condemned to death by hanging, is to stand the individual on the ground, or upon a suitable platform, and to adjust the noose, which should be soft and flexible, carefully around his neck, below the larynx. Having arranged the noose properly, the condemned should be raised from the ground by pulling on the rope, which should pass over a pulley fixed to a beam above, and he should be allowed to hang for thirty minutes. Carried out in this manner an execution by hanging will be effectually and mercifully performed.

A report of the Trustees was now read demonstrating obstructive acts of the Treasurer of the Society, and directing him to pay certain bills that he had refused to pay. This report was adopted.

A resolution requesting the resignation of the Treasurer was seconded and discussed. A second resolution, which was moved as

a substitute to the first, condemning the action of the Treasurer and also requesting his resignation, was finally referred to the Executive Committee for action.

The Society then proceeded to the election of Secretary in place of G. W. Welles, M.D., resigned. L. P. Holme, Esq., was unanimously elected Secretary. The Chair announced that vol. 2 of the Society's papers was completed and would shortly be ready for subscribers.

The meeting then adjourned.

CHICAGO MEDICAL SOCIETY.

At the May meeting of the Chicago Medical Society Dr. W. P. VERITY read a paper on "Insanity from traumatism in its medico-legal relations." The doctor made the following quotations: Marcé says, concerning the psychoses produced by traumatism: "In the greater number of these patients the mental disease assumes an illy-defined form, offering irregular alternations of stupor, agitation, and imperfect lucidity, without systematized delirious ideas, but recovery is never complete, and the patient becomes progressively demented." Francis Skae says that "Traumatic insanity is generally characterized at the commencement by maniacal excitement, varying in intensity and character. The excitement is succeeded by a chronic condition, often lasting many years, when the patient is irritable, suspicious, and dangerous to others. In many such cases distinct homicidal impulses exist. The characteristic delusions of this form of insanity are those of pride, self-esteem, and suspicion, melancholia being but rarely present. This form is rarely recovered from, and has a tendency to pass into dementia and terminate fatally by brain disease. The symptoms, progress, and termination of this insanity are sufficiently distinctive and characteristic to enable it to be considered as a distinct type of disease." Kraft-Ebing classifies "insanity from traumatism as it is: 1. The direct consequence of an accident. 2. Manifested later, the prodromus of disordered motor and sensory phenomena and change of character. 3. Preceded by a latent susceptibility (the result of the accident), which may be called an acquired predisposition, and which only requires an exciting cause to develop into actual insanity." Schläger, in a very valuable article on this subject, gives the following statistics and opinions: Of five hundred cases of insanity, he found forty-nine resulting from injuries to the skull. In twenty-one of these the injury was followed by immediate loss of consciousness; in six-

teen, by simple mental confusion and wandering of the thoughts; in sixteen, by dull pain in the head; in nineteen the disease, insanity, commenced within one year after the accident; in the other cases after an interval of from four to ten years after the accident. Generally the patients manifested from the time of the injury a tendency to cerebral congestion, after the ingestion of even a small amount of spirits, or mental excitement. In several cases ocular hyperæsthesia and even amblyopia made its appearance. In fifteen cases there appeared, shortly before and during the existence of the cerebral disorder, scotomic dots, which exerted a decided influence on the character of the delirium. The patient often experienced ringing and noises in the ears. In eighteen cases there was dulness of hearing; in three, abnormal subjective perceptions of smell, and changes in the pupils. Frequently the character and disposition changed. In twenty cases great irascibility and an angry, passionate manner, even to the most violent outbursts of temper, were remarked. Sometimes, but far less frequently, there occurred over-estimation of self, prodigality, restlessness, and disquietude. In fourteen cases there were attempts at suicide, and frequent loss of memory and confusion. The prognosis in all was unfavorable; seven became progressively paretic.

Kiernan says: That traumatism produces certain psychoses. That the majority of these are unaccompanied by epilepsy. That the majority have a tendency to end in progressive paresis. That a large proportion are accompanied by depressing delusions. That the majority of these latter do not exhibit any hereditary taint. That, with certain modifications, Kraft-Ebing's conclusions respecting the traumatic psychoses are correct. That injuries received before the age of forty are probably of more effect in producing insanity than those received subsequently. That slight injuries, from the insidious nature of the changes they set up, are as much to be dreaded, if not more, than the grave injuries. That traumatic causes did not have as much influence in the production of insanity as intimated by Schläger, he finding that over eight per cent. of the cases were caused by traumatism, while at the New York City Asylum for the Insane but two per cent. were so caused. That certain cases of insanity caused by traumatism have well-marked systematized delusions. That in all cases of insanity caused by traumatism a guarded prognosis should be given. He cited a case in which there was hereditary taint coming under his own observation, and in which, after an injury to the skull, marked change of character resulted, attended by halluci-

nations, prodigality, and violence. The man committed suicide, and Dr. Verity was called on to determine whether such suicide was an insane act, and gave it as his opinion that it was. Dr. Ingals asked if suicide was ever a sane act? Dr. Kiernan said that it very frequently was, and cited a case where a man committed suicide because he was afflicted with rectal cancer. Dr. Ingals asked whether the hereditary taint in the case cited was not sufficient to produce the insanity? Dr. Verity said that it no doubt acted as a predisposing cause, but the traumatism was the exciting cause. Dr. J. H. Hollister related a case where a young man was struck on the head, became insane within a year thereafter, and finally died in an asylum forty-three years after the injury. Dr. Kiernan said that he thoroughly agreed with Dr. Verity's diagnosis. The cases cited from him had a tangible ætiological relation to traumatism, and were not of the *post hoc ergo propter hoc* nature of the asylum reports.

Reviews and Bibliographical Notices.

The diseases of the spinal cord.—By Byrom Bramwell, M.D., F.R.C.P. (Edin.); Lecturer on the Principles and Practice of Medicine and on Medical Diagnosis in the Extra-Academical School of Medicine, Edinburgh; Additional Examiner in Clinical Medicine in the University of Edinburgh; Late Physician and Pathologist to the Newcastle-on-Tyne Infirmary, etc., etc. Edinburgh: Maclachlan and Stewart, 1882.

That the diseases of the spinal cord are assuming an unusual importance is indicated by the successive works, in different languages, especially devoted to this particular branch. Whether this is due to the tendency to differentiation in all departments of medical knowledge leading in the end to the inevitable development of specialism in practice, or whether it is due to the wonderful progress made in this one particular department of medicine, embraced under the term neurology, is difficult to say. Probably both factors have a direct bearing. Time was, and that not a decade past, when the practitioner turned to a treatise on general medicine for information regarding the diseases of the spinal cord; later he referred to special treatises on diseases of the nervous system in general; to-day we are offered a comprehensive work of nearly three hundred pages, whose sole object is to explicate the diseases of the spinal cord, including in its scope a full anatomical and physiological *résumé* of the subject.

The little treatise of Gowers led us up to this larger work, and, so to speak, whetted our appetite for more. This desire has now been most gratefully appeased by Dr. Bramwell.

The book is one of those sumptuous efforts that appeal to the eye preliminary to an appeal to the understanding. Indeed, merely to carelessly turn over the pages, from illustration to illustration, beautifully executed in carmine and bronze colors, is

enough to excite the keen interest of the student of diseases of the nervous system to a perusal of the text. How copious the illustrations, may be inferred at once when we say that in a work of 289 pages there are 286 illustrations, of which forty-four are chromo-lithographs, ten are lithographs, and the remainder are excellent cuts of sections of diagrammatic representations. The chromo-lithographs, with two exceptions (figs. 56 and 151, copied from Charcot), are drawn by the author himself, first with the camera lucida and then in lithographic chalk. For this original work he deserves much credit.

That there is no redundance in this full illustration is due undoubtedly to the careful selection and elimination of material and subjects, suggested by the necessities of the lecturer,—for the work is based on a portion of the author's course of lectures on medicine, delivered in the Extra-Academical School of Medicine, in Edinburgh. In reference to the value of illustrations of this sort the author says: "Believing that one great secret of all successful teaching is to teach by the eye as well as by the ear, I am in the habit of copiously illustrating my lectures by diagrams, drawings, and microscopical preparations."

On turning to the text our first favorable impressions are subjected to no disappointments. At every step we find evidence of painstaking diligence, of careful condensation, and scientific accuracy. We recognize the traces of the familiar teachings of Charcot and Erb, "to whose writings," the author gracefully says in his dedication, "I am largely indebted for my knowledge of diseases of the spinal cord." But the author's work shows no signs of being a mere compilation; his material has been well digested. Chapters I and II, devoted respectively to the anatomy and physiology of the spinal segment, and to the pathology of the spinal segment, are the most interesting chapters in the book. The diagrams illustrating the pathways of the varieties of physiological activities are particularly good; they display the ingenuity of a teacher who has a ready facility in materializing, so to speak, his ideas on blackboard or paper. The original studies upon the morbid histology of *polio-myelitis anterior acuta* are well described and well executed in diagram and chromo-lithograph.

Chapter III is devoted to methods of case-taking—to a summary of symptoms met with in diseases of the spinal cord,—and to the clinical examination of a case of spinal-cord disease. Under the latter heading the author remarks: "The essence of the

clinical examination of the spinal cord consists in the separate and systematic examination of its individual segments. The motor, sensory, reflex, vaso-motor, and trophic functions of each segment should be investigated as accurately as our present knowledge will allow." With these words we heartily agree, and we find that our author uses no empty words in expressing this view, for he at once proceeds to furnish the data by means of which we may localize the lesion in the cord by mapping out the peripheral territory involved in the paralysis. For instance, we are furnished with a *résumé* of the motor functions of the different segments of the cervical and lumbar enlargements. After reading this we feel almost inclined to assert that, given a paralyzed group of muscles, we could place our finger upon the spot in the cord involved. Localization of disease in the brain is the fashion of the day, and certainly no backward step is taken in thus attempting to trace the lesion home to its exact focus in the spinal cord.

In this same chapter the use of electricity is fully treated of from a diagnostic point of view, but therapeutically, we think our author has failed to do justice to the use of this agent of treatment and cure. Indeed, we may as well remark here, once for all, that if there is a weak spot in the book it is in its therapeutics. Often and again we find under certain headings a dearth of instructions in regard to treatment until we are at last reminded of the remark sometimes made of the French school, that the main interest in a case rests in the diagnosis and the *post-mortem*. While on this subject we must cite a curious blunder made in a foot-note, in quoting from Dr. Hammond's treatise certain directions in regard to the use of strychnia. By an error of printing ℥ iiss where Dr. Hammond's book says ℥ iiiss, the dose of strychnia is increased from the $\frac{1}{32}$ of a grain to the $\frac{1}{24}$. This in itself would not have been of much consequence if our author had not still further misquoted by writing: "Dose, a teaspoonful or less, according to the age of the *child*," whereas Dr. Hammond's words are: "Dose, a teaspoonful or less, according to the age of the *patient*." In the American edition this error has been corrected by the publishers, W. H. Wood & Co. But what book is there without faults? Our author has remarkably few, and a second edition will sweep away many of these. We close the book with a feeling of respect for Dr. Bramwell's honest work. His book will always possess a high order of merit with those who conscientiously desire to understand the diseases of the spinal cord.

The physician himself and what he should add to the strictly scientific. By D. W. CATHELL, M.D., Baltimore: Cushings & Bailey, 1882.

The author of this work enters upon a comparatively little trodden field of medical literature, as interesting as it is novel. He deals with the "*personal questions in medical practice.*"

He takes the younger members of the profession by the hand in a most cordial and paternal manner, and tells them some home-truths that are seldom uttered outside the circle of private friendships. To do this as Dr. Cathell has done it requires moral courage, ability, and, most of all, experience. In none of these qualities does our author appear to be wanting. With a clean sense of honor, he combines that worldly shrewdness that seems to be lacking in the mental composition of a number of his fellow physicians.

We are counselled as to behavior before the public, to our patients, and to one another. Dress, habits, demeanor, associates, relations to druggists, to homœopathists, and to various religious sects, collection of fees, and keeping of accounts, newspapers, medical ethics, purity of mind, and even variations in the size of teaspoons, form but a small portion in the enumeration of the subjects treated of.

Probably in all this the book is but a reflection of the man, and we have no doubt that our author practises what he preaches. Our present opportunities for ascertaining this are limited, but it is amusing to note that in the only single instance offered to his readers of judging, his practice is widely at variance with his precepts. Thus on page 55 the doctor writes: "When you publish any thing do not follow the custom of suffixing to your name a long tail, consisting of all the titles and names that you can rake together, with half a dozen etc.'s; such an enumeration is in bad taste and excites the ridicule of discerning people. The idea governing the use of suffixes is chiefly that the individual who writes may be identified,—a single suffix, or simple title, or your own town, street, and number, is more modest and equally as useful."

Turning to his title-page we read: "By D. W. Cathell, M.D., late Professor of Pathology to the College of Physicians and Surgeons of Baltimore; ex-President of the Medical and Surgical Society; Active Member of Medical and Chirurgical Faculty of Maryland; Honorary Member of the Lincoln Philosophical Society, etc., etc."

How many more titles our author could have "raked together" we know not, but a "simple title is more modest," he thinks. Well, perhaps so. Certainly we agree with him that half a dozen etc.'s are too many, and we suggest also that the two he employs are redundant, since one alone is a plural. But our good doctor nowhere preaches consistency; he is rather an opportunist—a clever man who trims his sail to the breeze, said breeze being the public and his patients, and since, in his present work, he writes for medical men, we may for once let the "censors smile," and excuse the doctor if he does not practise what he preaches.

If there is any one thing prominent in the book it is the "hard-sense" of the writer—or perhaps we should say that kind of "hard-sense" that is nearest akin to a truly agreeable, enlightened selfishness. Our writer preaches philanthropy but not abasement; in helping others he would have us retain our own strength, not waste it; he throws no pearls before swine. On the other hand, he neglects no honest person's interests. His main aim is to inculcate *professional tact and business sagacity*. Will any one say that there is not a great want of these qualities in the medical profession? We think not.

No one will read this book without feeling that many of his own crude experiences have been deftly worked out into a recognizable plan of personal ethics. Each will recognize therein reasons for his failures, reasons for his successes. The old practitioner, according to which of the two has fallen to his lot, may felicitate himself or repent; the young one may take heed and "form" himself. And in either event Dr. Cathell may feel assured that he has done his fellow physicians good service.

L' hérédité psychologique.—Par TH. RIBOT, Directeur de la Revue Philosophique; deuxième édition, entièrement refondue. Paris: Germer Baillière, pp. 417.

The first edition of this work, with its many *depassées* ideas and old title, will be laid upon the shelf, now that M. Ribot has given us this delightful new work, for such it really is, with its changed name, tone, and arrangement. Old parts have been taken from and new parts added to it, unimportant details dropped, noticeable lacunæ satisfactorily filled in with the results of investigation and observation by Darwin, Herbert Spencer, Galton, Lucas, and others. M. Ribot shows by his title his particular aim; for although he enters rather fully into the details of

somatic heredity, the hereditary transmission of mental faculties considered in their laws, consequences, and causes being so intimately connected with the physiological that this was necessary yet psychological heredity is what he especially writes to prove.

The book is divided into three parts: Facts, Laws, and Consequences. In the first part, facts, the author begins with heredity of instinct, the lowest degree of intelligence, defined by Hartman "as an act in conformance with an aim, but without knowledge of the aim," a phase of heredity which is comparatively easy to demonstrate, and takes us to the heredity of intellectual activity, the highest and most complex action of the brain, a phase of heredity which is most difficult to state; he takes the synthetic method and shows that the results of mental activity are transmitted. This part is full of authenticated facts dating from old time to to-day; they are well chosen and pertinent to their especial headings.

In the second part, the laws, the author analyzes the mass of facts borrowed from animal and human psychology, pathology, and history, and shows that they are not mere isolated cases, resulting from the accidental concurrence of other laws; he compares his facts, generalizes them, and evolves from them a biological, universal law, heredity,—a necessary, invariable law, except when secondary causes intervene. He reduces all the facts of heredity to four formulæ.

1. Parents have a tendency to bequeath to their children all their psychical characters, general and individual, ancient and newly acquired (law of heredity direct and immediate).

2 One of the parents may have a preponderating influence upon the mental construction of the child (law of the preponderance of transmission of characters).

3. The descendants often inherit the physical and mental qualities of their ancestors and resemble them without resembling their parents (atavism).

4. Certain physical and mental dispositions, very distinctly determined, generally morbid, manifest themselves in the descendants at the same age as in the ascendants (law of heredity at corresponding ages). The author introduces an ingenious formula by Prof. Lemoigne (of Milan), analyzing the theory of inherited resemblances. He quotes largely from Galton's "Hereditary Genius," and from De Candolle. They arrive at the same results: psychological heredity and the objective reality of its laws.

In the third part, consequences of heredity, M. Ribot shows

that heredity is one of the principal factors of the law of evolution, and that in accumulating the little differences it produces effects in apparent disproportion to the primitive causes. No one escapes from the law of subjection to and modification by surroundings, which deteriorate or improve his faculties. Chance and, above all, education can develop his intelligence, imagination, and character, and as these acquired modifications may be transmitted by heredity, we can say that evolution of psychical faculties is a law of the intellectual world, and that the gain of each generation is a profit to the next. M. Ribot says that if the power of heredity were better understood, it would be the ruling law of marriage. In Schopenhauer's theory of love, the "Genius of the Species," divested of its metaphysical phraseology, is the power of heredity. Love is blind instinct, and those complex states which constitute the passion of love, which are expressed by a choice and impose a preference,—all that, says Schopenhauer, is nothing but an embellishment and accessory.

In the conclusion, M. Ribot makes a brief extract from the most important contemporaneous hypotheses—pangenesis of Darwin, Galton's modification of this theory by his hypothesis of the stirpes, Herbert Spencer's principles of biology, Haeckel's pangenesis, and a theory of M. Balbiani. M. Ribot differs with the idealists; his formula is that physiological heredity is the cause of psychological heredity, or, more properly speaking, psychological heredity is a phase of biological heredity, since all psychical phenomena are inherent to some organ or tissue, and mental manifestations are transmitted as vital manifestations.

M. Ribot concludes this most interesting and valuable book with a comparison between the man of nature and the civilized man. He says: "We do not know certainly what man was in the beginning, and we cannot say what he will become; but let us take the naked savage, with his brain full of images and empty of ideas, in unformed language, and his idols, associated closely with Nature,—a part of her,—and compare him with the man farthest removed from nature, most civilized, most refined, initiated in all the niceties of art, literature, and science, in all the elegances and complications of social life. Between these two extremes the distance seems infinite, and yet it has been traversed step by step. Without doubt this evolution, the complex play of numerous causes, is not due entirely to heredity, but we will have badly succeeded in our task if the reader does not comprehend that heredity has largely contributed to it."

The treatment of diseases by the hypodermatic method.—By ROBERTS BARTHOLOW, M. A., M. D., LL. D. Fourth edition. J. B. Lippincott & Co.

Dr. Bartholow in issuing a fourth edition of his well-known manual has again extended our opportunities of studying a subject of the utmost value.

Many additions and alterations are made necessary by the rapid growth of the therapeutics of active principles of drugs, occupying, as these active principles do to-day, an important position in hypodermatic medication.

As might be expected from its relative importance, over a hundred pages are devoted to a detailed description of the hypodermatic uses of morphia.

The best preparations for hypodermatic use are fully discussed. Although showing clearly that permanent solutions are more or less irritating, either from the addition of an antiseptic or from the growth of the penicilium if the antiseptic is not added, and that there is often an uncertainty as to the exact dose, owing to the consumption of the alkaloid by the penicilium, the author does not seem ready to advocate the abandonment of permanent solutions, when practicable, in favor of powders to be dissolved at the moment when used, although stating powders to be safer.

A most valuable part of the work consists of a chapter devoted to the combined use of morphia and atropia, clearly demonstrating the greater safety and many advantages of the combination. When given together, morphia corrects the hallucination and phantasms of atropia. Atropia in small doses, $\frac{1}{100}$ of a grain, increases the hypnotic power of morphia. The pain-relieving power of morphia is increased by atropia, and the after-headache and confusion of mind are much lessened. Careful work is expended on the physiological antagonisms of several drugs, especially the antagonisms of atropia to physostigma, pilocarpine, muscarine, quinia, bromal hydrate, aconite, and morphia; also, on the antagonisms of strychnia to chloral, bromide of potassium, and nitrite of amyl.

The first enthusiasm over the hypodermatic syringe may have somewhat cooled, but it is certainly growing in favor as an aid in emergencies. As Dr. Bartholow states, a practice has grown up of using ether and various alcoholic liquors hypodermatically in cases of great depression of the powers of life; and, although it is well recognized that ether, like any other irritant, when introduced into the tissues may be followed by abscesses, it is not as

generally known that the use of ether may be followed by paralysis. Dr. X. Arnozan in the *Journal de Médecine de Bordeaux*, June 25, 1882, gives four cases in which ether injected into the muscles caused paralysis of the muscles into which it was injected. The paralysis showed a great similarity to local paralysis, *i. e.*, suppression or diminution of faradic excitability and increased galvanic response. All the cases recovered in various periods of from one to three months.

On the whole the work is a valuable and reliable guide, bringing us fully up with the times, while it deals only with facts which, in the author's opinion, are well established.

Mental pathology and therapeutics. By W. GRIESINGER, M.D. Translated from the German by C. LOCKHART ROBERTSON, M.D., and JAMES RUTHERFORD, M.D. New York: Wm. Wood & Co., 1882.

This volume of Wood's library indicates that there has been so much interest taken in psychiatry by the general practitioner as to constitute a demand for the appearance of a work on the subject in that very practical series, Wood's "Library of Standard Medical Authors." It is to be regretted, however, that a work less antiquated could not have been used. The English edition from which this was taken appeared in 1867. Since then many advances have been made in clinical psychiatry and psycho-physiology, of which this work makes no record. The first chapter deals briefly with the study of mental diseases. The second chapter, on anatomical observations, is not of much use, and should have been supplemented by a *résumé* of the views of Meynert. The third chapter, on physio-pathological considerations, is very general in its nature. The chapter on elementary disorders in mental disease shows that, to a certain extent, Griesinger is hidebound by a formulating tendency. The chapter on insanity might be read with advantage by certain experts in the Guiteau case. One statement made by Griesinger in the chapter on the causes of insanity is in marked contrast with the experience of the reviewer and the views of many authorities, namely, that hallucinations are much rarer in children than in adults. He speaks on page 109 of "hereditary mental disorders," a class of psychoses whose existence was strongly denied by all of the experts for the prosecution in the Guiteau case. The classification adopted by Griesinger is very general. It presents some good features. He makes three general divisions: States of Mental

Depression; Melancholia: States of Mental Exaltation and States of Mental Weakness. For a rough general classification this is certainly a good one, but, as will readily be seen, it is scientifically incorrect. The divisions of the first class are: Hypochondriasis, under which head are described many cases of decided chronic monomania (primäre verrucktheit) and hebephrenia; Melancholia in a more limited sense; Melancholia with stupor; Melancholia with destructive tendencies; and Melancholia with persistent excitement of the will. All of these types except melancholia with stupor include imperfectly reported cases of primäre verrucktheit, whose melancholia has a clearly objective basis. Griesinger believes with Guislain that a *stadium melancholicum* is a preliminary stage of all psychoses. The divisions of the second head are Monomania and Mania. Many of the cases of mania cited by Griesinger as clearly characteristic are curiously enough cases of melancholia with frenzy and not true mania. Under monomania are described cases of primary insanity and progressive paresis. The latter psychosis as a symptom-group is not recognized at all by Griesinger, and this is a very *serious* lack in a volume intended for "practical" purposes. His placing primäre verrucktheit in the same group with idiocy and imbecility is fully justified. Primäre Verrucktheit, the mania raisonnante of the French, the imbecility of the first grade of Ray and Nichols, the monomania of Spitzka, depends on teratological defect. From this stand-point it is closely allied to idiocy, but in the same group Griesinger places dementia of all sorts. This is not justifiable by clinical or pathological observations, and only tends to confusion. Between the perverted intellectual reasoning maniac and the dement is an immense gap. Like every authority of any note Griesinger recognizes the existence of moral insanity. In the chapter on pathological anatomy are some very sound conclusions which should be read with great interest by certain alienists who have coarse materialistic views. For a beginner in psychiatry the book is not of much value. For an alienist able to eliminate elements of error it is of use and interest. Well edited, it could have been rendered superior to any work in English. The translation is well done.

The philosophy of insanity, crime, and responsibility. By Dr. H. HOWARD, Montreal, Canada. Montreal: Dawson Bros., 1882.

The view that mind is the outcome of material changes, whether such be its ultimate origin or not, is so familiar to the average

alienist, nay, to the average physician, that the special emphasis laid by Dr. Howard on the physical nature of insanity reads somewhat strangely to an American over whom theological ideas do not exert too strong a sway.

There is, however, no denying that, though here in the United States the fact that insanity is a physical morbid entity is not gainsaid, still, in England, and English-speaking countries, the battle over this fact is not yet ended. Whoever has read the writings of Winn and Bateman must have been astonished at the survival of such mediæval views. In Canada these views are held with still greater tenacity, and it is not a great many years since that Dr. Douglass, then of Beauport, Canada, ridiculed Dr. Workman, of Toronto, for making autopsies on the insane. Such being the case, it is obvious that a work like this of Dr. Howard was needed to break down the prejudices against psychiatry. Dr. Howard looks upon not only insanity, but also crime, as resulting from the physical constitution of the individual. That such views are, with certain modifications, in accordance with science, cannot be denied. That they have been independently arrived at by Dr. Howard, is also true; but although he can claim originality, he certainly cannot claim priority. He makes a strong and well-timed protest against the right and wrong test of responsibility. Dr. Howard does not believe in monomania in the forensic sense; that is, he does not believe that a man can be other than an insane man who has but a single delusion: his will, intellect, and emotions must be affected by such delusion. This view does not conflict with the idea of monomania or partial insanity as held by the alienists. Dr. Howard maintains (p. 117) that the insane man is not responsible for his acts, because of pathological defect; the imbecile and habitual criminal, because of teratological defect, and in all of these conclusions he is fully justified. Kräpelin, Ferri, Lacassagne, and Lebon (this JOURNAL, January, 1882) hold similar views respecting habitual criminals. A little more diffusion of these opinions respecting habitual criminals, and even the general public may come to recognize the fact that law should not avenge the victims of crime, but prevent crime. The book is interestingly written, and as a protest against certain dogmas too prevalent in the United States, and others equally so in Canada and England, is of value. It is well issued.

Clinical lectures on diseases of the nervous system. By THOMAS BUZZARD, M.D., etc., London, 1882, 8vo, pp. 466.

Of the twenty-five lectures in this book, twenty relate to the

spinal cord, and of these latter ten are concerned with locomotor ataxia. The work, therefore, is very limited in its range, and its title is scarcely in accordance with its contents. As stated by Dr. Buzzard in the preface, some of the lectures have appeared at various times in the medical journals.

While there is nothing new in the book, Dr. Buzzard has said what he has had to say with clearness and precision, and with a degree of fulness sometimes in excess of what is required in clinical lectures, addressed to undergraduates, as these apparently were. We think, too, that his use of the term "tabes dorsalis" instead of "locomotor ataxia" is unfortunate. The former never had a place in English medical literature, and it was not till Duchenne took up the study of the subject that the disease which Romberg called "tabes dorsalis" became even tolerably well known to English physicians. Thus it is not mentioned in the "Cyclopædia of Practical Medicine," edited by Drs. Forbes, Tweedie, and Conolly, and published nearly forty years ago. Watson only refers to it in his later editions, and by the name of locomotor ataxia, without even mentioning Romberg; and Copeland, in his "Dictionary of Practical Medicine," while giving the name "tabes dorsalis," applies it to a disease which is certainly not locomotor ataxia. The following is Copeland's description of the symptoms of what he calls "tabes dorsalis":

"The symptoms in both sexes are chiefly extreme emaciation, a weak and bent state of the spinal column, the lumbar region of the spine having lost its posterior concavity, and having become either straight or convex, owing to the softened yielding, or atrophied state of the interstitial substance. The gait is unsteady and vacillating, the knees bend under the weight of the body, and all the muscular movements and mental manifestations evince debility, exhaustion, impaired powers of exertion, application and attention. The genitals are often flaccid, wasted, or soft and small in the male, and are subject to leucorrhœa in the female; the eyes are weak, and the whole body is emaciated. If the causes are continued, various functional and organic lesions intervene: especially nervous affections varying in character with the peculiarities and circumstances of individual cases, hysteria, hypochondriasis, mental depression or delusion, tremors, extreme susceptibility, anæmia, and ultimately epilepsy, incomplete or complete, partial or general paralysis, insanity, and the several other consecutive maladies mentioned when treating of voluntary or involuntary pollutions."

This was the English idea of "tabes dorsalis" less than thirty years ago. It does not have the slightest resemblance to Romberg's almost perfect description published in 1840. It is rather late in the day, therefore, for English writers to begin to employ Romberg's terminology.

Altogether Dr. Buzzard's book is a useful and interesting contribution to medical literature, the lectures on locomotor ataxia are particularly good, so far at least as the description of the disease is concerned; but here, as in regard to the other diseases considered, there is little or nothing relative to the treatment. Indeed, there is not a word on the subject of the treatment of the affection in question. Bad as the prognosis is in cases of locomotor ataxia, it certainly is not an entirely hopeless disease, and at least not a few cases admit of marked amelioration. Relative to paralysis agitans, under which name he includes, as did Parkinson, two very different affections, there is nothing said concerning the treatment, although, as is well known, the tremor of all scleroses is markedly ameliorated by the administration of hyosciamine. A work on clinical medicine should, above all things, consider the subject of treatment. It is for that that patients are admitted into hospitals; and clinical lectures, we take it, are mainly given in order that those who attend them may become acquainted with the methods of management which diseases require. Viewed from this stand-point, Dr. Buzzard's book must be regarded as not adequately representing the state of medical science relative to the diseases upon which his lectures were given.

Editorial Department.

WE had scarcely sent to press in our last isssue a thoughtful article upon the so-called family, hereditary or Friedreich's locomotor ataxia, than news came from Germany of the death of the man himself, who had been the first to differentiate what he held to be a peculiar form of this now familiar spinal disease. Prof. Dr. Nikolaus Friedreich died at Heidelberg on the 6th of July, of aneurism of the aorta. Friedreich's father was also doctor of medicine and a professor at Würzberg. Young Friedreich as early as 1853 turned his special attention to pathology; in 1858 we find him permanently installed as Prof. of Special Pathology and Director of the Medical Clinic at Heidelberg. Here he worked indefatigably to the end of his days. To his influence was due the great success of the medical clinic and the foundation of the psychiatrical clinic. He was perhaps the most prominent purely clinical teacher in Germany. Medicine owes to him many valuable works, some on general and many on special subjects. Among those relating to neurology may be mentioned, a treatise on "Progressive Muscular Atrophy," contributions to the subject of "Tumors within the Cranial Cavity," and a treatise on "Degenerative Atrophy of the Posterior Columns of the Spinal Cord."

The views entertained in this latter work were put forth twenty years ago, when locomotor ataxia was a comparatively novel disease. And Friedreich's contention for his peculiar form of the disease was apparently so securely founded on *post-mortem* observations and carefully observed symptoms, that no one even

attempted to refute them, until the able writer in our last number finally came boldly forward and demonstrated that the so-called Friedreich's form of locomotor ataxia was not locomotor ataxia at all. There is probably no more curious example in medical literature of writer after writer in systematic treatises of diseases of the nervous system, following blindly in the tracks of his predecessors, and employing a nomenclature which, if subjected to but a little thought, would have crumbled to the ground. So much for the influence of a mighty name.

But Friedreich's fame does not rest on a single foundation-stone. He builded well, and broadly, and surely. His work has become an enduring, component part of medical literature. His name is cherished by a broad brotherhood of friends, and respected by his co-workers the world over.

THERE is growing in the community a sentiment which is but a reflex of the opinion long held by those best informed upon the subject among the medical profession, that commitments of patients to the insane asylums are too easily obtained, and their retention in these institutions too easily managed. The daily press of late has recorded numerous examples of inmates who have been withdrawn from our asylums only by the aid of tedious legal processes. What fatal instinct induces superintendents to retain their hold upon the unfortunate whose reason has returned, we know not. We only know, from the instances now recorded during the last six months, that some patients have been kept in durance long after their recovery. Can it be that the typical superintendent is color-blind to sanity; or is it that he possesses an inherited feeling of domination over his patients similar to that displayed by the cat to a maimed mouse? We do not believe this. The distrust abroad in the community, fortunately, may be specialized so as to refer to but few of our lunatic asylum superintendents, who, in general, we are far from believing to be actuated by any of the motives thus publicly expressed.

The whole business of the commitment of lunatics and their

retention needs reforming. If there are incompetent superintendents, there are likewise in the ratio of many to one incompetent physicians who sign the certificates that place the insane in the hands of the superintendents. There are likewise rotten boards of trustees and rottener municipal rings. With such sustenance at their roots, what can be expected of the outgrowth?

We say again that our remarks are far from applying to all asylums; on the contrary, they apply to but a few. But the public finds it difficult to separate the chaff from the wheat. Taken as a whole, the recent revelations of wrongly incarcerated and wrongly retained patients reflect upon the entire asylum system. Let the superintendents themselves, then, be the first to propose means to right the evil. From them should come the proposals for reform, or otherwise their sins of omission may place them on the same plane with their fellows who sin by commission.

As a last tribunal there remains public opinion—our potent American reformer. It is this agent of reform that has now aroused itself, and we await the result, regretting, however, that the governing powers of the asylums should not themselves have been the first to inaugurate the changes that an urgent public would now seem to render unoptional.

Emphatic action has been lately taken by the grand jury of the City and County of New York concerning the Ward's Island Lunatic Asylum. After thorough investigation they have made to the court the following presentment, whose recommendations in regard to the precautions that should accompany a commitment, and in regard to the privileges to be accorded to patients, appear to us to be eminently humane and proper. So far as this indictment relates to the Ward's Island Asylum we refrain from special comment, since, on the whole, the grand jury's charges are in themselves of a general nature:

NEW YORK, *Nov.* 1, 1882.

Hon. FREDERICK SMYTH, *Recorder:*

SIR: At the request of this grand jury upon matters relating to the management of Ward's Island Lunatic Asylum, there has developed strong evidence of the existence of a system so dangerous to the rights of citizens that we feel

it our duty to recommend that a change in the laws may be made to remedy the evil and prevent, as far as possible, the incarceration of sane persons in either public or private asylums. To this end we recommend that the alleged lunatic, in all cases, before commitment shall be examined by three physicians, each acting separately without the presence of the other, and that the examination shall be had before a judge and in the presence of counsel for the accused; that the physicians shall be selected by the judge in the same manner that jurors are drawn, from the names of all reputable physicians who may have been in active practice in the State, county, or city during a period of five years at least, and that a majority verdict, with the concurrence of the judge, shall be necessary to a commitment.

We find the sanitary arrangements very deficient, especially in the use of the baths, where healthy and diseased persons are compelled to use the same bath without change of water. From the testimony before us we find that opportunities afforded to patients to communicate with their friends are too limited, if not altogether forbidden, and we urgently recommend that such changes be adopted as will enable patients to confer with friends and legal counsel.

CALEB B. KNEVALS, *Foreman.*

FROM the Secretary of the National Association for the Protection of the Insane and the Prevention of Insanity, we learn that at a recent meeting of Councillors of the Association held October 6, 1882, it was resolved: "That a semi-annual bulletin, or journal, should be issued by the Association, under the editorship of Dr. C. L. Dana (of the editorial staff of the *N. Y. Medical Record*), with an editing committee composed of Dr. Joseph Parish, of New Jersey; Dr. W. W. Godding, Superintendent of the Government Insane Hospital, Washington, D. C.; Miss A. A. Chevaillier, Boston, Mass.; Dr. H. M. Bannister, Assistant-Physician Kankakee Insane Hospital, Illinois; Dr. J. C. Shaw, Superintendent Kings Co. Insane Hospital, N. Y."; and, further, that it is proposed that this journal shall publish such medical and other papers as are read before the public meetings of the Association, and shall contain information regarding the progress of lunacy reform in this country and in Europe; also, such other matter as will tend to awaken an intelligent and practical interest in the important problems with which this Association has to deal. It is further proposed to appoint annually corresponding members from each State and from different parts of Europe, who shall be required to report, on or before the first day of January, to the Secretary of the

Association, on the condition of the insane, the laws which exist relating to them, the changes which have occurred, and such other facts of interest and benefit as he may be able to obtain in his particular State.

Members of the Association who pay the annual fee of two dollars will receive their bulletins free. Members are earnestly solicited to interest the community in their locality, and obtain as many subscribers or new members to the Association as possible. Also to send the Secretary a list of names of those in their State who would be likely to be interested, and to whom circulars soliciting membership may be sent by the Secretary. Personal effort, however, on the part of members and officers is desired. The officers of the Association are H. B. Wilbur, M.D., President, Syracuse, N. Y.; Nathan Allen, M.D., LL.D., Vice-President, Lowell, Mass.; Miss A. A. Chevaillier, Secretary, 7 Highland Park Avenue, Boston, Mass.; Geo. M. Beard, M.D., Treasurer, 52 West 34th Street, New York City.

ACCIDENTS in insane asylums repeat themselves under similar circumstances in different lands. Some time since a patient in the Ward's Island Insane Asylum was killed by boiling water let into a bath-tub in which he had been placed, in order to give him a bath. *Le Progrès Médical* of August, 1882, relates an almost identical case. In June last, an attendant at La Salpêtère was directed to give a bath to an excited patient named Georges. Having placed the woman in a bathing-tub provided with a copper cover, ordinarily employed for the excited patients, and having opened the hot-water faucet, the attendant went to a neighboring room, forgetting to close the faucet. A few moments later the patient was found dead. The attendant was arrested, but on the strength of the testimony of the attending physician to the effect that she was habitually attentive and kind to patients, and having in view the fact that she had already been some time in custody, she was condemned to six days' imprisonment only. Similar accidents, in spite of many

precautions, happen frequently, it seems, according to the report of the inspector-general, in French asylums. But in France there seems to be at least the compensation that negligent attendants are punished by law.

In several issues of the JOURNAL, under the heading of *Clinical Notes*, a number of neurological cases of interest have been reported. It is our desire to establish this department permanently, and in order to attain this end, we request our subscribers and readers to send us brief notes of cases occurring in their practice.

Every practitioner knows that it is often easy to make a short general outline of cases which, from lack of time or supposed lack of interest, he would refrain from reporting in a more formal manner. It is these short cases that we shall welcome to our Clinical Note Department, though of course longer and more elaborate reports will be all the more desirable.

STILL another new medical journal comes forward and asks attention and favor from the general profession. It is entitled *The Medical Chronicle*, and is edited in Baltimore by George H. Rohé, M.D., Professor of Hygiene and Clinical Dermatology in the College of Physicians and Surgeons of that city; it is to be issued monthly at a yearly subscription of one dollar.

There is good work in the first number. The article on the "Conflict of Rational Scientific Medicine with Homœopathy," by Dr. Jno. S. Lynch, is thoughtful and practical. Dr. Rohé is everywhere interesting, and Dr. J. H. Branham, under the title "A Year's Progress in Surgery," begins the first of a series of "special chronicles," that are promised to be a monthly feature of the journal.

There is an air of permanency about *The Chronicle* that commands our respect—hence this brief mention.

THE Medico-Psychological Society of Paris, at its séance of July, 1882, decided to put forth the following questions for prize

competition. *Prix Aubanel:* do there exist signs or indications which allow of recognizing that a mental disease is hereditary without a knowledge of the patient's antecedents? Give such signs and indications. *Prix Belhomme:* The proper means of developing the faculty of language in idiots.

THE American Neurological Association offers a prize of five hundred dollars, to be known as the "William A. Hammond Prize," and to be awarded at the meeting in June, 1884,[1] to the author of the best essay on the "Functions of the Thalamus in Man."

The conditions under which this prize is to be awarded are as follow:

1. The prize is open to competitors of all nationalities.

2. The essays are to be based upon original observations and experiments on man and the lower animals.

3. The competing essays must be written in the English, French, or German language: if in the last, the manuscript is to be in the Italian handwriting.

4. Essays are to be sent (postage prepaid) to the Secretary of the Prize Committee, Dr. E. C. Seguin, 41 West 20th Street, New York City, on or before February 1, 1884; each essay to be marked by a distinctive device or motto, and accompanied by a sealed envelope bearing the same device or motto, and containing the author's visiting card.

5. The successful essay will be the property of the Association, which will assume the care of its publication.

6. Any intimation tending to reveal the authorship of any of the essays submitted, whether directly or indirectly conveyed to the Committee or to any member thereof, shall exclude the essay from competition.

7. The award of the prize will be announced by the undersigned Committee, and will be publicly declared by the President of the Association at the meeting in June, 1884.

[1] No essay of sufficient originality having been sent to the Committee, this prize is again offered to universal competition.—E. C. SEGUIN, *Secretary*.

8. The amount of the prize will be given to the successful competitor in gold coin of the United States, or, if he prefer it, in the shape of a gold medal bearing a suitable device and inscription.

Signed—F. T. Miles, M.D., Baltimore; J. S. Jewell, M.D., Chicago; E. C. Seguin, M.D., New York.

Dr. Henri Groslambert, of the Faculty of Medicine of Paris, may be a very learned man, but the world will probably never become acquainted with the fact. M. Groslambert has recently written a book, and a publisher has been bold enough to give it a printed form. It is entitled: *Esquisses physiologiques de l' homme mental.* Beyond the title few will care to go. There are no running titles, no headings to the chapters, no index. There is, to be sure, a table of contents, and from this the would-be student of Dr. Groslambert's lucubrations might reasonably expect to obtain some knowledge of what is in the book. We quote it entire, trusting that our readers are endowed with a greater power of discovering the inscrutable than we are. Its richness would be lost by a translation.

"TABLE DES MATIÈRES.

Seriously, an author who issues a work with so little regard for the comfort of the public to which he appeals, as is exhibited by M. Groslambert, deserves to have his book tossed into the waste-paper basket. The idea which he evidently entertains, that people will be found with the patience, the time, and the admiration for the author to winnow the chaff of his 465 pages to get the grain

of wheat which may possibly be there, shows that he overestimates the good nature of those who may be persuaded from an inspection of the title-page to purchase his *Esquisses*.

THE *Journal of Mental Science* has recently reviewed the Guiteau case in a way that calls for special comment. The opinions expressed in this review are diametrically opposite, and are: first, that Guiteau was a mere scamp; second, that he was a psychological monstrosity. The first opinion is that of Dr. Orange, and is founded on the evidence of Dr. John P. Gray and the *résumé* of the evidence in the case given in the *Journal of Insanity*. The second opinion is by Dr. Tuke, and is founded apparently on the papers of Drs. C. F. Folsom and Channing. The first opinion is the deliberate one. The second is obviously prompted by a desire to placate the experts for the defence. The first opinion, therefore, may be accepted as representing the views of the *Journal of Mental Science*, since to accept both is to condemn the *Journal* for its inconsistency. The first opinion, as already stated, is based on Dr. Gray's evidence, and his *résumé* of the evidence of the experts for the defence and prosecution. When one takes the opinions of a physician from the writing of an opponent, he does that physician an injustice, unless such opponent may be relied upon to make an accurate presentation of the facts. Can we then place entire confidence in Dr. Gray's *résumé*. In the same number of the *Journal of Mental Science* is a demand for Dr. Gray to answer a certain grave charge preferred by Dr. Wilbur. This charge is well substantiated, and the evidence of such substantiation has been in the hands of the editors of the *Journal of Mental Science* for years, and has been studiously ignored. This may seem a strong assertion, but the evidence thereof will be presented in detail. In 1875 Dr. Bucknill wrote as follows concerning the asylum at Utica:

"The asylum contains six hundred and fifty patients, . . . and I was pleased to find that not one patient was either under restraint or in seclusion. I observed one young man in a state of great excitement, suffering indeed under the restlessness of the

most acute mania. He was under the sole charge of two attendants, who were carefully walking about with him, holding him on each side, and I could not refrain from asking Dr. Gray why he did not order him into mechanical restraint, as it appeared to me just the case in which it would be justifiable, if in any. Dr. Gray replied that he did not use restraint, but I found him indisposed to talk on the subject, as he admitted that his practice was not in conformity with the opinions of his professional brethren, and he evidently preferred to treat his own patients as he thought best, without opening a blazing question. As no one was in restraint in this asylum, neither was there any one in seclusion. . . ."

To this conduct of Dr. Gray there can be but one interpretation: before Dr. Bucknill he was an ostentatious non-restraint man. To be sure, when Dr. Gray reprinted this, he wrote that Dr. Bucknill was mistaken in so saying, and in July, 1877, a torrent of abuse was directed against Dr. Bucknill by the redoubtable Dr. Grissom, under the title of "Mechanical Protection for the Insane." In this Dr. Gray is held up as an apostle of "mechanical protection." In 1879 Dr. Gray testified before the New York Committee on Public Health that he had used the camisole, the crib-bed, and wristlets for years; this evidence shows as clearly as evidence can that Dr. Bucknill was misled. It has been before the *Journal of Mental Science*, but was not noticed by that journal until Dr. Wilbur's charge. It is from a witness whose credibility it questions, that the *Journal* takes the opinions of his opponents. If Dr. Gray misled Dr. Bucknill he is certainly capable of misleading Drs. Orange and Tuke by a biassed *résumé*. The main factor, therefore, on which the *Journal of Mental Science* bases a deliberate judgment is shown to be faulty, and its judgment therefore worthless. But it may be urged there was scientific evidence in the *résumé*, and upon this a fair judgment could be based. An examination of this "scientific evidence" is therefore in order. One witness is distinctly mentioned as having given "scientific evidence" (*Journal of Mental Science*, July, 1882, p. 239). What was this scien-

tific evidence? That there could be no hereditary insanity (p. 1,018, official report): that there was no such term in medical science as moral insanity (p. 1,019 *ibid.*). That insane men never were affected by outside influences as regards their delusions (p. 1,022, *ibid.*). That the exertion of self-control in any way was inconsistent with insane delusions (p. 1,022, *ibid.*). If this testimony is well founded, Griesinger, Ray, Morel, Buccola, Marcè, Le Grand de Saulle, Kraft-Ebing, Meynert, Emminghaus, Schüle, Hammond, Rush, and Esquirol have made some terrible mistakes. To the editor of the *Journal of Mental Science* this evidence may be of more value than the opinions of the authorities cited, but we recall also that Dr. Hack Tuke has written in conjunction with Dr. Bucknill a work on psychological medicine. In that work there are six extended references to hereditary insanity, and twenty-three to moral insanity, including the narration of nine cases. In the July, 1882, number of the *Journal* Roderick McLean is represented as forming by reasoning his delusions and being capable of exerting self-control, yet McLean is insane according to the *Journal*. A judgment based on the evidence of a witness whose methods and assertions are questioned, and on "science" which is in opposition to the opinions of all the European alienists, is all that the *Journal of Mental Science* can offer as a contribution on the Guiteau case. It has defended its American allies at the expense of its reputation for good judgment and consistency.

THE title of Dr. Huchard's interesting paper on the "Character, Habits, and Mental Condition of the Hysterical" (*Archives de Neurologie*) was inadvertently referred to in our Abstract Department (April number, p. 432) under the erroneous heading of "Mental Status of Idiots and Defective Children." We are glad to correct this error, and shall in our January number of the JOURNAL give an extended notice to Dr. Huchard's further valuable labors in connection with the editing of the *Traité des Névroses* par A. Axenfeld, deuxième édition augmenteé de 700 pages par Henri Huchard, etc., etc., Paris.

We are happy to announce that a leading article of great interest, prepared for the Journal by our distinguished collaborator, Prof. Charcot, Professor of Diseases of the Nervous System in the Faculty of Medicine of Paris, will appear in our forthcoming January number.

The New York Post-Graduate Medical School, recently inaugurated, has entered upon its winter's work with that solid guarantee of success that springs from an attendance excellent in numbers and in quality.

The general objects and the plans of the new School may be gathered from the following quotations :

" Every year," says the prospectus before us, " New York is resorted to by very many intelligent and progressive medical men, who having for years been engaged in the arduous duties of their profession have had neither the time nor the opportunity to keep abreast of the rapid advances now being made in all departments of medicine.

" But, notwithstanding the profuseness of the material for study with which this city abounds, it must be confessed that hitherto no thorough attempt has been made to render this material available for the uses of medical practitioners. The Faculty of the New York Post-Graduate Medical School propose to supply this deficiency, and having the opportunities at their command they entertain no doubt of their ability to accomplish the purpose they have in view.

" Instruction in the College building will be conducted mainly by the professors of the several departments. It will comprise systematic courses of lectures, that will also be clinical as far as practicable.

" Hospital, dispensary, and laboratory instruction will be given by the associate professors and instructors, who will give practical demonstrations of the most approved methods in use for the investigation and treatment of disease."

Under the heading of the Chair of Diseases of the Mind and Nervous System, and Medical Electricity, filled by Dr. Wm. A.

Hammond, Professor, and Dr. Wm. J. Morton, Associate Professor, it is announced that "Professor Hammond will give both systematic and clinical instruction, and the diseases considered will be amply illustrated by cases brought before the class. The associate professor will give a course of lectures on the anatomy of the brain and spinal cord, as developed by recent investigations. The instructors will give special attention to the subject of electricity in its relations to practical medicine. The course will consist of twenty-eight lectures."

Periscope.

a.—NORMAL HISTOLOGY OF THE NERVOUS SYSTEM.

NERVE-ENDINGS IN EPITHELIUM.—Although the details of structure of nerves and nerve fibres in their continuity are fairly well known, we are still very much in doubt as to the exact way in which they begin and end. Pfitzner[1] calls attention anew to the complexity of the chemical reactions of preservative and staining agents in the tissues through which, for the most part, their minute structure is rendered visible. In living structures the molecular condition is constantly changing, and it is not at all improbable that the structure may be at one time in a condition favorable to a certain reaction, and at another not. Moreover, it has usually been assumed that any agent which would stain or render visible one portion of any particular structure would affect all portions in the same way. Thus it is assumed that because gold chloride stains nerves in their continuity, it will necessarily stain their terminations in the same way. Where the characteristic gold precipitate stops, there, it is assumed, the nerves end, and wherever it is found, there are nerves. The fallacy of these assumptions has been often emphasized, and Pfitzner urges in view of them the necessity of resorting to various modes of staining in histological research. His method of demonstrating the nerve-endings in epithelium is to harden in chromic acid; make thin sections, and after carefully washing out the acid put for ¼ to ½ hour in 1 % sol. gold chloride in the dark; then after carefully washing to leave in the light for 12–24 hours in 5 % sol. formic acid. The sections are then mounted in glycerine, with or without staining with safranin. For purposes of control he places

[1] Pfitzner: Nervenendigung im Epithel.—*Morphologisches Jahrbuch*, Bd. vii, p. 727.

sections from tissue hardened in chromic acid for ½ hour in ½ % osmic acid and mounts in glycerine.

He finds in the skin of frog's larvæ that the nerves, as they pass into the outer layers of the corium, divide dichotomously and send branches into the epithelial cells of the deeper layer—two branches into each cell. These terminal nerves do not enter the nuclei but end in free, slightly bulbous extremities, sometimes curling over within the cell-body. The two branches in a single cell never come from the same, but from adjacent trunks. The pictures obtained in adults and in higher animals are not as distinct, but the author has seen enough to convince him that the same mode of termination occurs in higher animals and in man.

Nerves and Ganglia in Frog's Heart.—By exposing the inner surface of the opened ventricle of the frog's heart to the vapor of osmic acid, Dogiel[1] has succeeded in demonstrating that the nerves and nerve cells are by no means confined to the vicinity of the auriculo-ventricular valves, but that double contoured fibres ramify over the inner surface of the wall of the ventricle beneath the endothelium, as well as among the muscles. Numerous ganglion cells, single and in groups, are found in the upper third of the ventricle, to which Dogiel suggests applying the name *ventricular ganglia*, in distinction from the auriculo-ventricular ganglia of Bidder.

The Structure of Living Nerves and Nerve Cells.—The precision in detail which the modern methods of preservation and staining lend to the structural elements is so satisfying that observers are prone to forget that studies of dead structures alone cannot furnish an accurate conception of the nature and characters of a tissue, and it is daily appearing more probable that many of the features which we are wont to ascribe to histological elements are, to a certain degree, artificial. This consideration lends great value to every painstaking and objective study of living tissue, although these for the most part do not lead to striking disclosures.

The studies of Freud[2] on living nerve-fibres and nerve cells of

[1] Dogiel, Joh.: Die Nervenzellen u. Nerven des Hertzventrikels beim Frosche. *Arch. mik. Anat.*, Bd. xxi, Heft 1, p. 21.

[2] Freud: Ueber den Bau der Nervenfasern u. Nervenzellen beim Fluskrebs. —*Sitzungsb. d. k. k. Akad. d. Wiss. Math. naturw., Classe*, Abth. iii, Bd. 85, Heft 1, p. 9.

the fresh-water crawfish are of considerable general interest from this point of view. The fibres and cells were studied with as little teasing as possible in the transparent blood of the freshly killed animal. Under these conditions the fibrillated character of the fibres and cells was readily seen. The nerve-cells of the brain and abdominal ganglia consist of two substances, one of which is arranged in the form of a net-work of fibrils, continuous with the fibrils of the nerve fibres; the other, homogeneous and less strongly refractile, is connected with the inter-fibrillar substance of the fibres. The nucleus of the living ganglion cells consists of a nearly homogeneous body, scarcely outlined against the substance of the cell. As the cell dies the contour of the nucleus becomes more and more distinct, and it at last presents a well-defined double contour; at the same time the intracellular net-work becomes less distinct and the cell-body more granular. Within the nucleus are seen strongly refractile bodies of various forms—spheroidal, rod-like, angular, or forked,—which in the living cell are often in a state of continuous movement, sometimes swaying to and fro with such rapidity as to render the attempt to sketch them almost futile, and again changing their position slowly, or remaining quiescent. This curious movement of intra-nuclear bodies has already been described in a variety of living cells.

THE NERVES OF THE HUMAN EYELID.—The gap in our knowledge concerning the distribution of nerves in the eyelid, left by the exclusive description of the larger trunks by the anatomists on the one hand and by the studies of nerve-terminations by histologists on the other, furnishes the motive for the investigations of von Mises.[1] Using as reagents potash, osmic acid, and gold chloride, he finds that the nerve-trunks enter the lid from the sides and from above. Of the lateral trunks the inner is the larger. These trunks pass horizontally across the lid, supplying the region above the tarsus and forming anastomoses with each other and with branches entering from above. Branches pass to the vicinity of the sebaceous glands of the lashes, where they form a dense marginal plexus. From this plexus fibres pass to the skin, muscles, lashes, and conjunctiva. The nerves going to the eyelashes form around the root-sheaths near the excretory ducts of the sebaceous glands a narrow-meshed annular plexus,

[1] F. von Mises: Ueber die Nerven der menschlichen Augenlider.—*Sitzb. d. k. k. Akad. d. Wiss. Math. Naturw., Classe*, Abth. iii, Bd. 85, Heft 3, p. 172

somewhat similar to the "*anneau sensitif*" described by Jobut in the hairs of the beard, and by others in the tactile hairs of lower animals. The eyelashes, then, according to the author's view, are not merely mechanical, but acutely sensitive protectors of the delicate organ within.

Blood-vessels of the Human Spinal Cord.—Although too minute and extended in detail to permit of a *résumé*, attention should be directed to the second paper of Adamkiewicz [1] on this subject. The first paper, noticed in the July Periscope, having described in detail the distribution of blood-vessels within the cord, this is confined to the minute description of those which ramify externally.

The Structure of Nerves as Demonstrated by Trypsin Digestion.—When, in 1877, Ewald and Kühne announced the partial digestion of tissues by trypsin as a new method of histological demonstration, and sustained their suggestions with some striking results obtained with it, especially on nerves, it seemed that a new era in histological technique might be about to dawn. If it was possible by a simple chemical agent like the pancreatic ferment to digest and remove certain parts of structures, leaving others unchanged, what immediate additions to our knowledge might be confidently expected.

By treating, among other things, peripheral nerves with boiling alcohol and ether to remove water and fat, and digesting with trypsin, these observers were able to demonstrate that inside the neurilemma and around the axis-cylinder were delicate tubular structures, and between these stretched a net-work of the same resistant nature, which they called neurokeratin. In the meshes of this net-work, and between the outer and inner cylinders, lies the myelin. This neurokeratin was also found abundantly in the central nervous system.

Without further recalling the details of structure arrived at by this method in nerves and elsewhere, suffice it to say that while the views advanced in regard to nerve structures have been accepted by such observers as Schwalbe, Hoppe-Seyler, and others, in the minds of many trained investigators much doubt still lingered as to the ultimate value of the method and the belief that its limitations had not been fully ascertained. Careful

[1] Adamkiewicz: Die Blutgefässe des menschlichen Ruckenmarkes.—*Sitzungsb. d. k. k. Akad. d. Wiss. Math. naturw., Classe, Abth.* iii, Bd. 85, p. 107.

investigations by Hesse, Perlich, and others, tended to confirm this doubt. With the hope of arriving at a definite conclusion in the matter Waldstein and Weber[1] have instituted a series of experiments with trypsin, studying its action, among other things, on the peripheral nerves and the central nervous system. They arrive at the conclusion that the neurokeratin of Ewald and Kühne is an artificial product formed by the breaking up of myelin by the reagents employed, and that the inner and outer myelinic sheaths and their associated net-work do not exist in the nerves in their natural condition.

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b.—PHYSIOLOGY OF THE NERVOUS SYSTEM.

GUACHAMACA.—This drug comes from Orinoco, Venezuela, and experiments were made by Dr. Schiffer with the extract. The plant belongs to the apocynaceæ, a family which has furnished many therapeutic and toxic preparations. The chemical and physical relations of this drug resemble those of curare, and it was found that a great similarity existed in their physiological peculiarities. When given to a rabbit it paralyzed the motor

[1] Waldstein and Weber: Études histochemiques sur les tubes nerveux a myéline.—*Arch. de phys. nor. et path.*, July, 1882.

nerves, but it did not interfere with the respiration like curare does. The heart continued beating, as usual with curare. It differs from curare as follows: 1. This poison paralyzes for a time the voluntary muscles, whilst the respiration goes on normally, or nearly so. 2. It appears in the first stage to act on the nerve centres, whilst curare affects them late in the state of poisoning, or not at all. 3. Curare by the stomach does not affect the organism in colossal doses, whilst guachamaca does in moderate ones. It increases the salivary secretion and the peristalsis of the intestinal canal. It has also a slight narcotic action.—*Deutsche medicinische Wochenschrift*, No. 28, 1882.

Bucco-labial Circulation.—Dastre and Morat state that the cervical sympathetic contains vaso-dilator fibres going to the bucco-facial region. It was also found that certain excitations were able to normally throw these nerves into activity. It was found that the nerves of general sensibility, and especially the pneumogastric, conveyed irritations calling the vaso-dilator centres into activity. Of the branches of the pneumogastric the pulmonic were found to be the most active agents in calling out vaso-dilator phenomena. In this manner they explain the facial blush of pneumonia.

They made experiments to determine the reflex action of the depressor nerve of Ludwig and Cyon. They operated on a curarized rabbit, prepared the depressor and divided it. The section of the nerve had no influence on the bucco-labial circulation. If, however, the cephalic end was excited, there was a paleness and evident narrowing of the capillaries. Hence we have with the depressor a vaso-constrictor action, and not a vaso-dilator reflex. The rôle of the depressor is not a general vascular dilation, since at the same time that the vessels of the abdominal viscera are dilated those of the bucco-facial region are contracted. Their experiments also show the remarkable antagonism which exists between the intestinal circulation and that of the skin, the vessels of the one dilating whilst the others are contracting.—*Gazette des Hôpitaux*, No. 71, 1882.

Section of the Spinal Cord.—Grehant and Quinquad have made a series of experiments upon the phenomena consecutive to section of the cord in dogs. As a result of the section the temperature falls from 40° to 25°. They investigated the relation

existing between the fall of temperature and the exhalation of carbonic acid. It was found that a very close relation existed between the two phenomena.—*Gazette des Hôpitaux*, No. 86, 1882.

THE PHRENIC NERVE.—Henocque and Eloy have made experiments upon the phrenic nerve, to determine the action of each one of the roots that go to form the nerve. In the guinea-pig they found that section of the upper roots of these nerves increased the muscular contraction of the diaphragm and exaggerated the activity of respiration, whilst section of the inferior branches enfeebles the diaphragm and the respiratory rhythm.—*Le Progrès Médical*, No. 31, 1882.

REFLEX MOVEMENTS UNDER STRYCHNIA.—Dr. C. L. Walton has made some experiments with frogs under the influence of strychnia, and his conclusions are as follows: Any stimulus capable of producing a reflex contraction in the strychnized frog produces a maximal contraction, provided a certain period of time has elapsed since the preceding stimulation. The period which must elapse varies with the degree of poisoning, being only a few seconds when the frog is strongly poisoned. During this period the contraction is dependent on the strength of the stimulus, being absolutely relative to it at the beginning of the period and becoming gradually less so as the period advances. All these contractions are of the nature of a general convulsion. Stimuli separately inadequate to produce a reflex movement will not produce one when repeated; that is, there is no "summation of stimuli." This is one of the most striking respects in which the poisoned differs from the normal cord. The minimal stimulus capable of producing a reflex movement becomes less and less as the poisoning increases, and the contractions produced by these stimuli become meanwhile greater. The motor and sensory nerves are unaffected by strychnia beyond the wearying due to repeated activity. Invertebrates, as far as experimented on, are not susceptible of strychnia-poisoning. Death from strychnia, though probably due primarily to an alteration in the central nervous system, is greatly influenced by the amount of convulsive action; the frog which is kept quiet as possible remaining alive much longer than the one which is constantly stimulated, the degree of poisoning being the same in both cases.—*Foster's Journal of Physiology*, vol. iii, Nos. 5 and 6.

ABDOMINAL STRAINING.—Guillebeau and Luchsinger have been making experiments to determine the centre which sets the abdominal muscles into activity. They made experiments upon young cats, dogs, and rabbits. The spinal cord was divided high up, and artificial respiration set up. Then the abdomen was opened, and the left sympathetic sought, prepared, and divided. It was put on the electrode of an induction apparatus. When this nerve was irritated the diaphragm descended, the abdominal muscles contracted, and the thorax was in the position of expiration. Mechanical irritation acted similarly. It is also possible from the spinal cord alone, by irritation of a sensory nerve of the abdominal cavity, to reflexly call out the mechanism of straining. These experiments explain the contracted abdominal muscles, when great pain exists in the abdominal cavity.—*Pflüger's Archiv*, 1882, 1 and 2 Heft.

CHEMICAL IRRITATION OF SMOOTH MUSCLE.—Nothnagel has made experiments upon this point. The abdomen of a rabbit was opened in a bath of chloride of sodium, with a constant temperature of 38°. The animals were narcotized by the subcutaneous injection of ether. The salts were used in substance and placed in circumscribed places on the external surface of the bowel. When a potash-salt was placed on a spot of either the small or large bowel, there ensued a strong muscular contraction, which remained confined to the place of application, and lasted from two to five minutes. The application of a soda-salt generated a contraction which extended over several centimetres, and always toward the pylorus, and lasted five to thirty seconds. Ammonia-salts act like soda-salts. The experiments succeed when the nerves going to the bowel are completely divided.—*Centralblatt für die medicinischen Wissenschaften*, No. 37, 1882.

ACTION OF MORPHIA ON THE INTESTINE.—Nothnagel has also made experiments upon this subject. When in a rabbit the bowel was set into activity by a soda-salt, he injected .01-.03 gramme of morphia. If now the bowel was again tested by a soda-salt, then no ascending contraction ensued, but only a contraction at the point of application, as normally ensues with a potash-salt. If, however, he injected more morphia—.05 or .10 gramme—then the application of the soda-salt caused an ascending contraction. The small dose of morphia caused an irritation of nerve-fibres which

inhibited the nervous apparatus, generating the ascending contraction on the application of soda-salts. Larger doses of morphia paralyze the inhibitory nerves. The inhibitory action of morphia is conveyed chiefly through the splanchnics.

The constipating effect of morphia is partly due to this action of inhibition, and partly to diminished secretion and lessened sensibility of sensory nerves. Morphia and digitalis have a corresponding action on inhibitory apparatuses: thus, digitalis stimulates the vagus in small doses, whilst large doses paralyze it; morphia stimulates in small doses the splanchnicus, and in large does paralyzes it.—*Centralblatt für med. Wiss.*, No. 36, 1882.

FUNCTIONS OF PARIETAL LOBES.—Goltz, by experiments upon dogs, has proven that extensive and profound destruction of both parietal lobes causes not only diminished intelligence, but also a remarkable change in their disposition. Harmless and good-natured dogs, after this operation, become surly, quarrelsome, and violent.—*Pflüger's Archiv*, 1882, Band 28, Heft 11 and 12.

REFLEXES FROM MUCOUS MEMBRANES.—W. J. Belfield has made a series of experiments upon this point. He used dogs, and irritated the vagina and rectum. The animals were curarized, and artificial respiration was kept up. By irritating the rectum or vagina mechanically, he saw a considerable depression of the arterial tension. If the splanchnics are divided above the diaphragm, then irritation of these parts is without effect. He holds that the splanchnics carry the depressing impulses to the blood-vessels, allowing them to dilate, and nerves coming from the lumbar segment of the spinal cord convey the impulses to the nerve-centres. —*DuBois' Archiv*, 1882, 3 and 4 Heft.

THE INFLUENCE OF TETANIZING IRRITATIONS UPON THE FORM AND SIZE OF THE TETANIC CURVE.—C. Bohr has gone into this subject in a thorough manner. He used frogs and toads. His results are as follows:

1. Where, after the tetanus, there is no lasting contraction (Tiegel's contracture), the form of the tetanic curve is independent of the frequency and strength of the irritations.

2. The greatest height to which the tetanic curve can attain, other things being equal, is independent of the frequency of the irritation.

3. The height to which the tetanic curve may reach, within certain limits, increases with the strength of separate irritations.—*DuBois' Archiv*, 1882, Heft 3 and 4.

ISAAC OTT, M.D.

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c.—GENERAL PATHOLOGY OF THE MENTAL SYSTEM.

THE RELATION AND PATHOLOGY OF THE PACCHIONIAN FORMATIONS AND THE SPACES BESIDE THE SINUSES OF THE DURA MATER.—W. Browning, M.D., Resident Physician to the German Hospital, New York, in an elaborate article in the *Amer. Jour. of Med. Sci.*, October, says: The Pacchionian granulations are small nodular growths of the (cerebral) arachnoidea. They are usually more or less clustered, and the larger ones are, as a rule, pedunculated. Luschka claims, it is true, that they can originate from the inner surface of the dura mater, but Ludwig Meyer gives a series of observations to the effect, that if the dura be removed with proper care, it is always possible to see the pedicle by which the granulations which have grown into the dura are still connected with the arachnoidea. They can originate as well from the arachnoidea where it bridges the sulci, as where it lies on the crest of the gyri. The conclusion of Meyer, that the granulations originate wholly from the cerebral arachnoidea, is surely correct. He also states that in the normal condition they are covered by an epithelial layer like the arachnoidea itself. On the authority of Key and Retzius it is stated that these granulations fill to little vesicles, on injecting the subarachnoidal space. A remark of Meyer tends to confirm this: "The collective villi are very often infiltrated with serum when there is marked œdema. They can be easily reduced by pressure or incision, like œdema of the arachnoid itself. These facts speak for the granulations being pouches of the arachnoidea." Key and Retzius state further that the cerebro-spinal fluid makes its way from the subarachnoidal space, through the Pacchionian granulations, into the venous spaces of the dura, and by ways as yet unknown into the lymph-spaces at the base of the brain, and those of the nasal mucous membrane.

It has long been known that the Pacchionian granulations are limited in their occurrence to certain parts of the arachnoidea; in greatest frequency, it is true, along the side of the longitudinal sinus, but, as especially emphasized by Meyer, also occurring in the middle or temporal fossa, over the anterior lobes, often 3, and

not rarely 4–5 cm. from the mesial line, along the transverse sinus, over the vermis superior of the cerebellum, and even at the posterior ends of the occipital lobe. In cases of adhesion and the like, it is probable that they may occur on all parts of the arachnoidea.

Trolard is accredited with having first called attention to the cavernous nature of these growths, and their connections with the neighboring venous vessels. He was hardly earlier than Key and Retzius, who mention especially the connections of these spaces with the veins of the dura and with the sinus. My own injections have shown that a large share of the granulations which penetrate the dura do present the venous nature, but that not all even of these do. Such granulations as have not penetrated or become attached contain neither veins nor venous cavities.

Trolard tells of spaces along the sides of the sinus longitudinalis. * * * I have had occasion to describe their occurrence along both sides of the sinus longitudinalis, and on both sides of the sinus rectus. Their largest size is at about the crown of the head, or opposite the middle of the longitudinal sinus. These spaces are very irregular in form and outline ; they are injectable from (or with) the sinus, and certainly communicate with the veins of the dura, and occasionally with an Emissaria Santorini. Many of the dural veins may in fact be said to empty into these parasinoidal spaces. On the contrary, the superior cerebral veins do not seem inclined to empty into them, but run along or through them to the sinus. The spaces therefore do not belong to the pia or cerebral system of veins, but to the dura veins. My own injections carry out the analogy that the parasinoidal spaces increase in size as life advances. Meyer claims that the sinuses of the dura mater can yield somewhat to cerebral pressure, and thus act as a regulator as well as the cerebro-spinal fluid. He includes the larger veins as possibly accessory in their action.

François Franck goes further, and excludes wholly the participation of the cerebro-spinal fluid in this action. The parasinoidal spaces must be important accessories to the veins and sinuses in this respect. They can dilate considerably, and should not be forgotten in considering this question. After this preliminary explanation, it is evident that the old definitions and classifications are insufficient, and that we can distinguish : 1, parasinoidal venous spaces; 2, granulations (so-called Pacchionian) of the arachnoidea ; 3, combinations of the two ; 4, depressions on the inner plate of the skull (foveæ glandulares of Mickel).

Considering the pathological side of these growths, the author says: "Their marked prevalence opposite venous spaces leads to their penetrating them, and even growing into the venous sinuses. It is, however, very rare that they penetrate the veins. I have never been able to find a marked case of it. Meyer's statement, that in cases of chronic meningeal irritation, the granulations penetrating the bone may themselves ossify, I can confirm. Instead of a depression of the bone, one then finds a slight elevation, and, as I have seen, likewise spicules of bone in the meninges. A variety of morbid conditions are known to favor their unusual development. One of these cases is chronic alcoholism. According to Hyrtl, they are found of specially large size in men who have suffered from headache, and in drinkers who have died of delirium tremens. In cases of brain-tumor—glioma, sarcoma, gummata of dura, carcinoma, etc.—one often finds an excessive development of the Pacchionian granulations noted. Atrophy of the brain, with inflammatory affections of the pia and arachnoidea may also act as a cause. In subjects who have suffered from a variety of mental and brain troubles, it is very common to find them strongly developed. Fröhlich emphasizes their marked increase in some fatal cases of cerebro-spinal meningitis. Archambault remarks that they have often been noted in children in cases of meningitis, and that the name aciniform has been proposed for the granular meningitis. These granulations consequent upon meningitis, seem to argue for an inflammatory origin, and it is probable that they are, in reality, somewhat different from the usual Pacchionian growths.

Respecting the increase of the Pacchionian granulations with age, he quotes Huguenin as follows: "In the senile brain, on account of diminution in volume of nervous elements, the variations in the width of the vessels can be larger than in middle life"; and adds: "The same holds true of the parasinoidal spaces." He concludes, that while hyperæmia must be a frequent cause, still the same results could be produced in other ways, though, perhaps, more slowly; especially rapid changes in blood-pressure in the vessels, without at any time reaching decided venous hyperæmia; in fact, any changes or disturbances of the local circulation, possibly even a change of consistency of the blood, or the pulling and pressing of the falx and venous spaces by tumors. The largest meningeal arteries, with their pulsation, are consequently more active in this respect than veins of the same size. The facts respecting clinical symptoms which may be traced to these granulations, he admits are

almost wholly wanting. Four points are referred to: 1. A few cases where large Pacchionian-like granulations pressing on the the ganglion Gasseri, or on one of the motor nerves of the eye in the same vicinity, have been the only discoverable cause of corresponding neuralgia or paretic symptoms during life. 2. It is a question whether these growths penetrating the dura produce headache. Most causes leading to this development, of themselves tend to produce headache. 3. The symptoms of sinus-thrombosis, from granulations penetrating the sinus. 4. The little flat elevation of bone along the median line at the crown of the head. That these growths do not often perforate the cranium, is due, perhaps, to several causes; whatever occasions their development has doubtless ceased to act before they get that far. Again, at the very point where their force slackens, they meet the hard external plate, and are able to go no farther. Concerning the part which the parasinoidal spaces play in pathology, he says: "A variety of facts demand that we look to these spaces as the place where many a sinus-thrombosis originates. It is known that a sinus-thrombosis may form by continuation from the afferent pia veins. It is also known that in the veins in other parts of the body spontaneous thrombosis very generally begins behind a valve vein. To this the necessarily sluggish circulation within the parasinoidal spaces closely corresponds." That a thrombosis can form in these spaces is proved, he cites a case of his own observation, and quotes Huguenin in further support of the same opinion. "If we review the cases where a thrombus filled but a part of the longitudinal sinus, a majority are found opposite the largest parasinoidal spaces." These spaces are again the chief depot, or half-way house, of many septic processes, progressing from outward (cranium and dura) toward the sinus and brain. The anatomical relations demonstrate the necessity of this, since the veins of the diploë and dura, the chief recognized path by which such processes make their way inward, nearly all communicate with, or empty into, these spaces. These, in turn, communicate with the sinus. It has even been mentioned in some cases of so-called sinus-phlebitis, that collections of pus were found in the dura beside the sinus.

The descriptions of the so-called varix of the sinus longitudinalis accord much better with the supposition that they develop from, or are appendages of, the parasinoidal spaces, and are, therefore, not true varices of the sinus. The author states that the new data used in this article were collected, either at the Anatomical Institute, Leipsic, or at the German Hospital, New York.

A Case of Aphasia Without Lesion of the Region of Broca.—*The Am. Jour. Med. Sc.*, Oct., gives the following abstract: At a meeting of the Société Médicale des Hôpitaux, held July 28th, M. D'Heilly presented the brain of a woman, twenty-four years of age, who had died at the Beaujon Hospital. She had been suffering from pulmonary tuberculosis, and was suddenly attacked with loss of speech, without apoplexy, without disorders of sensibility, or motion, or any of the special senses. She was markedly aphasic, but did not seem to appreciate the incoherence of her speech, and showed none of the impatience usual to aphasics. She could neither read nor write, but she seemed possessed of a certain degree of intelligence, and could play cards without making mistakes, and could recognize money. One day she recognized a friend whom she had not seen for a long time. About three weeks later she died from the progress of her pulmonary affection.

At the autopsy the absolute integrity of Broca's convolution was established, but a large area of cortical softening was found implicating the inferior parietal lobule and a portion of the first spheno-occipital convolution; the softening was limited to the gray matter.

The fourth branch of the left Sylvian artery contained a clot of the size of a small grain of shot; the other branches of the same artery were unobstructed.

The question arises, were the disturbances of speech in this case the result of enfeebled intelligence, or of the localization of the lesion in a special region of the cerebral cortex? The latter hypothesis is much more probable, as proved by the reports of cases under the title of verbal deafness and dumbness, in which interesting lesions of the sensory cortical centres have been found in physiological relation with the convolution of articulate speech.—*Gaz. hebd. de méd. et de chirurg.*, Aug. 4th.

Cerebral Localization; Sensory Functions.—Theodor Petrina (*Zeit. f. Heilk.*, ii) reports six cases of his own, in which there was disturbance of sensation in the limbs which had lost their motor power, when after death there was found only lesion of the cortex of comparatively old date, such that the influence of shock or pressure could be excluded, and the symptoms could be referred directly to the lesion. When sensation was affected the lesions were limited to a rather narrow region:

the lower part of Broca's convolution, the convolution of the island of Reil underlying this, the lower third of the ascending frontal, the anterior upper surface of the first temporal convolution, the upper third of both central convolutions, and the superior parietal lobule ; that is, all the convolutions in the psychomotor zone around the fissure of Rolando. The loss of sensation from lesion of these localities consisted in a more or less decided weakening of the sense of pressure, or of pricking, or of locality and temperature, or several of these. The senses of taste, smell, and color were not affected. These cortical anæsthesias differ in this limitation of loss of sensation from those hemianæsthesias which follow a destruction of the posterior third of the posterior limb of the intracapsule. Cortical lesions of the occipital convolutions give rise to no sensory [common sensation, R.] disturbance. He concludes, that the most anterior portions of the frontal convolutions and the surface of the entire occipital lobe are not the seat of sensory [common sensation, R.] centres.—*Boston Med. and Surg. Journal*, Sept. 14.

Mono-Spasm (Zygomatici).—Under the title "A Contribution to Cerebral Localization," H. J. Berkley, M.D., Baltimore, reports in the *Medical News*, July 15, the case of a male, æt. seventy-three, for many years affected with cardiac disease both mitral and aortic; he was observed by Dr. Berkley to have a peculiar twitching of the left angle of the mouth, localized apparently in the zygomatic muscles. No other portion of the face participated in the mono-spasm, and with the exception of a slightly blank look on this side of the face, nothing else was observed. On inquiry it was learned that the twitching began suddenly some thirty months previous, unaccompanied by unconsciousness or pain, and had continued regularly since. No deviation or incoördination of the tongue, or disturbance of the voice, was noted.; and absolutely no paresis of the extremities. He had been blind in the right eye for many years, but vision in the left was nearly normal, and ptosis was not present. His mental conditions was that of an old man in his dotage. Death occurred suddenly. The autopsy revealed on the right ascending frontal convolution, one and a half inches above the margin of the Sylvian fissure, in a location corresponding to the seventh centre of Ferrier, a nodule of calcareous degeneration, of nearly circular shape, three sixteenths of an inch from side to side, and of a correspond-

ing diameter from above downward. The depth was very slight; not greater than one half of the thickness of the cortical gray matter. It looked as if many months before there had been an occlusion, probably from embolism of one of the smaller surface arteries of the gray matter, which had since undergone calcareous degeneration, a result which not unfrequently occurs in like lesions. The left hemisphere, cerebellum, pons, medulla, and cord, were healthy. The cerebral arteries, anterior and posterior, were strewn with atheromatous patches, even in the smallest arteries visible to the eye, but no embolism or rupture was found. The membranes were normal and not adherent. The heart and great vessels were greatly diseased. Calcareous plates and atheromatous patches; and the auriculo-ventricular orifice completely surrounded by a bony ring. Dr. Berkley calls attention to the interest of the case concerning localization of the centres of the face, on account of the minute size of the lesion absolutely unaccompanied by other lesions, and because of the few known uncomplicated lesions of this portion of the motor zone of the brain. The small extent of the degeneration indicates that it was an irritative, not a destructive, lesion. The space involved could not possibly cover the entire surface which supplied motor impulses to the muscles that participated in the spasm, otherwise we would have had paralysis, not mono-spasm, of the zygomatici.

THREE CASES OF CEREBRAL LESIONS; CONTRIBUTION TO THE STUDY OF LOCALIZATION.—Drs. Verdalle and Prioleau, *Journal de médecine de Bordeaux*, No. 49, July 2, 1882.

CASE 1.—A patient, aged seventy, on May 10th, had sudden loss of equilibrium; fell, but did not lose consciousness. On admission to the hospital, was in a state of hebetude; did not answer questions distinctly; slight paresis existed on the right side; no deviation of the face, no sensory trouble; pupil contracted on the left side. Three days later contracture was observed both in the superior and in the inferior limbs of the right side; a comatose state; death followed two days later.

Autopsy.—Very marked congestion of the sinuses, and of the whole convexity. Meningeal hemorrhage on left side, extending from the fissure of Sylvius to the superior margin of the hemisphere, invading, in width, both the ascending frontal and parietal convolutions, and the anterior third of the first and second parietal. No other lesion of the cerebrum.

CASE 2.—A man, æt. thirty-nine, was admitted to the hospital on May 18th. An apoplectic attack occurred during the day, with coma; complete hemiplegia on the left side; paresis on the right. Sensibility was abolished on the left side, and slightly diminished on the right. The next day contracture, exaggerated on making passive movements, was observed on the right side. No change on the left. Death occurred on the night of the 19th or 20th.

Autopsy.—Right hemisphere: nothing on the surface; in the interior, a large hemorrhage, which had destroyed and softened the corpus striatum, the opticus thalamus, the internal capsule, and part of the external capsule; the walls of ventricle are, in great part, destroyed.

Left hemisphere: a pretty large meningeal hemorrhage extending across the fissure of Sylvius. In height it extends from the second temporal to the middle of the ascending parietal and frontal convolutions. In width it covers the third frontal, the foot of the ascending frontal and parietal, and the second parietal. No other lesion found in the left hemisphere.

CASE 3.—A woman, æt. thirty-six, was admitted on May 16, 1882, in a state of hebetude, persistent somnolency; complains of great pain in head; fever; irregularity of pulse, and of respiration; no motor nor sensorial troubles were observed. Death occurred during the night of the 17th–18th.

Autopsy.—Nothing in the right hemisphere.

Left hemisphere: purulent meningitis of the whole base; the pus is abundant in the meninges, and reaches the medulla. About the middle of the base the cerebral substance is so friable that it easily gives way by being touched. A longitudinal section at that level opens into a vast abscess, which almost occupies the whole sphenoidal lobe, and opens in the lateral ventricle by a sort of fistula, and from that point into the aqueductus of Sylvius, and into the fourth ventricle. There is caries of the temporal bone (petrous portion) and otitis interna suppurativa.

APHASIA; RIGHT HEMIPLEGIA.—Gautier, *Union médicale et scientifique du Nord-est*, No. 7, July 1, 1882. A man, aged forty-five, was admitted to the Hôtel Dieu, January 5, 1882. Fifteen days before his admission, sudden and complete right hemiplegia; loss of consciousness, and vomiting occurred. He had enjoyed perfectly good health before. Examination shows, besides the

hemiplegia, considerable diminution of sensibility on the paralyzed side—little to be noted respecting the face. Patient does not seem to understand, and repeated questions are answered by the word yes (*oui*) only. January 31st, muscles of right side of face contract imperfectly; pupils and movements of the tongue are normal; in the night, patient seems to try to talk; and after having been asked about ten times: "Are you doing well?" he answers: "I am doing well, yes." Cannot write; and a large eschar is discovered on the sacrum. February 1st, some convulsions; on the third, tracheal râle: death occurred on the 4th.

Autopsy.—Right hemisphere larger than left; weighs 460 grammes; the left, 410. On left side, convolutions much smaller than on opposite side; white softening of three different parts of left hemisphere. The first lesion occupies, vertically, the posterior extremity of the three frontal convolutions, and extends to the paracentral lobule, leaving the ascending frontal convolution untouched. The second focus occupies the superior part of the ascending parietal convolution. The third is limited in front by the posterior margin of the ascending parietal convolution, and posteriorly by the supra-marginal lobule. The deep focus occupies the whole thickness of the first frontal, the whole supra-marginal lobule; then a deeply-seated reddish tumor, as large as a hazel-nut, can be seen. There is a small hemorrhagic focus in the left side of the pons; the rest of the brain is healthy.

Chorea in the Negro.—Dr. Wharton Sinkler, of Phila., states that the question of the frequency of chorea in the negro race has excited some interest since Dr. Weir Mitchell sent out his inquiry on the subject through the Smithsonian Institute, several years ago; the almost universal testimony being that the disease was very rarely met with in the negro. Forty-nine of sixty physicians had never seen a case in the black race, and the remainder considered it infrequent in that race. However, some physicians in Virginia regarded chorea as common in one race as in the other. Dr. G. W. Benton, a physician of large practice in a portion of Florida thickly populated with negroes, in thirty years' experience, informs Dr. Sinkler that he has never seen a case of chorea in a black. On the other hand, Dr. S. H. Stout, of Chattanooga, Tenn., states that he can recall twenty-one cases of chorea which have come under his observation. Of these, thirteen were black females, four white and three mulatto females

and one white male. Dr. Mitchell states "that the weight of evidence is in favor of the opinion that the black is less liable to chorea than the white." Dr. Sinkler has reached the same conclusion. Out of 319 cases of chorea treated at the Orthopædic Hospital and Infirmary for Nervous Diseases (Phila.), most of which he saw personally, but one belonged to the negro race, with a ratio of colored to white population of 1 to 24.32. The child was so light a mulatto, probably an octoroon, that it would readily be taken for a white child. He reports his only additional case from private practice. In this case, a female, aged nineteen, married, there were two conditions which predisposed to chorea, namely: an attack of acute rheumatism and pregnancy, also a blow on the wrist which might have acted as an exciting cause. Dr. Sinkler says that the only case he has met with in medical literature is one reported by Dr. Skinner, of Glasgow, Delaware, in a pure negro girl, aged eighteen years, who developed chorea after subacute rheumatism.—*Medical News*, Nov. 7.

GLIOMA OF THE PONS VAROLII.—By M. Pousson, Interne des hôpitaux, Paris, *Journal de Bordeaux*, No. 49. A child, aged nine years, was admitted in the service of Mr. Archambault (Hôpital des Enfants Malades) in the first days of October.

In September, '81, without any prodroma, sudden right hemiplegia occurred (extremities and face) with flexed muscles, deviation of tongue; no ocular or other symptoms were observed. On October 25th, symptoms of basal meningitis occurred; vomiting, constipation, rigidity of muscles of the back of the neck and legs, coma, high temperature, etc. There was a slight remission, during which patient recovered consciousness; but soon afterward the symptoms reappeared, and death followed. At first the diagnosis was syphiloma of base of brain, and mixed treatment was instituted, without any change. This failure of the treatment caused M. Pousson to think of tubercular deposit. At the autopsy, a tumor composed of three nodules was found on the superior border of the pons, composed of an abundant proliferation of the neuroglia, which had interrupted the continuity of the nerve fibres. Near the nodule, situated on the left side of the pons, was an hemorrhagic focus of new formation, as large as a hazel-nut. The meningitis which existed at the base of the brain, was occasioned by irritation caused by the tumor.

LARYNGISMUS OF THE ADULT.—In the *Annals of the Diseases of the Ear and Larynx*, Krishaber reports a case of the disease first described by Charcot under the name of laryngeal vertigo. It is a spasm of the glottis, which can be distinguished by its own character, and is not to be confounded with those noticed in locomotor ataxia or in hystero-epilepsy.

The patient, thirty-two years old, otherwise in perfectly good health, was suddenly seized with attacks consisting of dizziness or vertigo ; sometimes followed by loss of consciousness of short duration, which would occasionally recur several times in a day. The initial phenomenon has its seat in the larynx, and is characterized ; 1, by a slight but successive and rapid cough, like that noticed at the end of an attack of whooping-cough ; 2, by the sudden arrest of breathing. The whole motor respiratory apparatus is struck at the same time ; the loss of consciousness, when present, following immediately and lasting a few seconds only. No foaming at the mouth occurs, or involuntary micturition ; and immediately after the attack there is no stupefaction or lassitude as in epilepsy. There is no appreciable laryngeal trouble. It is only to these cases and to no other that Mr. Krishaber applies the denomination of laryngeal vertigo. The spasms and loss of consciousness consecutive to polypi or to other lesions of the larynx, are well known and are not to be confounded with the above affection, of which the cause is yet unknown. The treatment consists in cauterization of the larynx, counter-irritation, and large doses of bromide of potassium.—*Journal de médécine et de chirurgie pratiques*, T. liii, No. 7, July, 1882.

DIPHTHERITIC PARALYSIS.—Four successive cases presenting almost all the symptoms usually observed in that disease, have lately come under the observation of Dr. Damaschino at the Hospital Laënnec.

The first patient while convalescing from an attack of typhoid fever, suffered from a diphtheritic sore throat. Shortly afterward she was taken with a paralysis affecting the velum palati, remarkable from the fact that it affected one half of the velum only ; this is rather an unusual phenomenon as generally the paralysis affects the whole velum. In the cases where the paralysis is unilateral only, it may easily escape observation, as the patient, under such circumstances may swallow liquids without suffering from regurgitation through the nares ; for this purpose, they extend their

head backward and drink slowly; but as soon as they are ordered to keep their head straight, or to flex it slightly on the sternum and drink quickly, all the symptoms of the palatal paralysis become manifest; the troubles in swallowing become apparent, and the liquids are rejected through the nose.

Another patient contracted the disease from her child; soon afterward, the soft palate became paralyzed; in this case there existed the peculiar phenomenon that the sensibility was preserved. A few days after the involvement of the palate, she complained of formication and weakness in the inferior limbs; then violent palpitations supervened which were very painful; but disappeared shortly after their appearance. At last the eyes became involved, and troublesome defects of accommodation were added to those many and varied manifestations of diphtheritic paralysis. In a third case the diphtheritic inflammation of the throat was very grave, and in consequence the paralysis which showed itself some time afterward was more extensive; indeed, in this case, it was not the velum alone that was affected; but the loss of power extended to the inferior as well as to the superior limbs.

The complications were more extensive in a fourth case, that of a man about sixty years of age; here, after the diphtheritic attack, the soft palate was first involved; then weakness showed itself, both in the superior and inferior limbs; but shortly afterward, the paralysis was almost complete in all the limbs. Nevertheless, there were present these interesting facts: that the loss of power of the right arm was much greater than that of the left one, while the reverse existed for the inferior limbs, viz., that the left leg was much more impotent than the right one; the fact that the right arm and left leg were more affected than the two other limbs makes this case a type of cross paralysis, at least as far as its intensity is concerned. This was not all; after a short time there was considerable trouble in passing water, owing to the paralysis of the abdominal muscles. At last, the movements of the head were impossible on account of paralysis of the sterno-mastoids. All these symptoms were so grouped, that before his admission the patient had been taken for a general paralytic. These facts, says Dr. Paul-Lucas Championière, constitute a sort of table of all the mild forms of diphtheritic paralysis.—*Journal de médecine et de chirurgie pratiques*, T. liii, No. 7, July, 1882.

Ascending Paralysis (Landry's Disease).—*Gazette des hôpitaux*, No. 84, 22 Juillet, 1882.

This is an apyretic progressive disease with rapid and fatal termination. Dr. Dejérine has published two new cases with autopsy.

The first patient, without pathological antecedents, was admitted to the hospital while suffering from very slight weakness of the limbs for two days previous. In a few days a slight chronic state supervened, during the execution of movements; seven days after admission, sudden paraplegia, slight at first, became absolute, ascending to the trunk and superior limbs. The patient died, at the end of seven days after the beginning of the paraplegia, of asphyxia. Sensibility, nutrition, and the sphincters were normal during the whole duration of the disease. No fever except on the last day; electrical contractility very decidedly diminished.

The second case, in good health up to the time of admission for pain in the inferior limbs. Is taken with paraplegia; the paralysis ascends to the trunk and to the superior limbs; the patient dies in four days from asphyxia. In this case no electrical investigation was made. In his own cases Landry found it to be normal; and professing the same opinion, Duchenne (de Boulogne) thought he had a means of differential diagnosis from spinal paralysis in which the electrical reaction is rapidly diminished or lost. At the autopsy, Dejérine was unable to find any lesion in the cord. Nevertheless, in the anterior roots, and in the nerves, a few fibres had undergone a degenerative process similar to that found in the peripheral ends of nerves after section. In the presence of such negative results, Dejérine is willing to admit that a few of the large cells of the anterior horns have been affected, if not in their substance proper, at least in their function, but thinks that this affection is quite different from acute anterior myelitis with a progressive course. In acute myelitis the lesions are appreciable under the microscope; in the present disease, no lesion of the spinal cord is present.

General Subacute Anterior Spinal Paralysis.—*Gazette des hôpitaux*, No. 84, July 22, 1882. In the "*Revue clinique hebdomadaire*" the editor states that this type is considered by Dejérine as being identical with "progressive muscular atrophy with a rapid termination"; nevertheless, it is to be noted that in the latter

disease the morbid process never retrogrades, while in general spinal paralysis, as has been shown by Duchenne (de Boulogne), the progress of the paralysis as well as that of the atrophy may stop, then retrograde, and at last disappear altogether after months or years. The progress of this disease in a case which at the present time is in the service of Dr. Damaschino at the Hospital Laënnec, was similar to the description given by Duchenne.

The patient, æt. twenty-six, previously in good health, was taken suddenly with headache, vomiting, colic, and diarrhœa. During one week there occurred very severe diarrhœa—25–26 passages a day; weakness of legs from the very beginning of attack; formications; diminution of sensibility in the soles of the feet and in the fingers. Three to four weeks later complete paralysis of the lower extremities occurred; movement of vertebral column produced pain in the same region and in the waist. Two or three weeks later complete loss of power supervened in the superior limbs, movements of head being almost the only ones possible at that time. Sensibility to pain was normal; to heat and touch, apparently diminished in different parts of the limbs. All tendinous reflexes were abolished. Four to five months later the pain diminished, and voluntary movements began to reappear. At that time faradic examination produced scarcely any reaction in the muscles of the arms, and none at all in the inferior limbs; the amelioration continued in all the symptoms, and at the time of writing the patient could walk without support. This case is sufficient to show, says the reviewer, that the disease is not "progressive muscular atrophy." In fact, those two affections are quite distinct, the one from the other, as far as the prognosis and the symptoms are concerned. The only character that they possess in common, is the location of the lesion in the anterior horn of gray matter; but that does not imply identity of process.

Pott's Disease; Sudden Paraplegia; Rapid Spinal Epilepsy.—By Albert Mathieu (Interne des hôpitaux).

A young man, æt. twenty-three years, is admitted in the service of Dr. Proust, at the Hospital Lariboisièu.

Three weeks before admission he had a cold, with malaise and fever, and kept his bed. Two or three days later, when trying to get out of bed, he noticed that his legs were paralyzed; nevertheless he maintained that he had never noticed before any thing that could have made him foresee this paraplegia. He had been in good health, all his movements were free, and never had any pain in his

chest, his back, or his legs. From that time it became impossible for him to get up, and he began to suffer from girdle pains (douleurs en ceinture) in his legs, from painful contractures and lancinating pains; his bowels were habitually constipated, and his bladder became implicated.

His legs were flexed on his thighs, and these on the abdomen. It was easy to overcome the contractured flexor muscles without causing much pain. It was impossible for the patient to raise his foot from the bed, but flexion of the leg on the thigh was more easily performed, on account of the permanent tendency of the flexors to contracture. The patellar reflex was sensibly exaggerated, especially on the right side, and spinal epilepsy (foot clonus) was easily produced by forcibly bending the great toe backward; also predominating on the right side. Micturition was slow, difficult; the abdomen was tympanitic; the bowels constipated. As regards sensibility, it was evident that it has undergone serious modifications, for the patient complained of various pains, at times more or less severe, and of formication in the legs. Besides, anæsthetic spots were discoverable in various parts of the body, notably on the thighs and on the superior aspect of the legs, while sensibility was more or less preserved on the feet and on the inferior parts of the legs; but there its perception was greatly retarded, and oftentimes it is perverted. The patient ascribed pricking of the left to the right leg, and the different sensations of cold, warmth, pricking, and simple contact, were confounded with each other.

At the level of the abdomen patches of anæsthetic integument alternated with healthy ones in such a way that it was very difficult to demarcate a limit to the anæsthesia.

On the vertebral column there was an angular deformity, of which the patient did not suspect the existence, and which invaded three or four vertebræ, the fifth dorsal corresponding to the most prominent point of the angle. The patient having been transferred to Prof. Duplay's service, a plaster-of-Paris jacket was applied; nevertheless, all the preëxisting symptoms continued; soon the respiration became difficult, dyspnœa and cyanosis supervened, and five weeks after the appearance of the paraplegia the patient died, completely asphyxiated.

Autopsy.—A superficial eschar, as large as a silver dollar, exists on the sacrum. The body of the fifth dorsal vertebra, which corresponds to the angle of the deformity, is completely destroyed, together with its superior intervertebral disc. The dura

mater does not offer any particularity ; it is not the same with the pia mater, which is of a milky-white color, and much-thickened, especially on its posterior part. This whitish coloration and the thickening are observable also on the inferior part of the medulla, on the pons, the base of the brain, and on the inferior and superior surfaces of the cerebellum. Various other parts about the fissure of Sylvius and the inter-hemispheric fissure present the same appearance ; the cerebral and cerebellar tissues appear normal. The spinal cord had evidently been compressed about the level of the fifth dorsal vertebra, and presents at that point a circular depression. There is nothing to be noted above the constriction ; but below it the antero-lateral column is thinner on the right than on the left side, and grayish, longitudinal tracts, with their base adherent to the pia mater, are found in it, which, probably are the indication of a beginning sclerosis. The substance of the spinal cord is, perhaps, a little more vascular than in the normal state. As conclusion, Mr. Mathieu points out the following facts as being of uncommon occurrence : the sudden paraplegia, followed in three weeks by spinal epilepsy, and the inflammation of the pia mater invading all of its spinal portion, the medullary, the cerebellar, and even the cerebral portions of the membrane. Nevertheless, the compressing exudation from the dura mater, specially mentioned by Michaud, did not exist in the present case, the compression having been performed by a purulent mass which existed in the vertebral canal at a level with the depression found on the cord. Very likely the pachymeningitis progressed very slowly, for the patient never complained of any cerebral trouble, or any pain in the upper extremities.—*Progrès médical*, No. 35, Sept. 2, 1882.

Latent Contracture in Pott's Disease.—Prof. Charcot, *Gazette des hôpitaux*, No. 73, June 24, 1882, in speaking of Pott's disease, shows how the involvement of the spinal cord could be the result, not of direct compression from displaced vertebræ, but in consequence of an inflammation of the meninges, with thickening ; a sort of proliferating pachymeningitis, forming a tumor which might suppurate ; hence irritation of the cord, transverse myelitis, with more or less complete interruption of the fibres ; thence, also, all sorts of functional troubles in the parts situated below the lesions. All the limbs, or only the inferior limbs, are impotent, according as the lesion affects the cervical or the lower portions of the cord. In the first period of a para-

plegia, for example, certain interesting characteristics are present; but Prof. Charcot calls attention particularly to the motor phenomena. In this first period it is not a simple weakness, it is not merely a beginning paralysis with flaccidity of the muscles; there is something more, "a latent disposition to contracture." That predisposition becomes apparent in a more or less marked manner, as soon as the various tendinous reflexes are examined in the affected limbs. The latent contracture may exist even in individuals who still use their limbs perfectly, and it is important to note its presence, for in the course of Pott's disease it might prove to be the first step toward an absolute paralysis with contracture. It might also prove to be the remains of that same paralysis which has disappeared. In both cases its characteristics are quite identical. If, then, the patellar tendon is percussed, the reflex is found to be more energetic than in the normal state; if the percussion is repeated at short intervals, the extensor muscles of the thigh become more and more excited, and at a given moment they may enter into actual contracture, which in its turn may invade the neighboring muscles. Phenomenon of the same order, spinal epilepsy, can also be observed in Pott's disease of the spine. Such are the most simple symptoms, and those most easily made out in latent contracture.

Pseudo-Hypertrophic Paralysis.—In a clinical lecture, Dr. Damaschino presented to the class two new cases of pseudo-hypertrophic paralysis, of which he has already spoken in another number of this journal. Although somewhat different in their clinical aspect, those two cases are interesting in many respects. In the first case, the diagnosis is made easy by some interesting and characteristic symptoms: his peculiar gait strikes the observer's attention immediately, and not less than his enormous calves; his buttocks are soft and pendulous; his brachial biceps has disappeared, while the forearm muscles are preserved. This fact is to be noted also, that the atrophy, as well as the hypertrophy, is very nearly symmetrical. From a differential diagnostic point of view, it is important to note, that the facial muscles are healthy; it is known to-day that it is by the muscles of that region that the progressive muscular atrophy begins in children. In the posterior region, the muscles of the vertebral groove have diminished in size, and, as a consequence, there is lordosis; the pectorals, except their superior fibres, have completely disappeared; there is an accumulation of

fat under the skin, which by its bluish coloration indicates that there exists a tendency to blood stasis. The history of the case reveals that the patient appeared well developed, but that he began to walk while nineteen months old. At ten years, he was easily tired, and his calf muscles appeared enormously developed; the disease progressed up to the fifteenth year. At that time he could not get up without help when sitting on the floor. Actually, although eighteen years old, he can accomplish this act only by a series of very complicated movements. In this case, there is no possible doubt about the diagnosis.

The same thing could not be said of the second case, although most of the symptoms were in accordance with the phenomena peculiar to the disease. A young man, twenty-two years old, began at thirteen to feel tired easily; soon after he had a certain tendency to walk on the tips of his toes; then the weakness invaded the arms and the sacro-lumbar muscles—actually, the whole muscular system is affected to such a degree that the patient cannot get up from his chair, and when standing, he walks with just the same peculiar gait observed in the first patient. Although the symptoms are different in the present case, nevertheless they belong to the same disease, and it is known that this affection can show itself under four different forms. In a first form all the muscles are atrophied; in a second form, while some of the muscles are atrophied, others are in an apparent state of hypertrophy. In a third form, a few muscles only are involved, and in the last form, the least common of all, the predominating element in the alteration of the muscles, is a certain tendency to sclerosis, which gives to the muscular reaction an elastic character quite peculiar to this form. In this affection, heredity plays an important part. In fact, this patient is the brother of three younger sisters, who are all suffering, more or less, from the same disease.—*Journ. de méd. et de chirurgie pratiques*, T. 1, No. 7, July, 1882.

REMARKS ON PSEUDO-HYPERTROPHY OF THE MUSCLES.—Prof. Schultze, of Heidelberg, questions the correctness of Prof. Pekelharing's interpretations in a "case of spinal-cord disease, with pseudo-hypertrophy of the muscles" (*Virch. Arch.*, Bd. 89), when he says that the anterior and inner ganglia cells in one section are much less distinctly defined than are the central cells, while in another section the loss of cells is more marked on the right than on the left, and that in the former section the central

canal is compressed and surrounded by a decided collection of nuclei. "All these statements," says Schultze, "are correct, yet any one who has seen many normal preparations knows that these so-called abnormalities may be seen in the healthiest subjects. It is truly a scientific misfortune, that under normal conditions individual variations are found respecting the quantity of glia cells collected around the central canal. They were considered by Michaud as cause of tetanus, by Elischer as the incitant of chorea, and now they are actually connected with muscular pseudo-hypertrophy. The greatest marvel is, that when they really increase in a pathological manner neither tetanus, chorea, nor even pseudo-hypertrophy of the muscles, result; at most, a degenerative muscular atrophy following, when, involving the anterior horns, they produce a disappearance of the latter. The remaining changes described by Pekelharing consist in distention of blood-vessels—an unimportant fact—and scarcity of ganglion cells in the anterior and median portions of the anterior horns. As if ganglion cells were not always scarce in these portions!" Schultze considers that this case confirms the view that the spinal cord, particularly the anterior horns, is normal in this disease, and says: "Were it not to be feared that the views of Pekelharing might bring new uncertainties into the theories of the disease, it would not be necessary to emphasize the facts. "I hold," he continues, "that, from the progressive conditions of our knowledge of the pathology of the spinal cord, on the one hand, and the numerous investigations concerning pseudo-hypertrophy of the muscles on the other, the question is *fully decided* that the latter disease has nothing to do with the spinal cord. The grounds are as follows: Pseudo-hypertrophy of the muscles is clinically, and, as shown by the examinations of the muscles, also anatomically, a completely independent disease. The individual cases are often similar in their smallest details; nervous phenomena are never present in uncomplicated cases, nor bulbar paralysis. Nearly always it is a disease of children, or, at least, occurs during the years of development. The muscles are not changed, as in acute or chronic polio-myelitis. The fibres are in part hypertrophied, have always the normal striation; the nuclei are not in excess, even when a larger number are smaller than normal; there is present a surplus of true normal fatty tissue or connective tissue between the individual fibres; dilated fatty degeneration of the fibres is not present. In short, there is exhibited to the observer a simple picture of muscles in which a number of fibres

are replaced to some extent by fat and normal connective tissue, while the fibres themselves are for the most part in a state of simple atrophy; to some extent, however, entirely normal, or in fact hypertrophied, but not exhibiting the appearance of muscles after degeneration of their nerve fibres.

"In agreement with the above are the facts that a reduction in function and diminished effect from electrical excitation are found, but no paralysis, and no degeneration reaction."

Schultze states that in a recently examined case he found the normal formula of contraction on careful testing with the galvanic current.

Pseudo-Hypertrophic Paralysis.—Dr. Edge exhibited at the Manchester Med. Soc. a case of the above disease, in a girl aged eight. The infrequency with which this affection attacks girls was pointed out, and attention was drawn to the severity of the case, girls being usually affected much less severely than boys. The case was remarkable, also, on account of the facial muscles being enlarged.—*Brit. Med. Jour.*, July 29, 1882, p. 169.

Ossifying Spinal Pachymeningitis in a Dog.—A four-year-old dog suffered for two weeks, apparently from an influenza. It grew weaker daily. Posterior paralysis and, finally, complete paralysis of the legs developed. The animal then died. *Post-mortem* showed wide-spread catarrhs and broncho-pneumonia. On opening the spinal cord, evidences of a diffuse myelitis were found, while in the thickened dura mater were numerous bony plates one to one and a half inches long.—*Jour. Comparative Med. & Surg.*, July, 1882, p. 264.

The Nervous Symptoms of Myxœdema.—Dr. W. B. Hadden, London (*Brain*, July), gives the following summary of the general features of the disease: Throughout the body there is a solid œdema, affecting the skin and connective tissue. The parts, however, are not anasarcous, or, in other words, they do not pit on pressure. The facies are pathognomonic. The expression is pallid and mask-like; the features broad, puffy, and coarse; the nostrils swollen; the lower lip thickened, everted, and pendulous; the mouth widened transversely. Over the cheek and nostrils there is a well-defined red patch, contrasting with the pallid, porcelain-like area beneath the lower eyelid. The tongue, fauces,

and palate are also swollen; the speech is slow, nasal, monotonous; the hands and feet are coarse, shapeless, and broadened transversely; the skin is dry and scaly, perspiration and the excretion of sebaceous matter being almost suspended. The thyroid gland is much diminished in size, and the subclavicular fossæ are often filled in with soft masses. The hair, teeth, and nails share in the general malnutrition. The urine contains no albumen, except in the later stages—then, as it were, an accident. The quantity of the urea excreted is remarkably lessened. The temperature is almost invariably sub-normal, and there is a constant sensation of cold. The bodily movements are performed slowly, though usually without imperfection. Falls, however, sometimes occur, and are dependent on the irregular action of the muscular groups, which are physiologically antagonistic. In short, there is often some degree of incoördination. The muscles, as in ataxy, lack tone, but are never paralyzed. The tendon reflexes are, in the author's experience, preserved intact. Lightning-like pains, similar to those experienced in tabes dorsalis, are occasionally observed. Common sensation is generally much impaired, apparently never annihilated, but blunted and retarded. Subjective sensations, such as "pins and needles," are very commonly experienced. In the later stages of the disease the special senses are liable to become affected. Visual disorders—in Hammond's case consisting of double optic neuritis, with blurrring of objects and occasionally double vision—are by no means constant, and may even be absent up to the last. Deafness is more common. Subjective auditory sensations (tinnitus) are described. The senses of taste and smell are liable to impairment. Bulbar symptoms have been described, and exophthalmus. Fatigue, on the slightest bodily exertion, is a very constant symptom in myxœdema. The most ordinary duties of life, such as dressing, are not only performed with great slowness, but entail an amount of lassitude quite out of proportion to the muscular effort put forth. The patients are consequently inert and sluggish, and indisposed for any exertion, however trifling. Headache, sometimes of a very severe character, is very commonly found to be present. Somnolence during the day is a very frequent symptom; but sleep at night is generally disturbed by unpleasant dreams, from which the patient awakens much startled and terrified. There is always very marked intellectual lethargy. The thoughts are evolved slowly, and often a distinctly prolonged interval elapses before the nature of a question addressed is grasped by the patient. Mem-

ory, according to some observers, for recent events in particular, is in most cases impaired ; aphasia, in the strict sense of the term, is of doubtful occurrence. The almost constant existence of emotional disturbances is noted. Occasionally these patients have what they call " nervousness," consisting of morbid fears and impulsive tendencies. True insanity in the later stages of myxœdema has been observed several times ; when it occurs, it is usually with hallucinations of hearing and sight.

The principal symptoms of the disease are summed up by the author under the following heads: 1. Slowness of bodily movements. 2. Slowness of intellectual operations. 3. Constantly subnormal temperature. 4. Diminished excretion of urea. 5. Solid œdema of the skin and connective tissue. 6. Diminished size of thyroid gland. The author believes : 1. That in the early stages myxœdema is essentially a disease of imperfect nutrition, dependent probably on generalized angio-spasm. 2. That the solid œdematous condition of the skin and connective tissue is due to a form of lymphatic obstruction which may also be ascribed to vasomotor influences, and that the accumulated products undergo changes which result in the formation of mucin. 3. That the condition of the thyroid gland is also to be explained on the vasomotor hypothesis. 4. That the more severe mental symptoms, such as insanity, occurring in the later stages of myxœdema, are due to alterations in the brain itself. 5. That although myxœdema is a distinct morbid entity, it is probably intimately allied to certain other disorders, such as sporadic cretinism and scleroderma. 6. That the solid œdema, which is universal in myxœdema, may be localized to various parts of the body, such as the tongue and extremities. 7. That the primary and essential lesion probably exists in the peripheral sympathetic system, and perhaps, too, in the supreme centre in the medulla oblongata, the last supposition being based on the occasional occurrence of bulbar symptoms in myxœdema. W. R. BIRDSALL, M.D.

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d.—MENTAL PATHOLOGY.

DELIRIUM FROM GALL-STONES.—Cases of this kind are not exceptional, but are so infrequent as to be of interest. Dr. W. J. Moore (*Dublin Journal of Medical Science*, August, 1882) reports a case in which a woman was attacked by delirium during the passage of gall-stones through the common bile duct. During the de-

lirium, which lasted six hours, she sang very correctly some of the masses of Mozart. The patient had been a resident of India and the gall-stones were of unusually large size.

ORIGINAL MONOMANIA.—Dr. C. T. Fenn (*American Medical Weekly*, August 19, 1882) cites a case of this form of insanity. There was in the case an hereditary neurotic tendency. The patient was a quiet, soft child, addicted to day-dreams. He showed talent, but of a puerile character. He had several feminine ideals, but no symptoms of insanity were noticed until the age of thirty-two. The patient fell extremely in love with a lady of superior station, who had never given any encouragement; who rebuffed him on all occasions. He believed that the friends of the object of his affections were at the bottom of this; that they slandered and persecuted him, and his conduct changed: from being temperate he became addicted to ardent spirits, and had frequent attacks of delirium tremens. He soon adopted a wandering life, and dressed in the incongruous dress so frequent with the chronic insane. Hallucinations of sight and hearing soon became manifest. He lived till the age of eighty-two without ever having been confined in an asylum for the insane. The patient died from senile exhaustion. There were found meningo-encephalitic changes. The brain was asymmetrical. The skull was markedly asymmetrical, and the occipital fossa shallow. There was asymmetry of the convolutions. There were three on the right island of Reil and four on the left. A case of almost equal duration was cited in this JOURNAL, October, 1881.

HEREDITARY INSANITY.—Under this title Dr. A. W. Hagenbuch (*Chicago Medical Journal and Examiner*, August, 1882) considers various forms of insanity in which hereditary taint exists. Of the one hundred and fifty admissions to the Jefferson Illinois Asylum during the past two years thirty-six presented very strong evidence of heredity. This is a very large percentage when it is recollected that Jefferson is a pauper asylum, and the histories of a large number of patients are not obtained. He has found asymmetry of the cranium to be of such frequency among the hereditary types of insanity, that in his opinion it "should not be overlooked in forming an opinion as to the probability of insanity developing, as well as to suggest early treatment to prevent an outbreak of insanity." He finds, like other authorities, that the

acute episodial attacks occurring among the hereditary insane usually have a good prognosis. In dealing with the question of home-treatment he takes into account what is often ignored by both the pro-asylum and anti-asylum fanatics, namely, that the blood-relatives of insane people are often badly adapted to carry out a physician's directions.

PSYCHOSES FROM URÆMIA.—Dr. Brieger (*Charité Annalen*, vii, 240) reports the following case: A patient suffering from chronic nephritis had several attacks of epilepsy (?). After the first attack the patient was comatose, and eighteen hours' hallucinations presented themselves, and were attended by much emotional excitement. Soon after there was a condition of total amnesia, and this was succeeded by a short period of psychical integrity. There was an indefinite relation between the albuminuric condition of the patient and the emotional excitement. In a case reported by Dr. E. J. Messemer (*Gaillard's Medical Journal*, vol. xxx, p. 503), the psychical symptoms presented resembled those of progressive paresis. The patient recovered from his nephritis, and on recovery the psychic symptoms disappeared.

CRIMINAL INSANITY.—After passing in review the views of Morel, and analyzing the physical and mental degeneracies to which Morel has called attention, and also the inter-relation which has been claimed to exist between crime and subsequent insanity in the next generation, Dr. Kneud Pontoppidan (*Nordiskt mediciniskt Arkiv*, Band xiv, No. 16) comes to the following conclusions: First, That the facts do not compel the establishment of a particular variety of criminal alienation, which is characterized by a mixture of moral depravity and mental alienation. His argument is, however, based on special pleading, and certainly does not show a broad view of the subject. He cites cases in which insanity resulted in crime, but no moral depravation occurred. In other words, he sets up the existence of a criminal insane class to disprove the existence of insane criminals. In the one case, the crime was an incidental result of the insanity; in the other, the crime and insanity were necessary concomitants.

NON-MEDICAL INSANITY EXPERTS.—Under this caption *Gaillard's Medical Journal*, October, makes the following apt editorial comment: The absurdity of non-medical evidence as to in-

sanity, especially where of a negative character, has been very well shown by two recent cases. A cashier of a Poughkeepsie bank was suddenly noticed to be very extravagant; this led to investigation, and a defalcation was found. On examining the cashier's house, notes, drafts, and money were found scattered over it, hidden in out-of-the way places; in some cases evidently for several years. The man was ultimately found to be suffering from a well-marked type of insanity, progressive paresis, and sent to an insane asylum. In this case, sharp, keen business men had had a man under observation for several years, yet he committed criminal acts due to the onset of an easily diagnosticated form of insanity. In the second case, a teller of a Troy bank was insane for several years before the trustees knew it. Meanwhile the cashier had been able, by reason of the the teller's infirmity, to rob the bank and bring it to the verge of suspension. Here are two cases where business men might be expected to detect the first sign of insanity, since their interests were deeply concerned, but in both cases their pecuniary interests suffered because they failed to detect the preliminary symptoms of an exceedingly easily diagnosticated form of insanity. If keen business men fail to find evidences of insanity in cases where their interests are deeply concerned, how little value can be attached to their negative evidence in cases of no special interest to them but where life and death or personal property are concerned. The story about Esquirol and the young physician has a special application here. Medical journals, therefore, which are citing the evidence of laymen as to the non-existence of insanity, are doing the profession as much dishonor as if they cited lay testimony as evidence of the value of some copyrighted nostrum.

Definition of Insanity.—Dr. E. C. Spitzka (*Chicago Medical Review*, July 15, 1882) proposes the following definition of insanity:

"Insanity is either the inability of the individual to correctly register impressions and experiences in sufficient number to serve as rational guides to rational behavior in consonance with the individual's age, time, and circumstances, or, such impressions and experiences being correctly accumulated in sufficient number, a failure to co-ordinate them and thereon to frame logical conclusions, or any other gross mental incongruity with the individual's surroundings in the shape of subjective manifestations of cerebral disease or defect, excluding the phenomena of sleep, trance, som-

nambulism, the ordinary manifestations of the neuroses, such as epilepsy and hysteria, of febrile delirium, coma, acute intoxications, and the ordinary immediate results of nervous shock and injury." Similar though not as comprehensive definitions were independently proposed by Dr. C. H. Hughes (*St. Louis Medical and Surgical Journal*, 1878), by Dr. Jas. G. Kiernan (*Gaillard's Medical Journal*, Nov., 1880), by Dr. Mercier (*Journal of Mental Science*, Jan., 1882), and Dr. Hughlings Jackson (cited by Mercier).

DIFFERENTIATION IN INSANE ASYLUMS.—Dr. R. S. Dewey (*Journal of Insanity*, July, 1882) calls attention to the fact that the problem of providing asylums for the insane is a complicated one. He calls attention to the fact that one embarrassing factor in this problem is the existence of three great classes which engender special difficulties, dangers, and inconveniences. These are the insanities complicated by epilepsy, by crime, and by alcoholic excess. The conclusion of Dr. Dewey is that in 3,000 insane there are about 192 epileptics. The proportion at the New York City asylum was somewhat below this, 101 out of 2,293. These epileptics he believes should be taken care of in a special asylum. He is inclined to believe that the proportion of insane convicts is 48 to 1,500 convicts, though Dr. Dewey admits that this proportion is probably much too low. His remarks apropos of the relation of the insane criminals to the criminal well deserve quotation. He says: "The question requiring most careful consideration is with reference to unconvicted insane persons who have committed crimes. Many of these belong strictly to the criminal class and on the same plane as convicts; while at the other extreme are those whose crime is a direct consequence of insanity. Between these are all possible links. Those held to be abandoned criminals have been found to be insane. Crime committed with *malice prepense* has been found to be the act of lunatics. There are criminals with inherited depraved and defective brains, who cannot be held responsible. There are the epileptic criminals. There are lunatics who know perfectly well the nature of their crime, who are able to distinguish the moral quality of their crime, and who are actuated by a criminal motive. There are lunatics who plan and execute their crime deliberately and allege some fantastic motive as its justification. Insane patients are met with who feign insanity in some other form in the hope of escaping from the consequences of their crime. Finally,

there are lunatics who know that they are immune from punishment and only lack opportunity to perpetrate deeds of malice or revenge." This is sound psychiatry, but it directly contradicts the teachings of the Utica School, especially as laid down by Dr. Gray in the Guiteau trial. Dr. Dewey would have the exact status of crime-committing lunatics determined: some sent to the criminal lunatic asylums like those at Auburn, New York; Chester, Illinois; and Fulton, Missouri; and Broadmoor, England; and a few only to the general asylums. The habitués, for it is these that Dr. Dewey means by this third class and not alcoholic paretics, etc., should be sent to special institutions. The remaining insane relieved from the incubus of the three classes cited could be well treated by the mixed cottage and asylum system so well illustrated at Kankakee.

MANIA TRANSITORIA.—It is only a few years since Dr. Ordronaux (*Journal of Insanity*, vol. xxix, p. 333), that legal light of the Utica School, fiercely denounced the theory of mania transitoria in terms that drew upon him the ridicule of Achille Foville (*Annales Médico-Psychologiques*, 1874). It is, therefore, somewhat astonishing to find a case of this identical psychosis described by Dr. E. N. Brush, of the Utica Asylum (*Journal of Insanity*, July, 1882). A man, aged twenty-three, was exposed to a temperature of 20° F. Psychical symptoms soon resulted which temporarily yielded to ether. After three days' asylum-treatment the man was discharged recovered. There was much motor excitability, but the case is imperfectly described. Dr. Brush calls it "Delirium from Cerebral Hyperæmia," but cites Schwartzer, the leading authority on transitory fury, and Reich as corroborating his position, and uses the term transitory mania as synonymous with the appellation he has given his case. Strictly speaking the mania transitoria is an acute stormy psychosis, not really a mania. Cases of it have already been cited in this JOURNAL (Oct., 1880) which support Schwartzer's position, and it is agreeable to find these supported by a case from the Utica School, which has so long cavilled at mania transitoria.

SEXUAL PERVERSION.—Dr. G. Alder Blumer (*Journal of Insanity*, July, 1882) reports a case of sexual perversion in a man, twenty-seven years old, whose hereditary history was not well described. The father was vacillating and "eccentric," whatever

that means in this case. The mother was emotional. The mother bore him "long after the child-bearing period," and he was a twin. He conceived a violent platonic affection for a friend. To enable him to retain this friend's affection he wrote anonymous letters denouncing the latter, and pretended to cling to the friend despite the letters. Marriage and pæderasty were alike distasteful. He was fond of discussing feminine dress. There were some evidences of epilepsy. The case is similar in some respects to those reported by Dr. H— (*Medical Record*, Mar. 19, 1882), Servæs (*Archiv für Psychiatrie*, 1876), Kraft-Ebing (*Archiv für Psychiatrie*, 1877), Krueg (*Allgemeine Zeitschrift für Psychiatrie*, Band xxxviii), Le Grand du Saulle (*Annales Médico-Psychologiques*, May, 1876); and was unlike the acquired sexual perversion described by Dr. W. A. Hammond (*American Journal of Neurology and Psychiatry*, Aug., 1882), a fact to which Dr. Hammond calls attention.

Female Sexual Disease and Insanity.—Dr. Danillo (*Archives de neurologie*, Sept., 1882) says that the complication of insanity by female sexual diseases is very frequent during the continuance of sexual physiological functions. After the menopause such complication is rare. Pregnancy and the lying-in period also influence such complications. He believes that insanity is influenced by, and influences the female sexual disorders; that these aggravate and are aggravated by the insanity; the two conditions acting in a vicious circle. These claims are much more logical than those put forth by the gynæcologists.

Self-recognized Insanity.—Under the title of "folie avec conscience," of which the above is a somewhat free translation, Dr. Marandon de Montezel (*Archives de neurologie*, Sept., 1882) discusses a condition, which he says is characterized by the fact that the patient reflects on his sensorial and psychic troubles, and having analyzed them, recognizes their morbid nature. Is there really such a state? The reasoning of Dr. Montezel seems to show only the fact that the patient temporarily recognizes the fact that some of mental phenomena are the result of morbid conditions. Not to split hairs too finely, the cases cited show only that when the patient was under the full influence of these morbid ideas he did not recognize their nature, or *vice versa*. Dr. Montezel also fails to distinguish hypochondriac conditions,

which led the patient to claim danger of softening of the brain. His first case was that of a woman, who believed she was suffering from cerebral softening, which is a popular synonym for progressive paresis, as it is a synonym for a hundred distinct conditions. The second case narrated is that of a paretic, who had a remission, and recollected imperfectly his expansive ideas as dreams. The third case is similar. That such a condition may occur, as Montezel has pointed out, in the hereditary vesanias, there can be no doubt. In these a normal idea may sway the abnormal to such an extent, that its force is lessened and finally destroyed. As has been shown elsewhere (JOURNAL OF NERVOUS AND MENTAL DISEASE, January, 1881), that by a collateral process of reasoning, systematized lunatics may correct their delusions. These rare cases have, however, been confounded by Montezel, with remissions in progressive paresis, and hypochondriasic conditions. This error is pardonable, compared with the false statements recently made, that lunatics never recognized their insanity, and did not therefore act accordingly. The " folie avec conscience " of Montezel does not, except in a limited sense, exist ; but even that limited existence is inconsistent with the false dicta of the Guiteau trial.

THE INSANE VICTIMS OF THE FRANCO-PRUSSIAN WAR.—Schwaab (*Archiv für Pyschiatrie*, xii) reports a case in which he claims that the fatigues of the Franco-Prussian war had occasioned such a disturbance of the nervous system as to develop a psychosis. The patient had, however, been suddenly attacked by a varioloform eruption in 1871. This was accompanied by cephalalgia and sensations of heat in the head. This eruption disappeared leaving cicatrices behind it to reappear as abruptly as at first in 1872–73, the patient continuing to suffer from occipito-bregmatic pain in the interval. The patient exhibited melancholic fury and was dipsomaniacally inclined, and also exhibited wandering tendencies, being finally found in 1879 near Auerbach, in a field, amnesic and half dead from cold and hunger. Seeming progressive paresis, with decided physical and psychical symptoms, then made its appearance, which disappeared to give place to apparently complete mental and physical restoration. The eruption suddenly reappeared in 1880, followed, as before, by melancholic fury and troubles of speech and gait. Schwaab concludes that the psychosis was due to the mental strain of the war. Frölich refers it to the eruption. This last, however, seems to have originated in the nervous condition, rather than *vice versa*.

HYGIENE OF THE INSANE.—Dr. L. A. Pomponne (*Thèse de Paris*, 1882) does not lean to the opinion at one time expressed by Griesinger, that asylums for the insane should be in cities. Isolation, which is the basis of asylum treatment of the insane can be best carried out in the country, where the hygienic surroundings are also the best. Pomponne believes that the detached-ward system and not the wing system generally adopted, is, for like reasons, the best. The grounds should be beyond tbe walls of the asylum, planted with trees, and containing twelve hundred square metres to each patient. The sleeping apartments should be on the first floor, and lighted from the top. The hospital should also be situated on the first floor. There should also be a separate annex for convalescents. Dr. Pomponne prefers for the uncleanly the simple mattrass of straw, so generally used in American asylums. He looks upon absolute non-restraint as a utopian idea. He regards the crib-bed as a dangerous implement. The camisole should not, except in case of extreme necessity, be used to confine a patient to bed. He believes it better to camisole a patient than to seclude him. This, however, is too absolutely stated; seclusion is of decided benefit in certain cases, and just the opposite in others.

THE GUITEAU AUTOPSY.—Concerning this, Dr. C. F. Folsom (*Boston Medical & Surgical Journal*, Sept. 21, 1882) says: "Dr. Spitzka, of New York, has expressed the opinion that the asymmetry of Guiteau's brain, as shown by *post-mortem* examination, is sufficient to justify the diagnosis of congenital insanity, the *primäre Verrücktheit* of German authorities." In this opinion Dr. Folsom is unable to concur, but claims that the asymmetry, taken in connection with the great thinness of the cortex of parts of the anterior portion of the brain, which was unaccompanied by any excess of fluid in the ventricles or elsewhere, had some value as corroborative evidence of hereditary insanity, and marks a brain which was from infancy or some early age incapable of normal development.

"In the pathological conditions shown in the blood-vessels, the perivascular lymph-spaces, the neuroglia, and the cells, with little, if any, evidence of atrophy, and with the anatomical elements for the most part preserved, can be seen only indications of recent disease, if the report of the autopsy can be interpreted correctly. The *Medical News*, which maintained Guiteau's sanity during life, and affirms his responsibility now, acknowledges that the mi-

croscopic examination revealed changes in Guiteau's brain which 'constitute the initial stage of a malady which, in its fullest development, is known as dementia paralytica or an allied disease, the early symptoms of which disorder correspond closely with the mental condition of Guiteau during the past year.'

"Could there be any more humiliating record to add to the story of the trial? As it stands, however, it leaves to those who testified that Guiteau was 'perfectly sane,' and to the many more who thought that he was 'only a crank,' a difficulty of explaining their position from which we can see no possible satisfactory extrication. We would suggest, as a diagnosis in this case, hereditary insanity, manifested in early life or congenital, and attended with such symptoms as are grouped under the unsatisfactory term moral insanity, to which were added the periods of excitement somewhat resembling mild mania common in that disease, and finally ending in the initial stage of general paralysis of the insane, in which distinct motor symptoms or general dementia would not be found." In the clause last quoted Dr. Folsom lends support to the view with "which he is unable to concur." The lesions found are those often present early in progressive paresis, but they are also found as a consequence of episodial excitement in "primäre Verrücktheit." The diagnosis of Dr. Folsom, just given, was, with the exception of the progressive-paresis element, that made early in the case by two, at least, of the experts.

Moral Insanity.—Dr. C. H. Hughes read a paper before the Asylum Association on "Moral (Affective) Insanity," (*Alienist and Neurologist*, October, 1882,) in which he took the scientific stand-point that such a form of insanity did exist, and cited the following case: A girl soon after an attack of mercurial poisoning underwent a marked change of character. She was intellectually bright, but delighted in various immoral acts, especially in vituperating and telling scandalous stories about her nearest and, hitherto, her dearest relatives. Dr. Hughes regarded her as a case of moral, or, as he preferred to call it, affective insanity. Dr. MacFarland regarded the case as one of moral insanity, as also did Dr. Nichols, who expressed his full adherence to this scientific doctrine, and therefore did not agree with the dictum laid down at Washington, that "the term moral insanity is unknown to science." Drs. Goldsmith and Stevens regarded the case as one of psychic epilepsy. Dr. R. M. Bucke was of

opinion that the case was one of congenital moral imbecility, which would sooner or later develop into intellectual insanity. Dr. J. B. Andrews said it was a case which would probably terminate in intellectual insanity. Dr. Hughes said that the existence of moral insanity in the present case was much more conceivable than the existence of so-called psychic or larvated epilepsy, the assumption of which was only using a hypothetical method to get rid of a case conflicting with preconceived ideas. The case only presented symptoms of the moral nature; into what it might ultimately develop could be only a matter of hypothesis.

TREATMENT OF PERIODIC INSANITY.—Before the last meeting of the Asylum Association, Dr. H. M. Hurd read a paper upon "Treatment of Periodic Insanity." The idea which he wished to enforce was the beneficial influence of a return home of the patient in the intervals of maniacal excitement, when the intervals of quiet and apparent recovery are sufficiently long. The influence of hope, of engagement in business, and of the return to the home circle were urged as good reasons for a temporary discharge from the hospital. Incidentally the history of several cases was given, and the influence of judicious medication in retarding the exacerbation or attack of mania was illustrated. In the subsequent discussion a large number of the members took part. Most of those present agreed with Dr. Hurd, having found in many cases good results following from an experimental return of the patient to his home, especially where the home environment is such as to exert a tranquillizing effect upon the patients. Dr. Fisher said that the prospect of a return home is one of the most potent of moral agents in the treatment of the insane. He had practised great liberality also in the matter of allowing visits from friends on the outside. It was generally agreed, however, that when the patient is married, the danger of his or her becoming a parent during this interval of calmness seriously complicated the question. In the case of the unmarried, or the married who are beyond the bearing period, it was generally pronounced a safe experiment to allow the patient to either visit home frequently or to return to it on trial.

MENTAL CONDITION OF GUITEAU.—Two contributions have lately been added to the literature of this subject: one of them by Dr. Charles H. Hughes (*Alienist and Neurologist*, October, 1882), the other by Dr. T. W. Fisher (*Boston Medical and Surgi-*

cal Journal). The two believed the case one of congenital insanity, the first marked symptoms of which were observed at puberty, when there was the evidence of a mental change, in the letters written to his sister, in his abandonment of his ambitions and studies, and his embracing the theory of the Oneida Community. His conduct while a member of the community, his moroseness, inefficiency in the field work, and a number of details, showed a morbid mind. At three times in his life was he pronounced insane by those cognizant of his life: at Ann Arbor, when he wrote in a strain of affected piety to his sister; in the defence made by Noyes, of the Oneida Community, to the assassin's suit to recover the balance of the $1,000 which he had placed in its treasury; and the third time, in 1875, when he threatened his sister with an axe. Dr. Fisher, with regard to the question whether the assassin was a fraud, a fanatic, or a lunatic, thought it would be fortunate if such cases could be placed strictly within any class made by the legal profession. In regard to his fanaticism, it was pointed out that a belief in the Divine leadership was one of the leading ideas of his life. That he was not altogether a fraud was indicated by the growth of his own esteem of himself in proportion as he became more degraded. It seemed perfectly natural to the assassin that a man of brains and decision, a man with a new religious truth to promulgate, should have had this great idea of the assassination of Garfield as the means of preserving the Republican party and thereby the country, suggested to him by Divine authority. The homicide was the outgrowth of false reasoning, and not a result of passion or revenge.

The nicety of his arrangements and his cool behavior after his arrest are evidences of this. He acted like a man who had performed a great act, beyond the comprehension of the vulgar mob. It was the crowning act of his career, to him. It seemed the crowning act of an insane life. It requires vastly more straining of probability to suppose the assassin sane than the reverse. If, when he was haunting the White House, or soliciting the Paris Consulship, he had been arrested as the insane vagrant he was and appeared to be, he could have been committed to the asylum. He would have been held on the strength of his history and absurd claims. Since the assassination, scores of persons have been sent to the asylum on slighter evidence of insanity than this, owing to an awakened public dread of "cranks." It would not be possible for another individual to repeat the assassin's con-

duct previous to the assassination, without instant arrest and committal to the asylum. Why, then, should a homicide so much resembling insanity discredit his insanity? It can hardly be conceived possible that a sane man, however desperate and depraved, could have simulated insanity before, and in the commission of such an act to cover his real motives. More within the bounds of probability is it that an insane man having committed an act which he supposed could be justified to the world, having failed in this expectation, should fall back upon the legal plea of insanity. He might even feign some other form of insanity.

VACCINATION AMONG THE INSANE. — Dr. M. J. MADIGAN (*Chicago Medical Review*, July 1, 1882) says, concerning this, that there are numerous delusions which render vaccination among the insane difficult, since patients believe they can be poisoned by this means. One patient evolved the curious delusion that his enemies had chosen this means of introducing spermatozoa into his system, and thus impregnating him. In the portion of the asylum under his charge, were congregated progressive paretics, cases of melancholia attonita, acuta, and agitata, of chronic intellectual insanity with depressing delusions, terminal dementia, and of hebephrenia (insanity of puberty). The phenomena resulting from vaccination might be divided into four great classes. First, those in which the vaccinia exerted a beneficial effect upon the pre-existing insanity; second, those in which it unfavorably influenced this; third, those in which dangerous complications resulted; and, finally, those in which dermic phenomena were present: these latter were exceptional. Vaccination exerted the most marked favorable influence in melancholia attonita and agitata, progressive paresis, in a few cases of acute melancholia, and in some cases of chronic intellectual insanity, and chronic mania with incoherence. In all of the cases wherein such influence was exerted, the vaccination was followed by a high fever and marked general constitutional disturbance. There was a pretty general eruption resembling variola. On the fever subsiding (in at least ten cases it reached 102° F.), the patient, if a melancholiac, was much more cheerful, and, occasionally, delusions of persecution seemed to be temporarily in abeyance. One case permanently recovered, and as it had exhibited no change previous to the vaccination, it is by no means impossible that this exerted a marked influence. The cases of progressive paresis

were attacked by boils soon after recovering from the vaccination, and were for a short time rational, but the physical symptoms of the disease remained unchanged. The cases of melancholia agitata were quiet and cheerful during the constitutional disturbance from the vaccination ; after it had passed away, all but two returned to their usual condition. These two improved from this time, and finally recovered. Three cases of chronic intellectual mania were markedly quiet and talked rationally during the vaccinal fever. Four cases of chronic mania with incoherence talked coherently and relevantly during the vaccinal fever, but resumed their usual condition on recovery. In a large number of cases the vaccination exerted a decidedly unfavorable result. Delusions of infection with syphilis, of loss of identity, of paralysis, of poisoning, and, in several cases, of infection with small-pox, were found to be much more frequent after the vaccination. One new delusion has already been mentioned. In the progressive paretics certain trophic changes made their appearance. The toe nails in four cases dropped off. In one case hæmatoma auris made its appearance during the vaccinal fever. In a case of syphilitic progressive paresis the luetic affection seemed to take on a malignant type. Three cases of melancholia attonita, who had markedly deficient capillary circulation, suffered from gangrene of the toes and fingers in consequence of vaccination. There were formed in a few cases of progressive paresis large bullæ, which subsequently gave way to ulcers of a very indolent type. In two cases of progressive paresis, apoplectiform attacks came on during the vaccinal fever. In ten cases of progressive paresis large abscesses made their appearance after the vaccinal fever had subsided, on the seat of the pre-existing vaccinal eruption. In one case the hair of a progressive paretic became gray on one side of the head, while the eruption from vaccinia remained confined to the opposite side of the body. Two cases of melancholia attonita, which were suffering from phthisis, seemed to be disastrously influenced as regards the pulmonary affection, which had been previously running its course without marked febrile disturbance, but thereafter had marked rises in temperature. One case of melancholia acuta displayed symptoms of diabetes during the vaccinia, which, however, vanished on recovery. The dermic phenomena displayed by the patients during the existence of vaccinia were very varied. In some cases the eruption (which in at least forty-two was generalized) displayed a tendency to appear in patches of two or three pustules. In others there was a tendency of the

eruption to follow the course of a nerve. In certain cases the former places of vaccination exhibited pustules which began soon after, and ran about the same course as the pustules of vaccination.

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J. G. KIERNAN, M.D.

e.—THERAPEUTICS OF THE NERVOUS SYSTEM.

CONSTANT CURRENTS; THEIR PHYSIOLOGICAL AND PATHOLOGICAL ACTION.—A. Estorc has found, in confirmation of previous experiments of M. Vigoroux, that in cases of hysterical hemianæsthesia the anæsthetic side offers much more resistance than the healthy to the constant current. When the anæsthesia

is transferred the increased resistance is transferred also. M. Estorc thinks that an examination for unequal resistances should form one of our means of diagnosis.—*Arch. de neurologie*, Sept., 1882.

Chronic Absinthism.—L. Gautier (in the service of M. Lancereaux) has noted the effects of absinthe, which, he says, gives rise to chiefly nervous symptoms.

Enumerated they are: Remarkable impressionability and variability of character; dreams like those of alcohol, or more terrifying; hallucinations of sight and hearing, and delirium; hyperæsthesia of the extremities, ovaries, and spine; peripheral pains, which are symmetrical; progressive paresis of the extremities. General convulsions occur. Digestive disorders, less pronounced than in alcoholism, appear. Sexual desire and power rapidly and completely disappear in men. In women an early menopause, abortions, and fœtal death in the early months of pregnancy are seen. Victims of the habit die of pulmonary tuberculosis, and seldom reach the age of sixty.

A premature senility of all the organs is found on autopsy, but no hepatic cirrhosis or atheromatous disease.—*Thèse de Paris*, 1882; *Arch. de neurol.*, Sept., '82.

Old Hysterical Contracture Quickly Cured with Bread Pill.—An undoubtedly hysterical girl, bedridden from stiff legs, entered "la Charité" Sept., 1881. Besides the spastic condition she complained much of pains, and demanded and obtained for some time morphine hypodermically. At last her attendants told her that in the place of the morphine a much more active medicine would be given, but she must use it with the greatest care, as it was a very violent agent. Two pills (bread) were ordered, of which she was to take one half of a pill morning and night. To hasten their effect the patient took both at once, and the next morning, although she said they "made her bowels boil," she pointed with pride to her legs, and, what was more, walked on them, a thing impossible before for eight months. The patient finally recovered completely.—Landouzy and Ballet, *Revue de médecine*, Sept. 10, 1882.

Hystero-Epilepsy in a young boy cured by Hydro-Therapy.—Father and paternal grandfather nervous and sufferers from migraine; mother a sufferer from convulsions and wry neck

in her infancy; a maternal aunt idiotic; consnaguineous marriage of parents; brother and sisters dead with convulsions; etc., etc. Starting with such a pedigree, the history of the case, forming the basis of the article, is given.

When nine months old the child had fits; was always very impressionable and subject to nightmare; when eleven years old, true hystero-epilepsy developed; hemianæsthesia, hystero-genetic zones, more on left side, and indubitable attacks. The treatment was tonics and bromide of camphor, followed by cold douches "*en pluie*" and "*en jet.*"—Bourneville and E. Bonnaire in *Prog. méd.*, Aug. 26, 1882.

HYSTERICAL TREMOR.—An hysterical girl of eighteen, anæsthetic on the right side, and subject to convulsive attacks, fell on the right knee and developed an arthritis.

At the Hospital Beaujon (service of M. Lefort and M. Blum), she presented herself with, in addition to the above symptoms, an aphonia, an uncontrollable tremor of the right lower extremity, and trophic disturbances in the same.

Immobilization of the limb did no good, so M. Blum stretched the sciatic with complete relief of the tremor, and troubles of sensibility and nutrition.—M. Carafi, *L' encéphale*, June, 1882.

HYSTERICAL COXALGIA CURED BY FREE AND FORCIBLE PASSIVE MOVEMENTS UNDER ANÆSTHESIA.—M. Pofaillon reports such a case.—*Gaz. des hôp.*, Aug. 5, 1882.

METALLO-THERAPY.—A male, twenty-one years of age, in the practice of Dr. Smith, of Newtown, Ct., was brought to Dr. Seguin Sept. 23, 1882. He gave a history of hysterical attacks, and an examination revealed a preposterous staggering, which necessitated a support on both sides to walk, and complete analgesia of the left side of the body, face, and tongue. Without any suggestion, twenty-dollar gold pieces were applied to the left hand, forearm, cheek, and tongue. In from one to three minutes sensibility was restored, completely in the tongue, partially in the cheek, forearm, and hand. The next day sensibility was quite normal in the left arm and hand, a little impaired in the cheek, and considerably blunted in the leg. There was hardly any staggering. A belt of gold plates was placed about the leg for ten minutes, when sensibility was found restored in the whole limb.

On the the third day the patient left the hospital, claiming to be well.—Seguin in *Arch. Med.*, October, 1882.

Rebellious Hysteria.—A woman, highly hysterical, anæsthetic, and amyosthenic, with more or less impairment of the special senses, had attacks, generally violent, lasting a long time and accompanied by loss of consciousness. When not convulsed she was a prey to ovaria, neuralgias, and spasms, now here, now there. All at once she had a severe coxalgia, with contraction of the corresponding foot.

At La Pitié she was relieved by M. Dumont-pallier by internal administration and external application of platinum; she, however remained anæsthetic and amyosthenic. Now M. Burq saw her, and after a brief examination he found her *very* sensitive to copper. A copper disk burnt like a coal of fire on her skin. The effect of the copper was mollified by placing between it and the skin a disk of steel, which M. Burq considers, in the metalloscopic scale, the opponent of copper. In this way the copper was made bearable to the patient, and recovery supervened.—Burq, in *Gaz. des hôpitaux*, Aug. 31, 1882.

Angina Pectoris.—A woman of fifty-five, with no cardiac or pulmonary lesion, was suddenly seized with typical attacks of angina pectoris, lasting, some of them, two hours, and recurring several times during the day and night. All accessible sedatives not availing, the patient's sensitiveness to steel was ascertained, forty-eight steel disks were applied, a natural ferruginous water from Amiens was given internally, and the anginous attacks left. —M. Burq, *Gaz. des hôp.*, Aug, 31, 1882.

Reflex Paraplegia: Recovery after Circumcision.—Dr. J. H. Blanks reports a case as follows: Male, two years old, became fretful, nervous, restless, and sleepless. In two weeks, unsteady gait, going on to paraplegia(?), and slight torticollis. Later, alternating convergent and divergent squint. A simple phymosis with one slight adhesion was removed by circumcision. Complete recovery in ten days.—*Dub. Journ. Med. Sci.*, Aug., 1882; *St Louis Courier Med.*

Lead Colic Treated with Belladonna.—M. Bernutz has revived this treatment recommended by Malherbe and Picot. He

says these plumbic cases are especially tolerant of the drug, and he gives the extract in .05 doses every half hour until four or five doses are taken. As a purgative he gives two drops of croton oil. —*Gaz. des hôp*, July 1, 1882.

CONVALLARIA MAIALIS, PHYSIOLOGICAL EFFECT OF. — M. Germain Sée asserts that the aqueous extract of the entire plant, in doses of from 1–1.5 produces slowing of the pulse, re-establishment of the normal rhythm, increased heart-power and arterial tension. Respiratory movements become more powerful, and dyspnœa is relieved. It also is a powerful and constant diuretic.

He says it has no bad effect on the cerebro-spinal or digestive organs, and hence is superior to digitalis.—*Acad. de médecine*, July 4, 1882.

ALCOHOL.—Stanislas Danillo, after much experimentation, aided by the graphic method, asserts that alcohol in large doses first weakens and finally abolishes the irritability of the motor region of the brain.—*Arch. de physiologie*, Oct., 1882.

ERGOTINE IN CEREBRAL AFFECTIONS, PARTICULARLY CHOREIFORM, AND IN TROUBLES OF SPEECH.—A woman of sixty, in the insane wards at the Salpêtrière, gave the following history: After her marriage she evinced a tendency to walk, dance, and jump, as is seen in some cases of chorea in children.

After a long sojourn in the hospital she became again excited, without marked psychic disturbance, and commenced to speak in spite of herself, and to make use of terms which she did not intend, viz.: she called her dormitory "sacred music," her attendant "holy sacrament," her windpipe "a whistle," etc. Her speech was regular but jerky, and interspersed with loud outbursts, which confused and exasperated her.

Through mortification she became taciturn, and at the same time she seemed paretic, and had a truly "cerebellar" walk. There was great excitation of the excito-motor reflexes. Withal, there was complete retention of the intellectual faculties.

Sedatives of all sorts gave no relief. She was put on ergotine, .30–.40–.50 a day, with wonderful improvement. On the fifteenth day it was stopped, and she got worse. On resuming treatment the symptoms again disappeared.—J. Luys *L' encéphale*, June, 1882.

ACUTE CHOREA TREATED BY MASSAGE AND FEEDING.—For *acute* chorea in children the writers pursue the following course: Rest in bed; massage and shampooing fifteen minutes twice a day, increased to twenty; frequent administration of nutritious food (principally milk and eggs), alternated with fresh malt extract. Twelve cases reported; four very much benefited, and all but one improved.—Drs. Goodhart and Phillips in *London Lancet*, Aug. 5, 1882

EPILEPSY, TREATMENT OF, BY LIGATURE OF THE VERTEBRAL ARTERIES.—Dr. W. Alexander publishes five more cases treated in this way, making eight in all. He asserts amelioration in all, as shown by reduction in the fits or improvement in mental power. No bad effects on the spinal cord, and no deaths occurred. Permanent results not stated.—*Dub. Jour. Med. Sci.*, Aug., 1882; *Med. Times and Gazette*, March 11, 1882.

STRYCHNINE.—M. Vulpian has found that strychnine in large doses abolishes the motricity of nerves in mammals as it does in frogs.—*L' encéphale*, June, 1882.

PILOCARPIN IN PARALYSIS.—In the *Gaz. des hôp.* for Sept. 14, 1882, M. Cassagnau narrates a case of paralysis of the arm, following a meningitis, in a boy, which resisted strychnine, frictions, and faradism, and in which recovery supervened after several administrations of pilocarpin hypodermically, .02–.04 at a time.

R. W. AMIDON, M.D.

BOOKS AND PAMPHLETS RECEIVED.

Medical Electricity. A Practical Treatise on the Applications of Electricity to Medicine and Surgery. By Roberts Bartholow, A.M., M.D., LL.D., etc. Second Edition, Enlarged and Improved, with one Hundred and nine Illustrations. Philadelphia: Henry C. Lea's Son & Co., 1882.

Caractère, Mœurs, État Mental des Hystériques. Par le Dr. Henri Huchard, Médecin de l' Hôpital Tenon, etc., etc. Reprint from the *Archives de Neurologie*, March, 1882. Paris: Aux Bureaux du Progrès Médical, 1882.

The Human Brain: Histological and Coarse Methods of Research. A Manual for Students and Asylum Medical Officers. By W. Bevan Lewis, L.R.C.P. (Lond.). London: J. & A. Churchill, 1882.

Boletin de Ciencias Médicas. México: Tip. de M. Pérez Lete, June, 1882.

Ein Streiflicht über physiologische Anatomie, xvii. Von Julius Hensel in Stuttgart. *Archiv f. Geschichte d. Medicin u. med. Geographie*, Bd. v.

Notes on Physiological Optics. By W. Le Conte Stevens. From the *London Philosophical Magazine* for October, 1882.

An Obscure Case in Nerve Pathology Accompanying Optic Neuritis. By Julian J. Chisolm, M.D., Baltimore, Md. Reprinted from the *Archives of Ophthalmology*, vol. xi, No. 2, 1882.

Note on the Essential Psychic Signs of General Functional Neuratrophia or Neurasthenia. By C. H. Hughes, M.D., St. Louis. Read before the State Medical Association, Mo., May, 1882.

Practical Examination of the Urine for Albumen and Sugar. By J. H. Linsley, M.D., Burlington, Vt. Reprinted from the *N. Y. Medical Record*, August 19, 1882.

Static Electricity as a Therapeutic Agent. A Paper Read before the New York Academy of Medicine, June 15, 1882. By James Knight, M.D. New York, 1882.

The Last Chapter in the Life of Guiteau. By W. W. Godding, M.D., Washington, D. C. Reprint from the *Alienist and Neurologist*, Oct., 1882.

Museums as Educational Adjuncts to Medical Colleges. By M. Josiah Roberts. Reprint from the *American Veterinary Review*, June, July, and Aug., 1882.

The Early Diagnosis of Chronic Bright's Disease. By T. A. McBride, M.D. New York: Trow's Printing and Bookbinding Company, 1882.

The Evidences of Insanity Discoverable in the Brains of Criminals and Others whose Mental State has been Questioned, etc. By Edward C. Spitzka, M.D. Read before the New York Medico-Legal Society, May 3, 1882.

On the Question of Hypertrophy of the Osseous Structure of the Turbinated Bodies, Practically Considered. By D. Bryson Delavan, M.D., New York. Reprinted from the *Archives of Laryngology*, vol. iii, No. 3, 1882.

Reflections on Criminal Lunacy, with Remarks on the Case of Guiteau. By Charles K. Mills, M.D., Philadelphia. Reprinted from the Transactions of the Pennsylvania State Medical Society for 1882.

Notes on Twelve Cases of Brain Tumor, Chiefly with Reference to Diagnosis. By Charles K. Mills, M.D. Reprinted from the *Archives of Medicine*, Aug., 1882. New York: G. P. Putnam's Sons.

Non-uniformity in the Principles of Treating Pott's Disease, as Taught by Professor Sayre, etc. By M. Josiah Roberts, M.D. Reprint from the *New York Medical Journal*, Oct., 1882.

Alcoholic Anæsthesia. By Lewis D. Mason, M.D. Reprint from the *Journal of Inebriety*, Oct., 1882.

A Study on Some Points in the Physiology of Digestion. By C. L. Dana, A.M., M.D. Reprint from the *Boston Medical and Surgical Journal* of September 14, 1882.

Was Guiteau Sane and Responsible for the Assassination of President Garfield? Read before the Association of Medical Superintendents for American Institutions for the Insane at Cincinnati, June 9, 1882. By Theodore W. Fisher, M.D. Reprinted from the *Boston Medical and Surgical Journal*, June 29, 1882.

Studies in the Medical Botany of Southern Illinois. By J. M. G. Carter, A.M., M.D. Reprinted from the *Chicago Medical Journal and Examiner* for Feb., 1882.

Forty-third Annual Report of the Superintendent of the Boston Lunatic Hospital to the Board of Directors for Public Institutions, for the Year Ending April 30, 1882. Boston, 1882.

Fourteenth Annual Report of the President of the Inebriates' Home, Fort Hamilton, N. Y., for the Year 1881. Also Statistical Report of Six Hundred Cases of Alcoholic Inebriety Treated at the Home, etc., etc. By Lewis D. Mason, M.D. Fort Hamilton: Printed at the Inebriates' Home, 1882.

Thirty-ninth Annual Report of the Managers of the State Lunatic Asylum, Utica, N. Y., for the the Year 1881.

General acknowledgment is here made for other reports and reprints, whose especial mention passes our limits.

THE FOLLOWING FOREIGN PERIODICALS HAVE BEEN RECEIVED SINCE OUR LAST ISSUE.

Allegemeine Zeitschrift fuer Psychiatrie und Psychisch-Gerichtl. Medicin.
Annales Médico-Psychologiques.
Archives de Neurologie.
Archives de Physiologie Normale et Pathologique.
Archiv fuer Anatomie und Physiologie.
Archiv fuer die Gesammte Physiologie der Menschen und Thiere.
Archiv fuer Path. Anatomie, Physiologie, und fuer Klin. Medicin.
Archiv f. Psychiatrie u. Nervenkrankheiten.
Archivio Italiano per le Malattie Nervose.
Brain.
British Medical Journal.

Bulletin Générale de Thérapeutique.
Centralblatt f. d. Med. Wissenschaften.
Centralblatt f. d. Nervenheilk., Psychiatrie, etc.
Cronica Med. Quirurg. de la Habana.
Deutsche Medicinische Wochenschrift.
Deutsche Archiv f. Geschichte der Medicin.
Dublin Journal of Medical Science.
Edinburgh Medical Journal.
Gazetta degli Ospitali.
Gazetta del Frenocomio di Reggio.
Gazetta Medica di Roma.
Gazette des Hôpitaux.
Gazette Médicale de Strasbourg.
Hospitals-Tidende.
Hygeia.
Jahrbücher für Psychiatrie.
Journal de Médecine de Bordeaux.
Journal de Médecine et de Chirurgie Pratiques.
Journal of Mental Science.
Journal of Physiology.
La France Médicale.
Le Progrès Médical.
Lo Sperimentale.
L' Union Médicale.
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Revue de Médecine.
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Schmidt's Jahrbücher der In- und Ausländischen Gesammten Medicin.
St. Petersburger Med. Wochenschrift.
Upsala Lakareforнings Forhandlinger.

THE FOLLOWING DOMESTIC EXCHANGES HAVE BEEN RECEIVED.

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American Journal of Insanity.
American Journal of Medical Sciences.
American Journal of Neurology and Psychiatry.
American Journal of Obstetrics.
American Journal of Pharmacy.
American Medical Journal.
American Practitioner.

Annals of Anatomy and Surgery.
Archives of Comp. Med. and Surgery.
Archives of Dermatology.
Archives of Medicine.
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Boston Medical and Surgical Journal.
Buffalo Medical Journal.
Bulletin National Board of Health.
Canadian Journal of Medical Sciences.
Canada Medical and Surgical Journal.
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New Orleans Medical and Surgical Journal.
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New York Medical Journal.
Northwestern Lancet.
Pacific Medical and Surgical Journal.
Philadelphia Medical Times.
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Physician and Surgeon.
Proceedings of the Medical Society of the County of Kings.
Quarterly Epitome of Braithwaite's Retrospect.
Quarterly Journal of Inebriety.
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Toledo Medical and Surgical Journal.
Veterinary Gazette.
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