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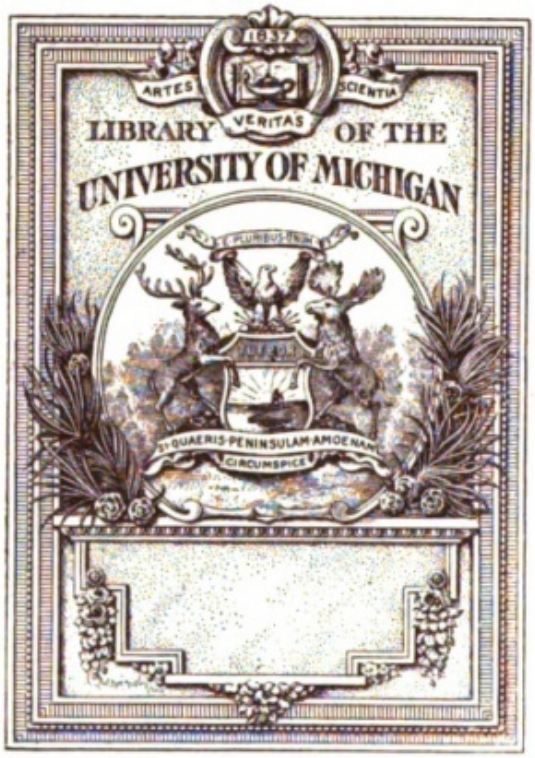

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ORIGINAL CONTRIBUTIONS.

THE EMPLOYMENT OF PHYSICAL METHODS IN THE TREATMENT OF NERVOUS DISEASES.*

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(*Conclusion.*)

THE MECHANICAL REMEDIES.

Massage and gymnastics have been employed in the treatment of nervous diseases from the earliest times. The first is used especially by uncivilized peoples for the cure of disease. There have been times when both, as curative measures, have passed into oblivion; gymnastics were revived somewhat about the middle of the 16th century by Merkuriali and Verono, and in the 18th and 19th centuries were further developed and more widely disseminated by Rousseau, Pestalozzi, Nachtigall and Ling.

In Germany gymnastics were perfected by Jahn in the form of turning, but more for education than therapeutic purposes. Spies developed this educational factor to the present system of calisthenics. Therapeutic gymnastics with

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massage were systematized by Ling, a Swede, into remedies capable of localization and dosage by introducing combined movements of resistance and various selected initial positions.

In France massage was again brought into therapeutic use by Tissot, Bonnet, Pierre, Nelaton. Estradere's book (1863) first treated massage as an independent branch of therapeutics. Of late it has been chiefly Metzger, Mosengeil, Zabludowski, Reibmeir, Schreiber, Kleen and others, as well as a large number of eminent surgeons, who have contributed to the advancement of this mode of treatment.

Massage as employed to-day, consists chiefly of four manipulations:

1. Effleurage, *i. e.*, stroking the skin from the periphery toward the centre with the flat hand. Its physiological action consists in accelerating the circulation of the blood and lymph in the skin and superficial tissues.

2. Friction, or rubbing consists of vigorous, circular rubbing and pressure with the hand or thumb and index finger. Its purpose is to assist in the absorption of morbid growths and swellings.

3. Petrissage, or kneading. Large amounts of tissue are taken up and rolled between the hands. This serves to improve the circulation in the tissues, in the muscles particularly.

4. Tapotement, or tapping with the hand, its edge or the finger tips.

Kneading and tapping, besides having a "detergent action" are also stimulating. The muscles tapped are excited to contraction, even when no longer subject to the will (mechanical muscular excitability); pain may also be relieved by them, owing to their paralyzing sensation. They also cause cutaneous hyperaemia. When large areas are subject to massage metabolism is stimulated. A special sort of tapotement, a rapid sequence of "concussions", which are given mechanically (Ewer's concussor, Liedbeck's vibration apparatus) is also employed in nervous diseases, owing to its anodyne effect.

Therapeutic gymnastics are of a far more complicated

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technique than massage. They consist of active and passive movements. As to the effect on the nervous and muscular systems by *passive* movements the muscles are alternately stretched and relaxed and changed in their mutual relations. Hence it is a sort of massage. The *active* movements, in so far as they refer to the general musculature, have, besides the mechanical effects peculiar to passive movements, a general stimulating action on metabolism. The muscle regularly exercised increases in size and strength, at any rate its state of nutrition, if it is not completely paralysed, is generally improved. The muscle becomes more plethoric, a fact on which the revulsive action of muscular exercise depends. By accelerating the circulation metabolism and the generation of heat are increased, which are beneficial to the general condition; on these effects depend the therapeutic indications.

The technique of gymnastics falls into two groups: the German and the Swedish.

German gymnastics consist merely of simple active movements, which are chiefly exercises with dumb-bells, the bar, etc. I must refer to the proper text-books for the more exact technique (*e. g.* Schreber). Anyone, who has practiced systematic muscular exercise, either at school or in the army, knows the greater part of those most useful. A fault of the German gymnastics is that the exercises cannot be so well localized and dosed as the Swedish, yet for many of the purely functional diseases of the nervous system they are especially adapted for home use, provided the movements are properly selected.

The general practitioner is scarcely able to give Swedish gymnastics. They consist, as arranged by Ling, of a very complicated system of movements, which by varying the initial positions, whose number is about 100, with very difficult uneuphonious names, are almost infinite. They are in part free movements of the head, trunk and extremities, in part against resistance from the hands of the operator. The individual movements are not materially different from those of German gymnastics, in part more complicated. The passive movements have fewer initial positions; they

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consist essentially in the execution of all possible active movements of the different joints by the operator, without the patient's cooperation. Massage is included in Swedish gymnastics and not regarded as an independent branch of therapeutics.

Various ingenious appliances have been devised for mechanically replacing the operator in these complicated movements. Numerous appliances are constructed, in which the resistance is effected by means of cords with suspended weights over pulleys, rubber bands, or by brake-like (Nycander) or lever and eccentric contrivances. Of all these, Zander's apparatus constructed on the last principle, is the most commonly used. Its merit consists in being able to exactly adapt the resistance to the physiological condition. The instrument, which consists of about 70 appliances, is too expensive for general use. By simpler means Otto Thilo seeks to meet the same physiological principles by using a series of pulleys which can be readily changed to suit the purpose. A full description of these exercises would require too much space, yet in special cases, when the patient cannot be sent to a Zander institute, they seem to be useful in nervous diseases. The simple apparatus of Stanislaw Sachs, constructed of rods with movable weights, one end resting in a ball and socket joint, is to be recommended on account of its cheapness and great adaptability (Eulenburg). The physician, in case he wishes to employ gymnastics in nervous diseases, may use the German and the Thilo or Sachs methods. With respect to the numerous indications, which hydrotherapy and electrotherapy have in nervous diseases, massage and complicated gymnastics are of far less importance. In bone and joint diseases, the latter attain their triumph; in the treatment of accidental injuries special institutes with gymnastics arrangements have become indispensable. The apparatus designed for the exercise of definite muscle groups like a *rowing apparatus*, *Gartner's ergostat*, *Largiarder's arm strengthener*, several of Sachs' appliances and the like may be recommended as suitable for home use.

As to who may give massage, it may be said: In all

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finer operations in which it is a matter of local effects, the physician shall give it. The manipulations of massage of the body may just as well be given by laymen instructed for the purpose, still, as in hydrotherapy, the physician should personally supervise its performance. Gymnastics should also be definitely ordered in each case and be convinced that they are properly given, when it is important that the physician understand the technique, in so far that he can give, *i. e.* demonstrate each movement.

Besides gymnastics there are several therapeutic procedures still to be mentioned, which cannot be called gymnastics strictly, yet must be included among the mechanical remedies. These comprise Frenkel's treatment of ataxia by continued exercise of coordination, called compensatory exercise therapy by Leyden, as well as the suspension treatment and similar methods.

Frenkel's treatment is based on the opinion, that in several nervous diseases, especially tabes, the disorders of motion are to be relieved by practice. In that Frenkel accepts the anaesthetic theory of ataxia in tabes, he assumes that it is possible for the patient to compensate for the want of feeling in his movements by continued and properly supervised practices. According to Goldscheider's theory the excitability is increased in certain undamaged neurons, and so the defect in the degenerated tracts is compensated. The performance of these exercises is comparatively easy, the physician must merely familiarize himself with their purpose and method. The kind of exercise depends on the degree and location of the ataxia. Treatment of the ataxia of the upper extremities absolutely demands the employment of simple appliances, while in that of the lower extremities Frenkel does not use any apparatus. At Leyden's clinic (Jacob), as well as at the Moabite Hospital (Goldscheider) certain simple appliances are used in the treatment of the lower extremities. Past experiences speak in favor of this method, yet it must not be forgotten, that it certainly requires the expert and personal supervision and direction of the physician. The results are not very promising in

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lowered muscular tone, flaccidity of the joints; overfatigue is to be avoided under all circumstances; these movement cures are also contra-indicated with exhausting baths. As this movement cure has generally met with favor and not as yet succumbed to the Moloch "suggestion", a more exact description of its technique will be proper, it never having been definitely described in English.

The movements are practiced in part in bed and in part while standing and walking. Frenkel insists on having the exercises in bed made by all patients, even the mild cases. The patient lies with his head somewhat elevated, so that he can see his legs and then successively makes the following movements at the physicians discretion (R. Hirschberg):

1. Flexion, extension, abduction, adduction of one foot, then of the other, followed by the same movements of both feet together.

2. Rotation of the foot at the ankle joint, the toes describing a circle.

3. Flexion of the knee, keeping the thigh in a perfectly straight line with the body.

4. Flexion of the thigh on the pelvis with the knee bent.

5. Adduction and abduction of the thigh with the knee flexed, the foot resting on the mattress and the pelvis fixed. This movement must be executed in four parts: adduction, back to the median line, abduction and again back to the median line without jerking.

6. Elevation of the leg as a whole, without zig-zag movements.

7. Adduction and abduction at the hip with the leg elevated.

8. Rotation of the elevated leg at the hip, the foot describing a circle.

9. With the legs extended and together require the patient to sit up in bed, without supporting himself on his hands and without flexing his legs.

10. The same movement with the patient lying perfectly flat.

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The purpose of these exercises is to teach the patient to again control his muscular contractions, and so be able to perform all these movements with normal regularity. At first the patient must attentively watch his movements, but after he is able to perform them quite accurately, require him not to look at his legs during the exercises, and finally he must try to perform them with his eyes closed.

The exercises in bed form the first part of the treatment. With patients who are unable to walk, the exercises in bed must be continued longer of course, than with those who can walk. Even in a high degree of motor incoordination most patients are benefited by the exercises.

Exercises in the upright posture. For these select a large, well lighted room, with little furniture and a not too smooth, uncarpeted floor. The patient is to be lightly clad, women should wear a sort of gymnasium suit, for in the beginning of the treatment it is very essential that they see their legs.

Exercises in static equilibrium. The patient stands erect, the physician at his side. If he is unable to stand alone, support him by means of Frenkel's belt about his waist and provided with hand loops. If he can stand by the aid of a cane, permit him to use it at least in the beginning of the treatment. The proper exercises are:

1. Stand motionless, the feet somewhat separated, the hands at the side. Maintain this position for 1-2 minutes.
2. Repeat with the feet together.
3. Stand with the feet separated and perform easy *gymnastic* exercises with the arms (extending them forward, upward and backward).
4. Repeat with the feet together.
5. Bend the body forward, to the left, backward and to the right; describe a circle with the head.
6. Repeat with the feet together.
7. Stoop over slowly and straighten up again.
8. Repeat with feet together.
9. Bend the body forward so as to touch the toes with the tips of the fingers.
10. Repeat with the feet together.

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11. Raise on the tips of the toes.
12. Repeat with the feet together.
13. Squat down by flexing the knees.
14. Repeat with the feet together.
15. With knees flexed perform the gymnastic exercises with the arms.
16. Stand on one leg.
17. Stand on one leg with knee slightly bent.

Exercises in locomotion:

1. Stand erect and slowly advance one foot the length of a step. Bring it back to its place quickly. Carry the same foot forward, then to its first position. Move the foot to the side the length of a step and then back to its place. To have these exercises performed with precision, it is well to outline with chalk the exact place the patient should place the foot. These exercises are to be repeated alternately with each foot.

2. Place one foot before the other in a straight line and maintain equilibrium.

3. Take twenty steps forward, planting the feet gently and touching the floor with their whole surface. The patient should count his steps aloud.

4. Walk a crack.
5. Walk backward.
6. Walk sidewise.
7. Walk with long strides.
8. Walk with knees bent.
9. Walk on the tips of the toes.
10. Walk at command, stopping and changing the direction quickly.
11. Walk over obstacles. Place pieces of wood on the floor at equal distances. The patient must step over these without disturbing them.
12. Rise from a chair without the aid of the hands; sit down slowly without dropping.
13. Practice ascending and descending stairs, with and without holding to the rail.

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Exercises while sitting:

1. Raising the foot on the heel and then on the tip of the toes.

2. Touching definite points with the tip of the toes.

3. Tracing circles, rectangles, octahedra with the tip of the toe.

4. Stop swinging balls with the tip of the toe.

For the treatment of ataxia of the upper extremities Frenkel has prescribed a series of movements, which are mostly effected by suitable appliances. These will rarely be required in general practice.

"They are individual movements of the fingers and hands: flexion, extension, spreading. Touch the several finger tips with the thumbs, crossing the fingers at the same time. Trace outlined figures. Guide a pencil in a small furrow, finally along an edge. Draw lines, circles, figures on paper from copy. Strike at suspended objects. Catch swinging balls. Touch several blocks or spots on a board in different order at command. Stick pegs into holes. Sort splinters of wood or pieces of money. Finger exercises like playing the piano or sorting money. Finally writing and drawing exercises". (Erb).

Goldscheider very earnestly recommends these exercises, as Frenkel did at one time. Jakob, who has constructed an apparatus for the lower extremities, similar to Frenkel's for the upper, believes, like Frenkel of late, that the treatment should be confined to special institutions. Owing to the simplicity of the several exercises, which I have almost completely enumerated, the procedure seems to me well adapted for general use, yet only by frequent repetition of the exercises are permanent benefits to be expected. Of the 4 cases I have treated in this way, 3 at least are greatly improved.

Nägeli has specified a number of "manipulations", which he has perfected to a therapeutic method. Its principle is a forcible stretching of the diseased or painful parts by the operator's hands, which must be continued for a certain time. They are recommended for the most diverse conditions and act in part by promoting the circulation, in part by pure mechanical pressure and traction. For details

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I must refer to his monograph, published in 1894. A part of their effects depend on suggestion, while in many cases a material action due to the nerve stretching, facilitated circulation, etc., is not to be denied. I have often used them, but without particularly encouraging results.

Suspension is another operation useful in the treatment of nervous diseases, which, like the above has been used in a certain class of cases of diseases of the spinal cord. The appliances are simple.

Sayre's, suspension apparatus is used, in which the axillary braces are replaced by Mitchell's elbow supports. Formerly the patient was swung free from the floor, but this has been abandoned of late and suspension preferably given sitting, which is much pleasanter for the patient, the duration of each treatment can be materially lengthened and any danger that might be incurred by the former method is avoided. For measuring the amount of traction used many cumbersome appliances (Sprimon's by Bechterew and Worotnysky) have been used. The simplest way of measuring the force employed is to place a spring balance between the pulley and the cross bar (Aug. Hoffmann), which I do not increase over 40 kg. The duration of the sitting at first is two minutes and may be increased to 20, yet I have found those of 6-7 minutes the most beneficial, longer applications occasionally causing cerebral congestion and great fatigue. Suspension must always of course be given and supervised by the physician and is compatible with general practice. It is contraindicated by organic changes in the vascular system and acute spinal and meningeal processes. The favorable effects frequently observed are said to be due to the facilitated circulation in the vertebral canal. Giles de la Tourette and Chipault have recently devised a special kind of "spinal cord stretching" by forcible flexion of the spinal column. By experimental investigation they have become convinced, that by vigorous flexion the spinal cord and cauda eguina are actually stretched. The extension amounts to about 1 cm., and affects the posterior parts of the cord especially. In giving it the authors place the patient on a table with a back, to which the pelvis is

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strapped and the thighs to the table, then by a system of braces fastened to the upper part of the body it is drawn well over the thighs by means of a set of pulleys. The traction force, measured by a dynamometer, varies between 60 and 80 kg. The results of this treatment are greatly extolled by its originators, who claim there are only 25% of failures with it, against 35-40% with suspension. My own experience is limited to one case, in which 8 sittings effected no improvement, but rather the ataxia became much worse. Yet the functions of the bladder were benefited. In any case it is not advisable to use such heroic treatment in ordinary practice. The method must be further tested before it is possible to decide whether it is to be given or denied a place among therapeutic methods, for Eulenberg is the only German observer who has spoken well of it.

The flexion methods employed by Bonnuzzi, Blondel and Benedikt for nerve stretching may be passed over, for their effects are uncertain and they are not without danger to the patient, as well as unsuited to general practice.

SUGGESTION AND HYPNOTISM.

Rossbach places suggestion and hypnotism among the physical remedies, and hence they may be spoken of here, although as *psychical* remedies they have a very special position. Employed by the laity since the last century as a means of cure under the names of magnetism, Braidism, their introduction into therapeutics really dates from the appearance of Bernheim's book on suggestion, as well as since Charcot's exhaustive studies of hypnotism. If the question as to the reality of the phenomena of hypnotism in the positive sense may to-day be regarded as settled, especially after Haidenhain's experiments, still the matter of its employment in practice is the subject of controversy. While on the other hand there are brilliant panegyrists, who believe they are able to favorably influence by hypnotism even "the secreting glands of the intestine, on the other there are those who are skeptical of its therapeutic action. For

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ethical reasons F. Schultze regards the use of hypnotism inadvisable.

My opinion, formed after employing it therapeutically for years, is that hypnotism is well adapted to act favorably on some symptoms as well as to radically benefit many cases of hysteria, particularly in children. According to Goldscheider's theory, the attention directed to a nerve arc will alter the "liminal value" of the neuron, as he calls it, and so explains the real action of suggestion. But in the majority of cases the result is not permanent. The effects of hypnotism may also be sufficiently attained by well directed suggestions while awake. In morbid states, where we have a very strong autosuggestion as in neurasthenics, hypnotism promises the most. The procedure as generally practiced to-day is simple. The physician must act with perfect confidence and not betray a trace of doubt as to any of his assertions, a preliminary condition, to whose non-fulfillment the failure to hypnotize is often to be ascribed. The patient is placed in an easy chair or on a couch in the quietest possible room, not too light. Either previous to the subjective phenomena his attention is called to the heaviness of his eyelids, etc., and then for a time he may fix his eyes on some object held slightly above them, or during the hypnotization the phenomena of sleep may be suggested. Bernheim gives the following directions for hypnotizing.

"'Look at me closely and only think of going to sleep. You will soon feel that your eyelids are heavy, then your eyes are tired; you already blink, your eyes are already suffused; you no longer see distinctly,now your eyes close.' With some this occurs at once, they close their eyes and go to sleep. With others I must repeat these assertions and earnestly; I add some manipulation, which may vary as to kind. I bring, *e. g.*, two finger of my right hand before the person's eyes and let him gaze at them, pass both hands downward many times over the eyes, or request him to look me steadily in the eye while at the same time I try to direct all his thoughts to the idea of going to sleep. I do this somewhat in this manner: 'Your lids close, you cannot now

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open them; your arms and legs feel heavy; you no longer hear; your hands feel as if they are paralysed; you can no longer see, you are going to sleep,' and I then add in a commanding tone: 'Sleep!' This order is often decisive, the patient closes his eyes, sleeps or is at least suggestible."

The patient may be hypnotized in this or some similar manner. During the hypnotic state the necessary suggestions may be made, *i. e.* the patient is told in an impressive voice of the phenomena that are expected on awaking, as the remedial action of hypnosis, like the disappearance of pain, etc. If the patient cannot be hypnotized the first time, it will perhaps succeed on the second effort, but do not forget that every failure to hypnotize essentially lessens the patient's respect for the physician's authority, and so his further efforts are regarded with greater mistrust. From this unpleasant fact it can be readily seen that the use of hypnotism has its own shady side for the physician. Excitable, readily and profoundly susceptible patients should only be hypnotized before witnesses.

As light sleep usually suffices for remedial purposes, the inability to open the eyes when told they cannot, profound hypnotism as a rule may be dispensed with. That the practice of hypnotism for remedial purposes should be left to the physician alone is shown by the many pernicious after effects from awkward application.

Under all circumstances try to get along with ordinary suggestion, which experienced physicians have employed for ages, and only use true hypnotism in special cases.

THE EMPLOYMENT OF PHYSICAL REMEDIES IN SOME DISEASES OF THE NERVOUS SYSTEM.

After the preceding description the employment of physical remedies will offer no insurmountable difficulties to physicians outside of institutions, who are familiar with their technique. It has been shown how, under certain conditions, when complicated apparatus and appliances are needed and are not to be procured, they may be improvised by the simplest means, for a greater part of the practical methods can be given the patient with unpretentious

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instruments. Of course knowledge and dexterity are required to thus attain really beneficial results, as well as a somewhat greater sacrifice of the physician's time.

With regard to indications in detail, it is evident after what has been said of the physiological action of the several methods, that no general scheme, applicable to every case, can be formulated. It is a peculiarity of these methods, that for each case a special program is demanded and to be modified according to the patient's individuality. It is common to all, that their employment must be free from all routine; to treat two persons with the same disease exactly alike, will almost always result in failure. As in internal medicine, individualization is and ever will be the physician's chief art, is especially true of the employment of physical remedies. All that is essential has been mentioned under the several headings and I will now take up the various forms of nervous disease and the physical remedies applicable to them, where all these assertions hold good, if the physician selects, varies and combines them properly, according to the nature of the case. These are matters taught by practice and experience. Make it a rule in every case to begin always with the mildest application and as the patient bears it, pass on to the stronger. So at least no harm will be done and in their more frequent use the certainty of judgment will be made keener.

If I classify the nervous diseases in the usual way, the employment of physical remedies is to be considered in:

1. Diseases of the peripheral nerves.
2. Diseases of the spinal cord.
3. Brain diseases (except mental disorders).
4. General neuroses.

DISEASES OF THE PERIPHERAL NERVES.

The diseases, respectively morbid phenomena, of the peripheral nerves are divided into those of the *sensory* and those of the *motor* nerves. The first are the neuralgias, anæsthesias and paræsthesias, the latter the spasms and palsies.

In *neuralgia* the physical remedies have been used

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successfully for a long time. With respect to the employment of hydrotherapy, warm compresses and packs are anodyne, while the action of intense cold is beneficial under certain conditions. Runge and Romberg regard cold to be contraindicated, yet others, like Erb, Edinger, Debanvais and Reddard take the opposite view. In neuralgia they recommend the use of intense cold to lessen the excitability of the nerves. For this purpose is particularly recommended, besides the ice-cap and cold douches, those remedies recently introduced into therapy, which produce cold by their rapid evaporation. Besides ether spray, these are chlormethyl and chlorethyl, the first being chiefly used in neuralgia of nerves distributed to a large area (sciatica, Steiner), the latter to superficial nerves. Both remedies are obtainable in tubes, *i. e.* syphons, from which they may be sprayed on the skin. The other methods of hydrotherapy are less used, only in *sciatica* packs, warm baths of long duration, brine baths have been beneficial. This is due to the general improvement of metabolism, as well as facilitation of the circulation in the skin and so unloading the deeper vessels.

Doubtless electricity is the most effectual means for combating neuralgia. Those admit this, who merely recognize a suggestive action in this therapeutic measure. The mode of employment is preferably the stabile application of the anode to the pain and pressure points. The electrode should not be too small, daily sittings of 320 minutes are to be recommended. On the other hand a vigorous stimulation by the faradic current is recommended, using a flat or pencil electrode (Frankl-Hochwart). The effect of the galvanic current is due in part to its polar action (anelectrotonus), in part to the "cataleptic", as well as to its action on the vasomotors. Both currents "inhibit" the excitement of the neurons. The weak galvanic current is always to be selected. The strong faradic with rapid interruptions.

Gymnastics now and then act well in neuralgia of the extremities, especially in its chronic stage. Old neuralgias may be treated with massage, particularly when due to pressure from muscular infiltrations. As the veins of the

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muscles are connected with those of the nerves, massage will always aid in unloading the circulation of the nerve trunks.

Nägeli's manipulations, particularly in neuralgia of the head, are to be considered; they facilitate the circulation.

Anaesthesias and *paraesthesias*, as results of peripheral disease, yield to treatment by warm, local baths, compresses, as well as by cutaneous stimulation with the faradic current of moderate intensity. The anode treatment with the galvanic current, as well as faradic baths, may be tried.

Spasms confined to single nerve areas form a frequent, but often unfortunately a very thankless incentive for the use of the physical remedies. Warm baths (32-35°C) for 20-40 minutes, or warm compresses and packs may be tried. Now and then I have had good results from vigorous cold douches, as in a case of spasm of the muscles of the shoulder.

Electricity has always been recommended for localized spasms. The point of origin of the nerves, whose area of distribution is affected with spasm is subjected to a moderate current (2-7 MA) from quite a large anode (25-50 scm.) for about five minutes. The cathode is placed on the sternum; at the conclusion of the treatment the anode is removed after the current has been gradually reduced. Strong faradic stimulation is rarely beneficial. Massage and special gymnastics act very uncertainly, on the contrary, as voluntary movements occasionally excite spasm, they are to be avoided in most cases. Still a trial of exercise therapy may be made. No permanent results are to be expected from suggestive treatment.

Palsies from destruction of continuity of peripheral nerves form an important chapter. It may be questionable as to the way physical remedies act for restoration of a nerve from its ganglion cell in regeneration of the axis cylinder, but it is certainly established by unbiased observations and experiments, that by the use of physical remedies curative results are more quickly attained, which directly prove their favorable action (E. Remak).

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While hydrotherapy is mostly employed in the form of compresses or long lukewarm baths, electrotherapy offers a rich, fruitful field of labor. At any rate for estimating the gravity of disease of the peripheral nerves, electricity has become indispensable from the reactions discovered by Erb and v. Ziemssen.

For the purpose of diagnosis in paralysis of the motor nerves an electrical examination of the area supplied by them is imperative. As already stated, the reaction of degeneration occurs in severe disorders of the primary neurons. The occurrence of the reaction of degeneration is also extremely important in prognosis, for palsies with the reaction of degeneration require months at least for their recovery, while those without it generally improve materially and recover within a few weeks. The curative effects of electricity, which were somewhat overestimated after Duchenne's and E. Remak's researches, must to-day claim certain recognition from the severest critics. E. Remak's recent communications on electrical treatment of radial palsies are evidences, that it favorably influences the period of recovery. The methods, which may be used for the treatment of peripheral palsies, are the localized applications of the faradic current, as well as the stabile and labile cathodal treatment with the galvanic. The current intensity of the latter should be 5 MA with an electrode of 9 scm. The paralysed muscles are stroked with it, or it is placed for a time (2-3 minutes) at the point of the lesion. This treatment may be varied infinitely, yet it is best to follow a definite method. I have usually succeeded with the above method used for 6 minutes on alternate days. Under certain circumstances the treatment of severe paralysis must be continued for months. While it often seems as though the beginning of restitution is not essentially accelerated by electrical treatment in severe paralysis, yet it is very rapid after it once begins. The employment of the galvanic current, to which under all circumstances the greatest effect is to be ascribed, in severe palsies, the only one, prevents further degeneration of the muscles. The effect of the current is explained by its "accelerating" and exciting action,

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thus relieving the fatigue and weakness, as well as its so-called catalyptic action.

Simple and *multiple neuritis* deserve special mention. Electrical treatment is to be used after the acute symptoms have subsided. Only the galvanic current is proper, for the manifestation of pain and irritation after the use of the faradic prove that it is injurious.

DISEASES OF THE SPINAL CORD.

Diseases of the spinal cord are eminently suited to physical therapy. First of all the most common spinal disease, "tabes dorsalis," is of special interest in treatment. All that is said of its treatment, may be applied, mutatis mutandis, to the other chronic diseases of the cord. The *acute* diseases of the cord are rarely subject for active therapy. In the secondary stage physical treatment first becomes affective for the same reason as in *chronic* diseases. In *tabes*, particularly in the so-called second stage, that of beginning ataxia, the requirements for a consistent physical treatment exist, and it is almost strange that this time is denoted as the most favorable to the action of this celebrated remedy, from which it is to be concluded with great probability, that the period of beginning ataxia is the one most favorable for *spontaneous* remission. Be that as it may, from this time on in chronic tabes, the question will always present itself to the physician: "What else is to be done?" Such patients cannot spend their life at baths and sanitariums, but must be treated at home. So in this disease it is especially incumbent on the physician to be familiar with the physical remedies and their use, and to employ them according to the state of the case. While part of the cases have a tendency to run an acute course, which is especially frequent in less well situated surroundings, from inability to arrest the disease in its beginning, our methods of treatment, like all others, leave us in the lurch, yet in chronic cases great benefits are to be derived from them. Hydrotherapy is effectual in the employment of especially mild procedures: cold friction and half baths. The latter may be given daily for a long time, and at their conclusion

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cool effusions over the back are requisite. The use of warm and steam baths is inadvisable. Many investigators are not convinced of the action of electrotherapy in chronic diseases of the cord, but Erb, who has the most experience in the matter calls electricity "*a powerful physical remedy*" in his latest discussion of the treatment of tabes. While there are no definite ideas as to the way a diseased cord is effected by the galvanic current, benefit is often derived from it. The treatment consists in giving the current with an electrode 6x12 cm., placed on the sternum or back of the neck, one equally as large about four inches below it on the neck, which after one minute is pushed downward its width three times. A case of tabes has been instructive to me as to the effect of this treatment, and in which I have employed no other than that described. The intestinal crises were especially benefited. As the case seems adapted to demonstrate the direct curative action of electricity on the central nervous system, it may be briefly reported.

L., 40 years old, a merchant for 13 years, after having had "sciatic" pains in his legs for several years, became troubled four years ago with severe and very sudden attacks of diarrhœa, which came on so quickly, especially at night, that he could not get up soon enough. This gentleman, who had kept account of his bowel movements for three years, had not been free from these tormenting attacks for more than seven days on the average during this time, in spite of the most diverse bath and dietetic methods,—one ordered 14 meals a day—suggestive and medical treatment. The tabes had been overlooked by all who had examined him. When I first saw him there was slight difference in the pupils and fixity. Absent patellar reflex, as well as slight ataxia, was also to be observed, and he had had palsy of the eye muscles for a year. As all aggressive measures, especially hydrotherapy and baths, had shown that any intense physical excitement increased the attacks, I was led to treat him expectantly at first, and employed the mildest remedy: galvanization of the back. Immediately after beginning the treatment an interval of more than forty days occurred, then five weeks followed, during which there

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were several relapses, but from that time on under continuation of the treatment, which was later interrupted by a six weeks' sojourn at the baths of Nauheim, a period of 280 days elapsed without a single attack of diarrhœa. Here is a case materially and permanently improved in a scarcely perceptible way by the use of electricity, on which suggestion had previously acted intensely.

Besides galvanization of the cord, which may be used for a long time without injury to the patient, although in most cases it is advisable to dispense with it for a time after 4-6 weeks, the faradic treatment, first used by Rumpf, is to be recommended, which consists in applying to the patient's back and legs the faradic brush for 10-20 minutes with a current able to excite powerful muscular contractions. Thus will be attained the reflex effects in the cord in the sense of facilitation and inhibition (Erner and Goldscheider), as well as vascular dilatation. Such intense stimulation of sensation in the legs is often beneficial in tabes, as I observed that every time a patient's sensation was carefully tested by many pin pricks, he was able to walk better. How large a role suggestion plays cannot be stated. A local galvanic or faradic treatment often benefits the laryngeal, gastric and intestinal crises of tabes. Massage is occasionally beneficial by its action on the nutrition of the muscles, especially when they are very flaccid and weak. Gymnastics, in so far as they consist of vigorous exercises and resistive movements, are generally inadvisable in incipient ataxia. Now and then favorable results from such methods are reported, yet as Frenkel, Leyden and Goldscheider state, the tabetic is inclined to use more strength than required in every movement and so is injured by the exhaustion occurring in these exercises, owing to the occasional absence of the sense of fatigue. It is entirely different with the Leyden-Frenkel *compensatory exercise therapy*, according to generally accepted views, as well as in advanced cases. Suspension, in the mild form now generally used, yields decidedly favorable results. I know of a large number of cases benefited for many years, as I reported to the Society of Natural Research in Braun-

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c hweig. Improvement of the ataxia, the bladder trouble and pains are to be thus attained. I have seen favorable results in chronic myelitis. Forcible stretching of the cord, according to Gilles de la Tourette is advisable in general practice. The use of support jackets must be left to expert orthopœdic specialists.

In all chronic diseases of the cord it is of prime importance, that the methods be changed, baths at Oeynhausen, Nauheim, etc., may, under certain conditions, be replaced by artificial aerated baths at home, while careful observation of the patient, regulation of the diet and mode of life must be kept in mind especially.

Of the acute diseases of the cord, infantile anterior poliomyelitis is to be especially mentioned, which demands the use of physical remedies in its secondary treatment. I would advise beginning 8-10 days after subsidence of the acute symptoms with labile application of the cathodal galvanic current to the palsied muscles, by placing an indifferent electrode of 5x10 cm. over the presumed lesion, also lukewarm baths daily or every other day and, if the patient's intelligence permits, active and passive gymnastics. The two cases, in which I began the treatment very early (in the first week), the first with complete monoplegia of the right arm, the second with total paraplegia of both legs, recovered *without any defect*, a result, which has led me to begin the treatment as early as possible. In the later stages the treatment must be mostly orthopoedic, which, supported by electricity, gymnastics, especially those of Thilo, and massage, often attain only indifferent results.

The diseases accompanied by muscular atrophy are still to be considered: spinal, neural and myopathic atrophies, respectively distrophies. Owing to their progressive character the treatment is purely symptomatic and conservative. Galvanization and local faradization of the diseased muscles seem to benefit their nutrition and so arrest the disease. Now and then massage and gymnastics are beneficial, yet exhaustion is to be avoided.

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BRAIN DISEASES.

The brain diseases suited to treatment by the physical methods are the hemiplegias especially, whether due to infantile, cerebral paralysis, embolism, thrombosis or cerebral hemorrhage.

In the acute stage of these diseases, physical treatment, except the ice-cap, is out of the question, but after 5-6 weeks, when the patient is convalescent, they are proper. Of hydrotherapeutic procedures, luke-warm baths only are to be considered, during which a cold compress is to be kept on the head. Further treatment is for the special purpose of restoring and increasing the functions of the muscles and nerves. For this electricity, gymnastics, as well as massage, are especially adapted. Galvanization of the head, once so often recommended, which consists in placing a 7x14 cm. anode on the forehead, an equally large cathode on the neck, with a current intensity of not over 2 MA, and continued not more than 3 minutes, I consider harmless, yet of little use. More is to be expected from local treatment of the muscles and nerves of the palsied extremities with the faradic or galvanic current in sittings of 5-20 minutes daily or on alternate days. Besides the relief of the symptoms of congestion, the counteraction of beginning contraction is also to be attempted by various passive and, if possible, active gymnastics, whose administration may be left to a relative after receiving full instruction.

In the treatment of mental diseases the use of lukewarm baths is to be considered, particularly in the mild forms of melancholia, suitable for home treatment under certain conditions (see Prof. Ziehen's Treatment of Melancholia; *American Journal of Insanity*, Vol. LIV., p. 543), yet even when circumstances permit, it will usually be better for the physician to send these patients to a special institution. For if convalescence does not occur after a time, the determination for a change of residence is always harder, and the patient and relatives are disappointed. Only a physician well versed in psychiatry should undertake, in my opinion, to treat the mildest forms of mental disease at home. If he is not, he should secure at least the advice of a

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psychiater, to escape the danger of having overlooked something, if the disease proves to be periodical (see Dr. Hoche's paper; ALIENIST AND NEUROLOGIST, Vol. XIX., p. 193) and relapses occur.

GENERAL NEUROSES.

The so-called functional neuroses, whose anatomical basis is unknown, especially *neurasthenia* and *hysteria*, form a special domain for the physical remedies. In these diseases suggestive influence may be given the most credit for curative effects, yet it is at least known that hypnotic and purely suggestive treatment attain permanent results only in the rarest cases, while properly conducted hydropathic, electric and mechanico-therapeutic measures very often improve and permanently cure many cases. And quite often it is these methods, where only a slight external effect is perceptible, *e. g.* galvanization with weak currents, which, according to all that has been said, should have the least suggestive action, that often attain the greatest success in functional diseases, greater than those procedures combined with the most mysterious and striking phenomena, *e. g.* Franklinization (Friedlander). If suggestion is especially decisive in the cure of these diseases, so one should succeed either with hypnotism, *i. e.* suggestive treatment, or that combined with the greatest possible display of showy instruments, for acting more on the mind and ideas of the patient. Yet both have been in no way satisfactory; the results of purely suggestive treatment are neither so alluring, that other remedies should be abandoned, nor does the employment of some complicated, striking method offer any demonstrable advantage.

We do not know the anatomical basis of these diseases, but may assume they consist of changes in excitability (liminal neuron, Goldscheider), perhaps also in the structure or chemistry of the nerve cells, respectively neurons. These changes perhaps lead to objective disorders, exaggeration of the reflexes, pupillary phenomena (A. Westphal), further to changes in the circulatory organs, which often become a serious factor, as well as frequently to severe disorders of

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the general condition. As often as I have tried to benefit these conditions by hypnotism, as I have for years, I have never been able to attain more than temporary success. Simple psychical treatment is able to accomplish much under certain conditions, yet not as much as when supported by physical and medicinal remedies.

That psychical treatment is still of the greatest importance is evident, confirmed by the fact, that the "liminal neuron" may be changed by psychical irritation (Goldscheider). To this psychical treatment belongs chiefly the most careful examination, as well as the avoidance of everything that is apt to make the patient anxious and especially destroy his confidence, be it in the physician, who advised him, or in the one who is to undertake some special treatment, requirements, which are alas too often neglected, to the patient's injury. When the value of a remedy is subjected to discussion, a justified doubt expressed as to its action or employment, if only by a shrug of the shoulders the want of confidence in the simple remedy is shown, it is seriously damaged for the neurasthenic under all circumstances. This practical side of comprehending the value of physical remedies must be the rule of action, and not whether this or that remedy only acts suggestively in certain cases, but if it will only benefit the patient, it serves both the patient and the physician. All else are purely scientific and theoretical questions, which must be kept out of the sick room. If I have here given psychical treatment a prominent place, it shows how highly I esteem it. That it must run like a bright strand through the use of every remedy, how it must be adapted to the individual and often in the choice of a curative method is decisive, if we individualize, are facts always to be considered.

Of the physical methods, hydrotherapy is first to be considered, and cold morning frictions are to be especially employed. At first they are to be given at moderate temperatures and gradually made colder, if well borne. They have an invigorating and refreshing effect, rousing the patient's energy. The wet pack is a sedative. Insomnia is often benefited by it. But half baths, whose action may be

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greatly varied by the temperature used, the length of their duration, as well as by the mechanical procedures accompanying them, are very useful in neurasthenia and hysteria. These methods, in part sedative, in part exciting, form a very special adjuvant in the treatment of such patients. In those weak and debilitated exciting measures must be avoided at first. Besides general treatment, symptomatic procedures are needed to combat pronounced local symptoms. Cold sitz baths of 8-29°C. for 5-10 minutes cause congestion of the abdominal organs and so unload the others, as well as an adjuvant to digestion and sexual potency. For sexual irritability warm, long continued sitz baths are indicated. Short, cold foot baths, as well as other cold stimuli to the feet (Kneip treatment) serve as derivatives in congestions of the head so common, and also as a general invigorant of the whole nervous system. The psychrophore is indicated in states of sexual weakness, spermatorrhoea, pollutions nimi. In this and similar ways various localized troubles are treated symptomatically. Saline, as well as carbonic acid baths are indicated under certain conditions. In congestion of the head do not fail to counteract the hypostatic, first of all bathe the face and neck with cold water, in severe cases an ice-cap or cold compress may be employed.

Electricity is especially useful in the treatment of functional neuroses in sanitariums. Beard and Rockwell introduced general faradization, *i. e.*, the application of the faradic current to the whole body, whose intensity depends on the sensitiveness of the several cutaneous areas, as well as central and general galvanization. Both may be used. Sleep and the general condition are often benefited by their frequent employment. Galvanization of the head with weak currents D=0 5-6:90, chosen according to the patient's individuality, for ½-3 minutes, relieves many cases of cerebrasthenia. According to Löwenfeld in brain anemia arrange the electrodes so that the cathode is on the forehead and the anode in the neck, or inversely. Galvanization of the neck is very often recommended and even by Möbius (especially in Basedow's disease, where it seems to be

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extremely beneficial in many cases). The treatment of states of sexual excitement, as well as of depression, by localized currents is often commended. One pole of 18-25 scm. may be placed on the perineum, or over the symphysis, or introduced in the urethra in form of an insulated bougie provided with a metal tip. Both currents may be employed externally, only the faradic internally. The treatment of dyspeptic disorders by electrization of the stomach seems to afford favorable effects in cases with anomalies of the gastric secretion; constipation may also be treated with electricity. The abdominal walls are energetically faradized by two electrodes, both placed on the abdomen or one introduced into the rectum. The faradic pencil is often very beneficial in relieving hysterical palsies, whatever their location, whose effect surely depends on its facilitating and suggestive action on the will, and this method of attaining a suggestive effect may often be employed as the most practical. It is to be stated, that it is not necessary to produce pain, but merely the idea of effecting a cure. The latter is suggestively effectual.

The employment of electrical baths is to be mentioned, which in hysteria and neurasthenia have a general tonic action, similar to general faradization.

Massage and gymnastics are symptomatically indicated in states of muscular weakness, and form a part of the Weir-Mitchell and Playfair rest treatment of the neuroses. It consists of forced nutrition according to definite rules, and the patient is kept in bed and isolated, milk forming the special article of diet. Still the nutriment must be suited to each case. At first the patient is not to talk or have any mental occupation, while the food is daily increased as much as possible. Besides increasing the amount of food, metabolism is facilitated by general massage, passive gymnastics, localized faradization. After one to two weeks active gymnastics are gradually introduced and later mental occupation, until the patient returns to his usual mode of life. This treatment, which often effects an enormous gain in weight in a short time, depends essentially on suggestive action, besides the improvement in the general physical

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condition. It is not a specific for nervous diseases, only for emaciated and debilitated individuals, and its employment demands a careful selection of the cases.

Gymnastics may occasionally be advantageously prescribed to overcome the apathy often found in these patients. The method depends very essentially on endeavoring to promote the energy of innervation and general vigor of the muscles. Young, vigorous persons may be benefited by German turning, calesthenics (Schreber) offer a multitude of exercises, which may be selected according to the purpose of the gymnastics and their symptomatic action, in case it is a matter of constipation, revulsion from the head, etc. Hence, according to the effect desired, one of the many gymnasium appliances may be prescribed, like the rowing apparatus, Sachs', etc. The Zander gymnastics are little used in neurasthenics, owing to the complicated apparatus and the noise, dust, etc. incident to their use. The routine employment of this treatment is to be guarded against in weak, overworked and fagged individuals. According to my experience the state of exhaustion will often be only intensified. Whereas moderate indulgence in sports, like riding, rowing, bicycling may be permitted under certain conditions, the patient being thus gotten into the open air.

Of the functional neuroses the traumatic are still to be specially considered, in which physical remedies are employed along the same lines as in neurasthenia and hysteria. Epilepsy is occasionally benefited by mild, cold water treatment, by lukewarm half baths and friction combined with the other essential remedies, also under certain conditions cautious galvanization of the head, neck and back may be given, yet no great benefit is to be expected. In chorea warm baths have a sedative action, cautious gymnastics are occasionally able to relieve the restlessness, yet as we have more effectual means, we need not promise ourselves very much from the exclusive employment of the physical remedies. Tetanus, myoclonia, myolonia rarely indicate the use of physical remedies. In paralysis agitans good results are often attained from warm baths, and electrical baths in particular

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(Erb). Electrotherapy is of no special benefit and only acts in a suggestive way, like the mechanical remedies. Suspension, formerly recommended in paralysis agitans, now has no advocates. Of the vasomotor, trophic neuroses ***Basedow's disease*** and ***migraine*** are to be mentioned. That Basedow's disease is often benefited by electrical treatment has been stated, also friction, packs and invigorating general treatment have good results. Gymnastics may occasionally be beneficial, if cautiously employed, yet suggestion here plays a part, if trifling. Migraine is occasionally benefited by galvanization of the neck, also by friction and sitz baths, while revulsive foot baths are also indicated.

A number of diseases are called occupation neuroses, which are generally observed after and during excessive demands on certain groups of muscles in certain unilateral functions in predisposed individuals. Neuralgia, cramps and palsies are observed. The therapy of these conditions agrees with that in diseases of the peripheral nerves. *Occupation cramps*, particularly writer's cramp, have special importance. Complete recovery from this very stubborn disease is rare. Massage, gymnastics, exercise therapy (Goldscheider) of the affected extremities are recommended by many as especially effective, as well as treatment with the galvanic current, applied to the muscle groups affected by the cramps. The faradic current is now and then recommended for local treatment. In this, as in all convulsive diseases, whose exact localization we do not know, the therapy is in the dark. It is extremely probable that all convulsive diseases have a central, if not cerebral, localization, hence in their treatment that of central organs, respectively general treatment, is never to be neglected. A case of writer's cramp of 20 years standing in a gentleman of 52, treated by celebrated masseurs, led me to think a great deal about the localization of this disease. It entirely prevents him from writing. He also has arteriosclerosis with myocarditis, and in the summer of 1895 had a mild stroke of apoplexy, causing a temporary paresis, respectively weakness, of the right side of the lower part of the face, as well as of the arm and leg of the same side. The

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paresis almost completely disappeared from the arm and leg, but what was the strangest was that he could again write perfectly normally and easily with the hand previously affected with writer's cramp and afterward paralysed. This case speaks much for the probable central origin of the trouble in many instances, where the knots and infiltration in the muscles found by the masseurs had nothing to do with it, and in spite of their alleged removal the cramp often continues. These symptoms of excitement in this case were benefited by the inhibition induced by the apoplexy.

In conclusion we find on reviewing the physical remedies, that:

1. A large number of the *physiological effects* of physical remedies are established.

2. A large number of reliable observers have derived the same *benefits* from their rational employment, and so often that they are regarded as dependent on them; their general organic action must be regarded as the greatest part of their cause.

3. These observations provide the reason for the opinion, that *but a small part* of the results attained are due to suggestion.

4. It is further established that physical remedies employed with competent experience, according to decisive principles, cannot injure the patients.

5. In the most modest practice the employment of the largest part of these methods, which are chiefly prescribed for a curative effect, is possible and practical.

But unfortunately, anything more positive cannot be said of the other remedies in nervous troubles.

Greater advancement in the knowledge of their action is to be expected from their more general employment at the clinic, and thus more general scientific work. Waldeyer's neuron theory has proven of benefit, in that Goldscheider first tried to explain the import of stimulation in the light of the neuron theory. The theory of the "neuron liminal" introduced by him is at least able to trace back the greatest part of the curative effects to amplification, respectively,

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derogation of the liminal altitude (inhibition and facilitation). This is not the place to more fully discuss these interesting matters.

It follows from all that has been said, that to-day we are in position to employ the physical remedies with benefit to our nervous patients, not only in sanitariums, but also in general practice.

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THE APPLICATION OF ELECTRICITY IN THE TREATMENT OF SOME DISEASES OF THE NERVOUS SYSTEM.*

By DR. ALEX. L. HODGDON, Baltimore, Md.

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DURING late years a great amount of skepticism seems to have been indulged in by many members of the medical profession in regard to the use of various forms of electricity and the magnet, in the treatment of disease; many, I understand, believing that no benefit whatever accrues to the patient, others that the influence is purely psychical, and still others who believe that psychical influences do not play a part in the results achieved. Some of these may think there is little good accomplished outside of the galvanic current with its direct chemical action; others may include the faradic as worthy of notice; still others may deign to admit the virtues of static electrification, while only a few seem disposed to ascribe any virtues whatever to the magnet. But why should not all of these therapeutic agents be used in appropriate cases? Because opium is good, in certain disorders, why limit ourselves to its exclusive use? There is another aspect to this subject —that is, should only one drug be used, opium probably is the most generally useful, and if only one form of electricity be administered, due possibly to lack of time or inclination on the part of the general practitioner, then it may be well to possess either a galvanic or faradic battery, as being the most generally useful.

*Read before the Clinical Society of Baltimore, Md., at its meeting, November 16, 1900.

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Of all the various diseases of the nervous system, there is probably none in which electricity is more generally useful than in the treatment of neurasthenia, or nervous exhaustion, with its many psychical and other symptoms, simulating at times, grave organic trouble. In this disorder we have many distressing features, such as the lightning-like pains, resembling those of locomotor ataxia, the cold extremities, the tremor, headache, and gastric symptoms; the latter predominating in many cases; the cardic palpitation may even be so great as to cause the patient to fear that he is the victim of an incurable heart lesion. The great feeling of exhaustion present, either mental or physical, as the cerebral or spinal form of the trouble predominates (cerebrasthenia or myelasthenia), also the morbid fears to which some of these victims are subject, as agorophobia (fear of open places), topophobia (fear of places in general), claustrophobia (fear of closed places), anthrophobia (fear of man), gynephobia (fear of women), all of which, with sometimes many other symptoms present, but too numerous to mention, paint a graphic picture of neurasthenia. This literally being a condition of nervous exhaustion, what would be the treatment indicated? I shall not mention the administration of drugs (of which there are many good ones) in this article, as it is only upon the subject of the electro-therapeutics of the diseases mentioned; therefore the treatment should be, one or all of the following methods: Central galvanization, the object of which is to bring the nervous system, the spinal cord, brain, and sympathetic, as well as the pneumogastric and depressor nerves under the influence of the galvanic current; the method of performing which is, to place the negative pole on epigastrium, the positive on cranial centre, passing it over forehead and top of head, by inner border of sterno-cleido-mastoid muscles, from fossa to sternum, at nape of neck, and down entire length of spine. General faradization may advantageously be practiced, by placing the feet on a large wet cloth electrode, and passing the roller electrode over nearly the whole extent of the body. Static electricity is probably better adapted to the treat-

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ment of this condition than any other form of electrical applications, and it may be administered by either insulating the patient negatively or positively, according to his various symptoms, the negative insulation being suitable for the greater proportion of neurasthenics. It must be remembered that the population of this earth is constantly in an electric bath, on clear days, the atmosphere being positive, and the earth negative, while on cloudy days the conditions are different, as the earth may be either negative or positive; therefore clear weather producing, in most neurasthenics, the greatest sensations of bien être, they should be negatively insulated, while a positive breeze, spray, roller discharge, or marked sparks, are applied; being careful to avoid the region of the eyes while administering sparks. The static breeze and spray are better adapted to the treatment of the neurasthenic than any other form of administration; this, I believe, being acceptable to about all, but a certain number are very susceptible to the action of the sparks, which may produce disagreeable sensations in the patient. A few in whom extreme excitement prevails may be better treated by the cathodal rather than the anodal discharge. I consider the prognosis of neurasthenia very bright when treated by electricity. In the various forms of sexual neurasthenia in the male electricity may be applied to the genitals of the individual either externally or by intra-urethral application, by insulated electrode or ordinary metallic sound. This applies also to cases of impotency, but when loss of sensation exists in the mucous membrane of the glans and foreskin the faradic wire brush from the secondary coil should be passed over the surface of glans, and internal portion of foreskin, every day or every other day, or the galvanic current may be applied, taking care not to make it too strong (remembering that electrical resistance of mucous membranes is slight), or in some cases which may not yield to any other treatment, the static spray or sparks may give relief. The sparks can be administered by using the Morton pistol electrode, separating the brass balls, and placing the sponge end over the glans penis; this treatment it seems

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to me is a great deal more scientific than a great deal of drug administration for this class of diseases. In general atonic impotency sparks may be drawn from the lower portion of the spine as well as treatment addressed to the parts themselves. In exophthalmic goitre, I consider electricity to be one of the best remedies of which we know. The negative sponge may be placed below auriculor-maxillary fossa and the positive over sixth and seventh cervical vertebra, using the galvanic current, and thus galvanizing the cervical sympathetic, or one pole may be placed over heart. A current of from 3 to 8 milliamperes can be used, or the faradic current be applied directly over enlarged gland. Remedies may be applied directly to enlarged gland by means of cataphoresis. I have used a mixture of about equal parts of Liq. Iodin. Comp. and Ergotole in this way, in a cataphoric cup attached to the anode directly over the gland. Generally speaking, the iodine should be placed under the cathode, as it is electro-negative, and would be attracted toward the positive pole, but by remaining there, for sometime, it becomes polarized and in that way, after becoming of the same polarity is expelled, and passes through the tissues with the ingoing current. Static electricity is of great value as a general tonic, and may even be of benefit in a certain number of cases by administering direct sparks over the seat of the enlarged gland. It must be remembered that the resistance of the skin to the electric current is greatly diminished in many cases of this kind, being due probably to the dilatation of the capillaries with blood. The normal resistance of the body being from about 4000 to 8000 ohms, it is found that in exophthalmic goitre the resistance may be 800 ohms or even as low as 300 ohms; this is a valuable point in diagnosis. A great many of the spinal cord cases are apparently hopeless, especially in their later stages, but in posterior spinal scleroses, hereditary ataxia, and the combined scleroses of the cord, as well as disseminated sclerosis, are there many things which hold out any better hope for a cure, or for an amelioration of the symptoms, than electricity? The static breeze in the headaches accompanying locomotor ataxia, is probably the

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best agent which can be used. In neuralgia of the fifth nerve, sometimes one form of electricity may relieve, and sometimes another, but it is well to always remember that the positive, or anode, is the sedative pole, and the negative or cathode the irritant, and that descending currents are sedative and ascending of a stimulating, or irritant nature; also that the current from a long or high tension coil is sedative, while that from a short coil is irritant. A test for high tension may be made with a Geissler tube, the tube being glowed by the high tension coil, as I will illustrate; the battery here, being a chloride of silver battery, which is one of the best made; the cells having a wonderfully long life.

Some forms of chorea and neuralgia seem to be greatly benefited by the use of the magnet. I have a permanent one in my office, made for me in France, capable of supporting about 180 pounds. Always remember that the south pole is sedative, while the north pole is irritant; the polarity may be determined by the compass. In nearly all forms of headache electricity comes nearer to being a specific than any other form of treatment; all of the various forms of electricity being useful. The static applications are probably of greater service than any other kind; the positive breeze or spray, or even head bath electrode, being brought near to the painful portion, allowing the spray or breeze to play generally over the head, taking care to keep out of sparking distance. The cataphoric administration of cocaine may be practiced over the painful neuralgic portion of the head, the cocaine being carried down to the nerve by the anodal or ingoing current, and should be in solution and if possible a cataphoric electrode should be used. This has proved itself very valuable in neuralgia.

In hysteria, static and faradic electricities are probably the most valuable remedies which can be used, and should be administered in the form of the breeze, spray and roller, and the faradic by general faradization, using the roller electrode. In all of the diseases before mentioned the use of electricity should never be neglected; and in the various

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forms of paralysis it is the most generally useful form of treatment of which I can conceive.

Both the faradic and galvanic currents as well as the static may be passed through the ground and in that way be administered to the patient.

A comparatively low tension medical induction coil would seem to be transformed into a high tension coil by creating a ground circuit, as I will illustrate, by grounding the wires, placing my body in circuit, passing the voltage through my body, with its thousands of ohms of resistance, and yet causing the Geissler tube to glow brilliantly by means of the voltage passing through my body. I have never seen anything written upon the subject of increasing the tension by grounding a medical induction coil, but as you see, it can be accomplished. Nor have I seen any reference to grounding the medical galvanic current.

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SOME OF THE MEDICAL AND LEGAL PHASES OF INSANITY*

By CHAS. O. MOLZ, M. D., Bedford, Ind.†

IN ATTEMPTING to prepare a paper for the edification of the learned men constituting this medico-legal meeting, I have fully realized the herculean task which has presented itself to me, and although I may enter largely upon the domains of medical study I ask the pardon of the legal men present for it is necessary that I do so in order that I may be able to more fully and clearly elucidate the medical and legal phases of the subject, which I have attempted to handle.

In discussing the subject of insanity from a medico-legal standpoint we enter upon a study that is to-day more fully understood than it was a few years since, and will in the next decade be still more clearly understood.

The conception constituents of what to-day comprises our nervous system is vastly different from that which supposedly constituted it only five years since. When we then had the cell, nerve fibre and terminals we to-day have the hystologic element under the name of the neuron, consisting of cell, neuraxon, collaterals, and terminal filaments, or dendrites, and where in former years the weight and size of the brain was supposed to be a criterion by which we could judge of a man's intellect, we to-day judge it by the number and conditions of the neurons. This neuron concept, as it is called, is now generally accepted by

*Read before a joint meeting of the physicians and Lawyers of Lawrence Co., Indiana May 5th 1900.

†The author acknowledges his indebtedness to the current literature of Psychiatry for many facts and conclusions contained in this contribution.

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physiologists, and every day brings forth new and valuable information on the subject.

The brain is that portion of our cerebro-spinal system of neurons situated in the calvarian and the study of its pathological conditions and diseases is to-day an important branch of medicine, and one upon which modern science is directing her search lights with assiduous attention.

The brain is rightly called the Colonel of the nervous system and is the seat of intelligence, will, understanding, reason and memory, and it is easy to perceive how an abnormality of any one of these functions may cause such a change in a person that the question of his sanity or insanity may readily arise. Insanity is a disease of the brain and not of the mind as is commonly supposed and demands as much attention as any other disease of that organ. While it is a disease of the brain, it does not invariably start in that organ. Indeed it may originate almost anywhere else, as in the uterus of the female or a diseased colon and with proper treatment of these organs the insanity may be caused to disappear.

Insanity is more frequently secondary than primary and when a man is insane, there is always a disturbance of the normal working powers of the brain, and this secondary prominence constitutes one step towards the proper elucidation of the subject, for it emphasizes the fact that it is not necessarily a stigma, as was formerly supposed, and is yet considered by so many, nor is it, metaphysically speaking, a disorder of the mind with accompanying mental disturbance of a mysterious character. It is an affection of the brain which, though not always, originating there invariably has its seat there.

This is easily understood when we consider that there is no part of the human economy, however infinitesimally small it may be, but which is connected with this great cerebro-spinal center, and is dominated by influences which emanate from it. For this reason we can readily understand that the functions of the brain may be impaired by the presence of disease, especially when the predisposition to insanity exists.

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Predisposition exists toward insanity as it does toward other diseases and some are very much more predisposed to it than others, and always labor under a highly unstable condition of the nervous system.

People subject to the same influences and surroundings undergo different changes and while one may go insane another may not suffer the slighest change of his intellectual functions.

If an inquiry is made of the insane the fact is nearly always elicited that this predisposition does not originate with the person himself, but is hereditary and transmitted. Insanity literally means deprivation of reason, deviation from normal health, unsoundness of mind. Now is it possible to form a definition of insanity?

"Can a line be drawn so sharply between reason and insanity that on one side all the phenomena found shall be compatible with reason and on the other with insanity?" This is impossible and as one great author says: "The shades of variation in eccentricity, between sanity and insanity, are so slight and numerous that it is exceedingly difficult to state where reason ends and insanity begins."

"This we have all observed in some of our friends, whom if we had not known all our lives we would be ready to pronounce insane."

"This too is made prominent because at times one's deportment may not be compatible with sound mental health, while at other times he entirely removes our apprehension. This class of cases may be said to live constantly upon the "border line of insanity" and are apt at times to cross the line and then return."

"Many learned and eminent men occasionally cross the line and make excursions into the labyrinths of intellectual abberation. These are the cases which require months of study to arrive at a definite conclusion, and even then we may be baffled."

No two persons' intellectual faculties are exactly alike; we differ in this as we differ in all other things, and if we differ so much physically and mentally in health, how much more will we differ in disease! Our mental faculties

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are blunted by neglect of education or they are sharpened by mental gymnastics. In men who study habitually, and who constantly think, there is, figuratively speaking, a constant mental absorption going on, to which Dr. Carpenter has applied the term "Unconscious cerebration" and with which each of us has had some experience. Can we not recall the time when we were perplexed by some legal or medical question, racking our brains for its solution, burning mid-night oil that we might solve it and finally gone to our beds to sleep and wake up the next morning with the solution plain when a few hours before all was dark? We were appropriating knowledge unconsciously and after an invigorating rest, the mind manifested what had been acquired without perception.

To formulate a definition of insanity which would be comprehensive is a task that is nearly an impossibility on account of the protean character of the disease and of the wide dissimilarity that exists between normal minds, which dissimilarity is necessarily widened by disease. There are no constant characteristic phenomena which may be said to be attendant upon mental alienation, and any physician is justified upon the witness stand to refuse to define insanity.

Shephard gives a definition as follows, "Insanity is a disease of the neurine batteries of the brain". This definition, he states, will puzzle the lawyers. In cases in which medical testimony is desired, lawyers possessing a knowledge of medical jurisprudence and some smattering of medicine formulate definitions of their own, knowing how incomplete they must be, and then attempt to entangle the medical witness in their meshes. For this reason the shorter the definition the better. Maudsley says "Insanity is a morbid derangement, generally chronic, of the supreme cerebral centers, the gray matter of the convolutions or the intellectorum commune, giving rise to a perverted feeling, defective or erroneous ideation and discordant conduct, conjunctly or separately and more or less incapacitating the individual for his due social relations". This definition is voluminous and yet inefficient. It is comprehensive and does not cover all cases. It has however one advantage, it states that insan-

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ity is a chronic disease, for all cases existing three months are considered chronic.

It is a popular belief among the laity that a man to be insane must be a raving maniac; while just the opposite condition may exist.

He may be courteous, intelligent, polished and affable and yet be hopelessly deranged: Some times it is most difficult to determine the exact mental condition of insane persons, because some of them possess such perfect control over themselves. Cases are on record in which insane persons at their own "de lunatio inquirende" have obtained permission to address the jury and after doing so have been released leaving the impression with the jury that judge, lawyers and doctors were doing an injustice and that the alleged lunatic was of greater intellectual acumen than those trying to incarcerate him in an asylum. Personally I can recall several cases in which after six months constant contact as physician, I failed to discover an insane word, delusion, or act, and yet some of these patients had been inmates of the asylum for ten years or more, and were considered incurable.

"An insane person does not cease to be human, and it should not be forgotten that the insane are just as liable to commit crime as the sane. The propensities, motives, schemes, peculiarities, eccentricities, disposition, moods, and general characteristics of sanity frequently coexist with insanity. The insane just as often commit crime as the sane, and the determination of a man's free will is no easy matter and one that can not be determined by one or two interviews. Man's free will is not the property of any substance which can be demonstrated by chemistry, physiology or microscopical research, but it is the result of a combined action of a whole group of functional activities the very relation of which to each other are as unknown as their method of action."

The legal conception of insanity is a condition of the mind with reference to certain conduct. "An insane person is simply non-compos-mentis. Insanity is irresponsibility." A lawyer's idea of insanity is narrower than that of the physician, regarding it as he does, with reference to a certain

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act or series of acts. Folson holds that "an insane person in any insane asylum may be a party to a valid contract" or make a will that will hold in law. In this opinion he is in accord with many of the highest authorities on medical jurisprudence and to quote him further he says "A man is not insane in law unless his act is traceable to, or its nature has been determined by mental disease affecting his free agency. In other words, unless insanity causes his act either wholly or in great part."

The medical man should always remember that there may be, as regards some particular person a wide difference between medical insanity or mental disease and legal insanity or irresponsibility. He does his duty when he confines himself to the explanation of the changes caused by disease, leaving the question of guilt or responsibility to the judge's charge and the jury's verdict. It is entirely out of the province of a medical expert to pass upon the question of guilt and responsibility, for when he does so he encroaches upon the domains of judge and jury. No medical witness should prostitute his calling by having any interest in the case either financial or otherwise. Nor should he be biased in his opinion either before, during or after the trial. He is there to tell the truth, the whole truth, and nothing but the truth, and he should not accept any contingent fee or one which has any relationship to either side of the case. He is in a false position if he places himself in the attitude of an advocate, as he is interested solely in explaining and supporting the unvarnished facts, as they are tabulated and presented for analysis by those whose duty it is to arrange them in their proper order.

The individual on trial must be compared to himself at some previous time and not some ideal standard of mental health which never existed. Folson most correctly states: "If we could measure nicely, no two of us could be held to the same degree of accountability". He also states: "The degree to which the individual deviates from the path of the law may depend more upon his training and surroundings, than upon his disease. Points which also must be considered

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in establishing a definition for insanity in obscure cases.

Most authorities emphasize the fact that it is not the doctor's province to punish for crime but to treat disease, and that the doctor fails to appreciate this distinction. Medical definitions of insanity in text books and on the witness stand fail to state clearly enough how far the medical and how far the forensic meaning of the word insanity is implied. What seems to be a wide difference of opinion regarding responsibility for crime as given in the courts is often due to different ways of stating the question and nothing more. Boileau said that, "All men were insane, the only difference being the skill by which some could conceal the crack."

Montesqieu says, "that insane asylums are built in order that the out-side world may believe itself sane."

Haslam in 1832 who was one of the first experts on mental disease in England testified that he had never seen a sane person in his whole life, adding: "I presume the Diety is of sound mind and He alone."

Savage in his treatise on insanity and allied neuroses remarks: "The first question naturally is, what is meant by insanity?"

It has been clearly proven that no standard of insanity as fixed by nature can under any circumstances be considered to exist. Sanity and insanity as used by physicians and public are words of convenience. No person is perfectly sane in all his mental faculties any more than he is perfectly healthy in body.

Spitzka is more nearly correct when he says, that with our present knowledge it is impossible to correctly form a definition of insanity, which, while it meets the practical every day requirements is constructed on scientific principles. As it is to-day, scientific definitions must rest upon hypotheses."

Insanity is a disease that interests us all because it may at any time invade the sacred precincts of our own home. It is a disease that is becoming exceedingly rife, keeping pace some authors hold, with advancing civilization, and clinical observations prove that the wear and tear, the

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stress, the contentions, troubles, of every day life engulf many minds, so weakly constituted that they are not able to resist such inevitable influences.

Modern science has accomplished one achievement, in dismissing the old mythical theories of the metaphysicians, which taught that in dealing with insanity we were witnessing or combating nonentities, shadows, spiritual processes, or mystical conditions of still obscurer origin, and that the insane should be forever ostracized, though predjudice still exists among many, however much science has progressed.

Another accomplishment of science is in the fact, that there is nothing in the aspect or appearance of the insane to lead us to be able to at once diagnose the disease by a casual observation of the physiognomy. In medico-legal contests you frequently hear lawyers use the expression, "the wild eye of the insane" and yet there is no physician who has had any experience in insanity who does not fully appreciate the fallacy of such a statement. There are some forms of insanity which present a very marked characteristic expression, for instance, the dement, but in passing through an asylum, where we may observe others, who may be playing cards, billiards, chess, perusing periodicals, and then listen attentively to their conversation or study their features, and we will find that we have a task that is herculean in character. We can not diagnose insanity without careful subjection of data which should mould our opinions to the laws of diagnosis governing the recognition of other diseases.

To the community at large the plea of insanity is one of the utmost importance. The medical witness therefore has a double duty to perform, justice to the community and justice to the prisoner at the bar. Society demands protection against crime and violence, while the prisoner if insane has not forfeited his claims upon humanity. The plea of insanity is abused and fraught with great evils, and the plea itself is derided by press and public.

None will dispute the fact that where real insanity is proven to exist, it would be most unjust to subject such a person to the penalties of the law, when his volitional

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powers are morbidly impaired or destroyed, and who therefore must be morally irresponsible. Forbes Winslow, an eminent authority thinks "such cases should be left to a commission of medical experts for adjudication."

One authority holds "That simple justice requires, whenever a man after committing a homicide is liberated upon a plea of insanity '*ipso facto*' he should be sent to an asylum for life, because in cases of supposed recovery no one could assume the responsibility of affirming that sooner or later his dangerous disease would not recur."

On the contrary every physician knows that one attack of insanity predisposes to subsequent attacks, therefore from the character of the act, and the probability of its recurrence, from the very nature of the disease, if a man has once deliberately taken the life of a fellow creature, in consequence of want of proper volitional control due to the disease termed insanity, then for and during his life he should be deprived of liberty and never again be afforded a chance to perpetrate similar deeds.

It has been held that physicians alone should pass upon the plea of insanity, because the psychological physician is more familiar with all the phases and complications of mental alienations than his professional brother, the lawyer or the judge. The irreconcilable antagonism that exists upon the plea is widening more and more each day because the physician who makes this a life study is opposed and thwarted by minds more guided by legal acumen than enlightened by the scientific status of the question involved. The nonprofessional observers of the contest day by day grow more skeptical, humanity suffers and the discoveries of science are rendered less available.

The question of motive always arises, whether the act be done by the sane or by the insane. If a child kill its parent, not influenced by passion, the desire of inheritance, or any other discoverable cause, a strong suspicion and presumption of insanity will arise.

If a mother destroys her children to send them to heaven, the same doubt of her sanity will suggest itself. But even in cases where no motive is determinable, it is

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well known that the insane are influenced by motives equally with persons of incontestible sanity.

The successful treatment in modern institutions to-day for the treatment of the insane is that of parent towards child, rewarding or punishing as indicated. "Kindness but firmness" with the insane should never be forgotten, for they allow themselves to be swayed by motives the same as other people.

There are sane people the interpretation of whose motives are inexplicable mysteries and we would have to penetrate deeply into the labyrinths of the innermost soul to be successful in this direction. "It is assumed or implied," says Dr. Taylor, "that sane men never commit a crime without an apparent motive or of a delusive nature only in the perpetration of the act." If these positions were true it would be very easy to distinguish a sane from an insane criminal, but the rule wholly fails in practice. In the first place nondiscovery is assumed to be a proof of the nonexistence of a motive. It is undoubted that motives may exist for many atrocious crimes without our being able to discover them, a fact proven by the numerous recorded confessions of criminals before execution, in cases of which until these confessions were made no motive for the perpetration of the crime had appeared to the most acute minds.

Of late years the study of epileptic insanity has received the attention from writers on forensic medicine that it has deserved.

In the criminal records of civilized countries there are very few cases in which this disease has received the consideration it deserves in fixing the responsibility of the accused.

The medico-legal students of epilepsy heretofore have paid too little attention to the conditions allied to and dependent upon it and which require special treatment and demands the serious attention of every medical jurist.

It is a common opinion of many authorities that epileptics with exception of just before, and, after an attack, and included in it, are sane from a medical, and competent and responsible from a medico-legal standpoint, unless they are

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chronically demented. This view is held by many general practitioners and by most English medico-legal authorities, while on the other hand, certain authorities hold that on the slightest indications of epilepsy the subject can not be of sound mind or responsible for any action whatsoever. Spitzka however holds that both of these opinions are extreme and damaging to the cause of justice because interested and unscrupulous medical experts may fortify themselves by such opinions in support of testimony too ofen successful in defeating the legitimate purposes of the law.

Fredericks, a noted German authority, says "That criminal responsibility is absent in epileptics even should it be proven that the determination to commit a criminal action resulted from revenge or malignity." This, however, is not upheld by American authorities.

Trosseau, the eminent French neurologist, says in strong language:

"It may be said almost without fear of making a mistake, that if a man suddenly commits murder, without any previous intellectual disturbance, without having up to that time shown any signs of insanity and if not under the influence of passion, alcohol or any poisonous substance which acts with energy on the nervous system, it may be said, I repeat, that the man is afflicted with epilepsy, and that he has had a fit, or more usually an attack of epileptic vertigo."

The question is much discussed, and many eminent authorities have taken sides upon the subject, but the fact still remains to unprejudiced and attentive observers that there is a fatal influence of epilepsy upon the intellectual faculties, especially of epileptic vertigo. Epilepsy assumes many forms and presents many phases, but after all it is a form of insanity.

"Should lunatics be hanged" is a question that does not seem to need discussion in this enlightened age, and yet it is agitated and reagitated notwithstanding its senseless barbarity. Some hold that as lunatics are dangerous, expensive and of no possible benefit to the community *pro bono publico*, they should be hanged as soon as they

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committ a crime. The atrocious inhumanity of such a senti- is as disgraceful as it is brutal.

As regards the plea of insanity Lord Hale's views were extreme. He held that "There must be a defect of the under- standing unequivocal and plain."

Lord Coke held "That whoever by sickness, grief or other accident, wholly loses his memory and understanding is 'non compos mentis'."

Lord Chief Justice Mansfield in the trial of Bellingham, charged that "The single question was whether at the time the act was committed he possessed a sufficient degree of understanding, to distinguish good from evil, right from wrong, and whether murder was a crime not only against the laws of God but the laws of his country."

Lord Erskine considers "Delusion where there is no frenzy" to be the true characteristic of insanity." Viewed however as a principle of law the delusion and act should be connected." But this eminent Lord's view can not be upheld, for while delusions are a most frequent accompani- ment of insanity, there are many forms in which delusions are entirely absent.

Dr. Haslam says "That it is not the province of the medical witness to pronounce an opinion as to the prisoner's capability of distinguishing right from wrong. It is the duty of the medical man, when called upon to give evidence in a court of law to state whether he considers insanity to be present in any given case, not to ascertain the qualtity of reason which the person imputed to be insane may or may not possess."

As regarding the recognition of right and wrong it is now an indisputable fact that nearly all the insane make this distinction without difficulty.

Lord Bramell once said "that insanity is a strong but not conclusive evidence of innocence" and Lord Blackburn has stated "That the jury must decide in each individual case whether the disease of the mind or the criminal will was the cause of the crime."

Sir Jas. Stephen in his history of criminal law in Eng- land says: "No act is a crime if the person who does it is, at

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the time when it is done, prevented, either by defective mental power, or by disease affecting his mind from controlling his own conduct, unless the loss of power of control has been produced by his own fault."

Baillarger states that "the essential element of insanity is loss of free will."

Ball of Paris describes an insane man as "one who in consequence of profound disturbance of the mental faculties has lost more or less completely his free will and has ceased thereby to be responsible for his actions."

The Supreme Court of U. S. in a decision maintains, "That the presence or absence of will power, in the plea of insanity is the question upon which the existence of criminality or responsibility exclusively depends."

The volitional centers are invariably affected in all forms of insanity, hence in every judicial charge the question to be determined is as to whether or not the criminal pleading insanity, while recognizing the difference between right and wrong, is able or unable to control his actions.

The fashion prevails to-day of attempting to shield criminals under the protective aegis of insanity. This plea is too often used to defeat the ends of justice and in extenuation of fearful crimes.

Insanity is recognized as a cause of impulsive crime and a suspicion of its existence should excité care and full research, but the fact that it is so often used to protect criminals, should not affect the public mind so that persons morally irresponsible suffer any penalty. Christian charity or even common humanity should make us fair and just in our dealings with this class of criminals, for it would be much better that many guilty should go free than one innocent man should unwarrantably suffer the extreme penalty of the law.

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DEGENERACY STIGMATA AS A BASIS OF MORBID SUSPICION.*

A STUDY OF BYRON AND SIR WALTER SCOTT.

By JAS. G. KIERNAN, M. D., Chicago.

Fellow of the Chicago Academy of Medicine; Foreign Associate Member French Medico-Psychological Association.

ACCORDING to Lady Blessington, a keen observer, who evidently understood Byron better than other persons of her time, Byron's eyes were asymmetrical and were unequally placed. There was a difference in the pupils as well. Stigmata of the eyes have not received as much attention as those of the ear, despite the fact that they far from rarely crop up in degenerates. Guiteau, as I pointed out nearly two decades ago,† had a similar asymmetry of the orbits and pupils. Aught that affects deeply the development of the eye naturally tends, according to Talbot,‡ to evince itself in other anomalous states in that organ. Since excessive asymmetry of the body is one of the most noticeable of the stigmata of degeneracy, it is not astonishing to find that this asymmetry expresses itself both in the position as well as in the size and structure of the eye. As I pointed out more than twenty years ago§ asymmetrical irides are exceedingly frequent in the types of insanity due to hereditary defects. This observation has since been confirmed by Fèrè and Woodruff‖ as to

*Continued from the July, 1900, ALIENIST AND NEUROLOGIST.
†*Chicago Medical Review*, December 15, 1881.
‡Degeneracy: Its Causes, Signs and Results.
§*Journal of Nervous and Mental Diseases*, 1898.
‖*American Journal of Insanity*, No. 2, 1900.

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all classes of degenerates. Microphthalmia (small eyes), macrophthalmia (big eyes) are quite frequent in degenerate families. Corectopia (displacement of the pupil so that it is not in the center of the iris) often exists. Coloboma (eye fissure) is also not infrequent among the degenerate. These vary greatly in situation and general results. The iris is sometimes completely absent on one or both sides. Besides the anomalies, diseased conditions like retinitis pigmentosa, congenital cataract and mascular degeneracy reported by C. P. Pinckard, of Chicago, are far from infrequent expressions of degenerate taint in the eye; the organ in this particular obeys the general law that degeneracy may show itself in the minute change resulting in disturbance of function or in that producing disease, or finally in atavism. Defects of the eye requiring glasses are exceedingly frequent in degenerates and often aggravate their morbidity.

Dr. L. W. Dean* has confirmed the results of Talbot in a series of examinations made at the Iowa College for the Blind. He cites the case of two brothers married to two sisters who were their cousins. As a result of these unions there were seven children, five of whom had retinitis pigmentosa. This condition Dr. Dean has found associated with polydactylism, micropthalmus, colobomata, cleft palate, etc., in the same individual and other members of the family.

According to Roberts Bartholow, when Byron and Scott met in London at the house of Murray, the publisher, the conversation between them concerned every topic other than their mutual lameness. There was neither humorous nor serious allusion to their physical limitation. Byron guarded his secret with exquisitely sensitive apprehension of exposure and permitted no reference to it even by his most intimate friends, and was quick to resent even a look of inquiry directed toward his deformity.

Scott was never reticent about his lameness and gave in an interesting autobiographical fragment the following clinical history of his ailment: "I showed every sign of

Ophthalmic Record, September, 1900.
†*New York Medical Journal*, November 4, 1899.

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health and strength until I was about eighteen months old. In the morning I was discovered to be affected with the fever that often accompanies the cutting of teeth. It held me three days. On the fourth, when they went to bathe me, as usual, they discovered that I had lost the power of my right leg. There appeared to be no discoloration or sprain. Blisters and other topical remedies were applied in vain. When the efforts of regular physicians had been exhausted without the slightest success, my anxious parents during the course of many years eagerly grasped at every prospect of cure which was held out by empirics, or ancient ladies or gentlemen who conceived themselves entitled to recommending various remedies, many of which were sufficiently singular." When he was four years old he was sent to Bath, where for a year he "went through all the usual discipline of the pump room and baths, but he believed without the least advantage to his lameness." He was treated by the celebrated electrical quack, Dr. Graham, who made a great parade of electrical appliances, but he was not benefited in the least by the magnetic touch of the splendid quack or by the electric current.

Scott's maternal grandfather, Dr. Rutherford, professor of medicine in the University of Edinburgh, sent him into the country to rough it, and made efforts to call into action the affected muscles by the will. This method consisted in placing bright objects or things that the boy especially desired in such a position that he could get them only by the most powerful efforts, in which the affected member participated. By the persistent use of this plan of "natural exertion" there ensued a great gain in the power of the will over the muscles, and they increased in size and in the range of their actions until the limb ultimately became quite useful, although always lame. This method of dominating the paralyzed and wasted muscles by the forcible action of the will is only possible in those cases in which a little voluntary control was still preserved. Some response to the will may be present, Bartholow claims, when the faradic or interrupted galvanic currents have no longer any power to excite muscular contraction. That this was the

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case with Scott is shown by the results of the method of "natural exertion." As he writes in his autobiography: "My frame gradually became hardened with my constitution, and being both tall and muscular, I was rather disfigured than disabled by my lameness. The personal advantage did not prevent me from taking much exercise on horseback and taking long journeys on foot, in the course of which I often walked from twenty to thirty miles a day."

Graham, the quack, mentioned by Dr. Bartholow, was one of the fashionable medical fads of the late eighteenth and early nineteenth century. He was partly educated in the University at Edinburgh, when he left for America, where the newspapers gave him a great boom as a philanthropic physician traveling for the benefit of mankind, to administer reljef in desperate cases which had baffled ordinary practitioners. His advertisements celebrated his nostrums and medical skill in religious poems. By this means he obtained a considerable reputation in Connecticut and Massachusetts. Just before the Declaration of Independence he found it necessary to return to England, where he began practices similar to those which the *Chicago Clinic* has lately permitted a female Christian Scientist to advocate in its columns. Under the title of a Temple of Hymen, and under the pretense of instructing persons of both sexes who were willing to sacrifice to Venus in its sacred domes, he engaged to teach "the art of preventing barrenness and of propagating a much more strong, beautiful, active, healthy, wise and virtuous race of human beings than the present puny, insignificant, foolish, peevish, vicious and nonsensical race of Christians who quarrel, fight, bite, devour and cut one another's throat over they know not what." Such was the language of more than one of his eccentric advertisements in the London papers. He erected the most elegant and superb bagnio invented since abolition of public worship of Aphrodite in Paphos and Cythera. All the exertions of the painter and sculptor, all enchantments of vocal and instrumental music, all the powers of electricity and magnetism were called in to aid, enliven and

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heighten the voluptuous scene.* The most sacred shrine, called the great Apollo, was 30 feet long by 20 wide and 15 feet high. According to Graham, no words can convey an adequate idea of "the astonishment and awful sublimity which seizes the mind of every spectator. The first object which strikes the eye, astonishes and expands the mind and ennobles the soul of the beholder, is a magnificent temple sacred to health and dedicated to Apollo. In this tremendous edifice are combined or singly dispensed the irresistible and salubrious influence of electricity or the elementary fire, air and magnetism, three of the greatest of those agents of universal principles which, pervading all created being and substance that we are acquainted with, connect, animate and keep together all nature, or, in other words, principles which constitute as it were the various aculties of the material soul of the universe: the Eternally Supreme Jehovăh Himself being the essential source—the Life of that Life—the Agent of those Agents—the Soul of that Soul—the all-creating, all-sustaining, all-blessing God —not of this world alone, not of the other still greater worlds which we know compose our solar system."

The temple was the auditorium where Graham delivered what he called eccentric lectures on generation, which were illustrated by handsome nude females. He displayed crutches, ear trumpets and spectacles over the outer door of the Temple of Health as evidence of his skill. Amongst the furniture of the Temple of Health was a celestial bed, provided with costly draperies, standing on glass legs. It was prescribed to married couples as a cure for sterility, at a cost of $500 per night. Graham was an alcoholophobiac and a vegetarian. He anticipated Kneipp in all particulars of the "cure," including the walking on grass with bare feet. Graham, like Dowie, posed as a new Messiah, and calling himself the servant of the Lord O. W. L., claimed to inaugurate a new era. He prescribed mud baths, covering the patient completely to the neck. He was a great favorite among the quack-ridden nobility and enjoyed, in

*Jeafferson. "Book About Doctors."

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consequence, the fees of the shopkeeping class who courted to the nobility.

The employment of a quack like this by the paternal relatives of Scott would indicate that belief in the occult in medicine which characterizes degeneracy in people of unequally balanced culture. What has been entitled the recrudescence of superstition as exemplified in faith healing, "Christian Science," and other phases of folklore, is often the result of financial conditions which place people, both American and foreign, of superficially high but judicially low grades of culture in commanding position because of their financial status. The witchcraft delusion maintains its hold among the Pennsylvania Dutch, in certain districts of New Hampshire, Vermont and Maine, as well as in the South. When people of this grade of culture emigrate (in consequence of increased wealth due to the accidental discovery of petroleum, mines and lumber, etc.) to the cities, they exercise an intellectual influence on newspapers, magazines, etc., out of all proportion to their own mental calibre and directly due to their financial status and resultant social advantages. The emigration from the British Isles and the continent of Europe bring people of the same grade of culture who likewise rise in financial status, retaining full belief in all their folklore. Some American types of this grade of culture naturally gravitate to "Christian Science" as they previously did to "metaphysical medicine" and Hahnemannia. Indeed the great apostle of "Christian Science," "Mother" Eddy, began thirty-three years ago as a "metaphysician."

Many American and European phases of folkmedicine retained prehistoric characteristics. Thus "Dr." Paul Wachter was sentenced to the penitentiary in Chicago in 1894 for obtaining money from wealthy North Side Germans to cure disease by putting it in a magic tree. As he employed the money in worship of Gambrinus rather than of the dryads, his dupes had him arrested and imprisoned for obtaining money under false pretenses.

His detection, however, failed to destroy superstition among the class gulled. An individual was recently arrested

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for trying the same confidence game on exactly the same class of people. This new aspirant for magical fame claims to possess a magic mirror given him by the Devil by which he is able to cast a spell over the people who fail to believe in his pretensions or to comply with his demands for money. A sixty-year old woman paid him twenty dollars under threats of a "spell" and promises to cure blindness. His usual method of operating was to call at houses of Germans or Poles in North Chicago and ask if anyone were ill. To the invalid he would show a small mirror, bidding him look therein and be healed. The procedure in this particular resembled certain methods adopted by hypnotists. If the individual claimed to feel better, money was demanded with a threat to cast an evil spell if the demand were not complied with. In one instance the mirror man threatened to kill chickens by a spell and to poison a husband if his demands were not met. He also claimed to exercise considerable influence with the Devil. He excited the neighborhood against people who refused to comply with his demands by claiming they were guilty of witchcraft, causing disease.

Some of the "Pennsylvania Dutch" "witch doctors," by such accusations, more than once caused riot and attempted homicide. This was notoriously the case with the famous "Witch Doctor Amend," of Pittsburg, Pa., who died in 1895.

These wizards among the Italians of New York are "Devil's Doctors," who treat disease as follows: They first blow in the patient's face and afterwards scarify his hands, feet and body with a razor until the blood flows freely. This blood is rubbed over the chest or other part affected. Then the patient's hair is cut off and a letter is written to "Satan, Prince of Hell." The letter and the hair are then burned. These procedures are repeated for four days.

In Paris, France, Satanism of this type described a few years back was a fashionable cult and had its ceremonies with a ritual resembling the famous "Witches Sabbath" so vividly pictured by Hawthorne. About a year ago both West Virginia and some other states had witch-

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craft epidemics among the whites. In West Virginia the epidemic required governmental interference. These recrudescences of fetichism do not illustrate that either the age or the race is degenerating, but that commercial changes are placing people at a low grade of culture in positions where their superstition and fetichic creeds receive support.

It is a singularly excellent illustration of Scott's mental balance that, despite this fetichic element in his early environment and despite its presence in his Highland Scotch surroundings, he never became superstitious. Indeed, he lamented to Washington Irving his inability to throw himself intellectually into popular superstition. Byron, however, despite his comparative freedom of thought in religious matters, retained throughout life the occult degenerate fear of the unknown which made him singularly susceptible to primitive beliefs like the evil eye.

(*To be Concluded in April.*)

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MEDICAL JURISPRUDENCE IN THE NINETEENTH CENTURY.*

By CLARK BELL, ESQ., LL.D.

President of the International Medico-Legal Congress of New York, June, 1889; Delegate from the Government of the United States to the Thirteenth International Medical Congress of 1900.†

MEDICAL jurisprudence is more greatly indebted to the Italian scholars of the 16th century and the preceding centuries than to those of any other land.

That splendid diplomat, scholar, statesman, musician and physician, Paul Zacchias, was the physician to the Pope in 1620. His treatise, now in the library of the Medico-Legal Society in New York, could be read with profound interest, to see how far advanced was this learned and gifted man, in the elementary and fundamental truths of the science, as recognized to-day.

From the 12th to the 16th centuries, Italy stood pre-eminent in every field of scientific study, and especially in medicine.

Prior to 1500 there were sixteen universities in Italy; while in France there were but six; in Germany, eight, in Great Britain, only two; so that Italy had then as many as England, France and Germany combined, and the supremacy of the Italian universities was beyond all comparison with the others.

This Italian superiority continued until after the 16th

*Abstract of Paper.

†Contributed to the Thirteenth International Medical Congress of Paris, 1900.

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century, and it existed when Zacchias wrote and flourished.

It has been well said that "medical jurisprudence owes its power to knowledge derived from every branch of medicine; but the law determines how far this power shall be utilized in the administration of justice."

For more than two centuries Germany has had an organization of medico-legal officials, who are required by law to be qualified by an especial education, not only to procure the medical facts needed by the courts, but to estimate their weight for the benefit of the courts.

In 1650 Machiavelie delivered the first course of lectures on legal medicine at the University of Leipzic, and he was succeeded by Bohn; and as early as 1720 professorships of forensic medicine were erected by the government of Germany.

The literature of the science was enriched, in the 18th century, (1725), by the celebrated authors Valentini, Teichmeyer and Albertus, one hundred years later than the writings of Zacchias. These writers laid the foundation of that literature of forensic medicine for the German scholars, exceeding that of nearly every country, and which, in later years, in the 19th century, has been quickened by the clinical schools, the first of which was established at Vienna, about 1830; at Berlin in 1833; at Munich in 1865. Germany owes her great advancement to the fostering hand of the government, and to favoring legislation.

France, from 1570 to 1692, also enacted laws which favored the study, culture and advancement of legal medicine, and the science progressed; but at the close of the 17th century, the medico-legal officials became hereditary, and the science languished until after the French Revolution.

Since 1790, however, no nation on the globe has surpassed or even equalled France in the culture and advancement of medical science and the arts; and from the era of the French Revolution, and under the reign of the great Napoleon, and those who have succeeded him, France advanced, until she became the seat and center of the highest civilization in the nineteenth century, which proud position she has continued to occupy.

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The Exposition of 1889, and the splendid one which marks the close of the nineteenth century, well illustrate her place in the world of science and arts, and the advancing civilization of the world, as the 20th century opens its portal to the brotherhood of man in all countries upon the globe.

During all these years of advancing supremacy in France, all was due to the splendid support given by the government, and by the generous laws of France forensic medicine has kept pace with the sister sciences there.

Chasseur, in 1790, was the first lecturer in legal medicine, and Mahon, in 1795, was the first professor of medical jurisprudence.

In Great Britain very little attention was paid to medical jurisprudence in the 18th century, and she transmitted to her American colonies laws, that have been well stated by Prof. Stanford E. Chaille, in his centennial address before the International Medical Congress of September, 1876, intended as a review of the preceding one hundred years of forensic medicine, as: "barbarously conspicuous for the absence of provisions to apply medical knowledge to the administration of justice, and Anglo-American law continues to be, in large measure, hostile to medical jurisprudence."

These words were spoken in 1876—twenty-six years ago. They properly describe the state of the law of Great Britain at that date, and show why, in the American states the 19th century opened in America with the standard of forensic medicine trailing in the dust. When contrasted with France, Germany and Italy, but America, with this sad inheritance from the mother country, has not remained where she was placed in the first fifty years of the American national life.

Scotland should be exempt from these criticisms. In 1803 a chair of forensic medicine was founded in the University of Edinburgh. Dr. Duncan, the elder, was the first lecturer on medical jurisprudence, in 1801; and his son the first professor, in 1802.

While this University was chartered in 1682, it was not

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until 1726 that an English medical faculty was established, with lawful authority to confer degrees. Before 1726, and after 1705, a few honorary degrees had been conferred, but not by legal authority.

In each of the twenty-three medical colleges existing in England, Ireland and Scotland, in 1875, there was a regular teacher devoted to forensic medicine, on whom legal authority to confer a degree in state medicine was conferred, upon those at Cambridge, Oxford, Edinburgh and Dublin; but it cannot be said that medical jurisprudence, as a science, was practically taught outside of the University of Edinburgh, if there, except as to toxicology.

Scotland has kept alive, on her altar at Edinburgh, the science, and Prof. Ogston, and the Scotch scientists, have been among the foremost of medico-legal jurists of Great Britain in the earlier years of the century.

The Registration Act was not passed in England until 1858, and "Glenn's Manual of the Laws Affecting Medical Men," London, 1721, cited by Professor Chaille, in his admirable address, from which I quote, freely states and details thirty-six laws, from 1850 to 1870, of which twenty-five were passed in the twenty years between 1850 to 1870. The medical profession never had legal recognition under English Laws until 1858. No laws existed for the preparation of official medical experts.

The British bench never held medical men or medical expert evidence with the respect with which it was received in France, Germany and Italy, under the provisions of law; and there has been no legislation in England tending to utilize the aid of competent medical knowledge, in aid of the administration of justice, in the British Islands, save in Scotland.

At the opening of the 19th century, the science of medical jurisprudence, upon the American Continent, did not command that recognition in either profession of law or medicine that its importance demanded.

At this era, the science may well be said to be at its decadence in all the English speaking peoples of the world. In England, the works of Farr, Dease, Male and Haslem

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may well be said to reflect the progress and state of the science and the American states cannot be said to have made any substantial advances in forensic medicine, having but recently emerged from that revolutionary struggle which established the American nation upon the principles of human rights enunciated in the Declaration of American Independence.

Dr. Benjamin Rush, of Philadelphia, one of the signers of that Declaration, was one of the most conspicuous of those who gave the science attention. He was Professor of Chemisty in the Philadelphia College of Medicine and the University of Pennsylvania, and his labors extended from 1769 until his death in 1813. He held the chairs of Theory and Practice of Medicine, and of the Practice of Physics. He left sixteen lectures, the last of which was delivered in 1810 at the University of Medicine, and was devoted to the science of medical jurisprudence. Its chief features relate to mental states, testamentary capacity and legal responsibility in cases of crimes committed.

Dr. Thomas Cooper, who had been a judge in the courts of Pennsylvania, was a Professor of Chemistry and Mineralogy in the University of Pennsylvania, and published "Tracts on Medical Jurisprudence."

In 1829 Dr. J. Bell, also of Philadelphia, published an address upon the same topic, and he delivered a course of lectures on medical jurisprudence in the Philadelphia Medical Institute, of which he published a syllabus.

Professor Robert Eglesfield Griffith, M. D., of the University of Maryland, and Lecturer in the University of Virginia in 1832, edited with notes and additions the first American edition of the work of Michael Ryan on Medical Jurisprudence, which was published by Carey & Lea, at Philadelphia, where Professor Griffith then resided, and where he died in 1850, at the close of the first half of the century.

But there is no American name to whom the science of medical jurisprudence is more indebted than that of Prof. Theodore Romeyn Beck, M. D., LL. D. He was born at Schenectady, N. Y., August 11, 1791, and he died Novem-

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ber 19, 1855. He graduated at Union College at the age of sixteen years and took his degree in medicine at the New York College of Physicians and Surgeons in 1811. Mercersburg College, Pennsylvania and Rutgers College of New Jersey, conferred the degree of LL. D. upon him.

In 1815 he was made lecturer on medical jurisprudence in the College of Physicians and Surgeons of New York, and in 1826 he was made Professor of Medical Jurisprudence in that college, and held that chair until 1840.

In 1823 he published "Beck's Medical Jurisprudence," which passed through many American, English and German editions, and which was universally acknowledged in its day, to be the leading work on the science, and was found as often upon the shelves of the lawyer's library as those of the medical man.

For forty years of his life this illustrious man devoted himself to the advancement of the science, and most of it in the latter part of the first half of the century.

In 1853, at Albany, the capital of New York, in addressing the legislature of his native state upon the proposed establishment of a university, he demanded "the appointment, under public authority, of a Professorship of Medical Jurisprudence or Forensic Medicine." and in support of it said: "There is a person now living (Orfila), the subject of whose knowledge on the power of poisons is such that he is not only called to examine cases in any part of France, but not long since was summoned to Belgium in one, which at the time attracted the attention of all Europe. I hold that there should be two or three persons of this character appointed and paid by the government, to perform this important duty."

The most illustrious name in forensic medicine, after that of Beck, in the department of the medical jurisprudence of insanity, was that of Isaac Ray, M.D. He stands at the very head of American alienists. His treatise on "The Medical Jurisprudence of Insanity" has never been surpassed, in the century in which he lived and acted, in any country, and no work of the century produced a more profound or lasting impression upon the mind of man.

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He lectured on insanity at the Jefferson Medical College, Philadelphia, and his contributions to Mental Pathology, published in 1873, enriched the literature of this branch of forensic medicine.

In considering medical jurisprudence from this standpoint, we should classify it into general divisions, and as one of these: "The Medical Jurisprudence of Insanity," Dr. Ray stands pre-eminent.

With his name should be mentioned some of the earlier alienists: Pliny Earle; Allan McLane Hamilton; Henry P. Stearns; Dr. John P. Gray, of Utica, N.Y.; Prof. Chas. H. Hughes; William A. Hammond; Prof. Charles K. Mills, of Philadelphia, Pa.; Dr. W. W. Godding; Dr. Geo. M. Beard; Dr. Nichols, of Bloomingdale Asylum, New York City; and a great body of earnest students and workers among the superintendents of American asylums and hospitals for the insane, with many names of merit among the students of neurology and psychiatry that have adorned the brilliant galaxy of American students of mental medicine.

Perhaps no work of recent date exercised a greater influence in the nineteenth century in America than did the work of Dr. Alfred Swayne Taylor, on medical jurisprudence. The work had a greater influence than the volumes put out by John C. Bucknill and Dr. Hack Tuke, which was a work of great value and entitled to high praise. The splendid work of Chaude and Briant, which was also a contemporary, being in the French tongue, could not rival these publications.

"Taylor's Medical Jurisprudence" was universally recognized as the model standard, and superceded Beck, who had so long stood at the very front. It passed through a large number of American editions, and its 12th American edition was completed in 1897.

Among medico-legal jurists, who have been prominent, I should name in the last third of the century: Chief Justice Charles Doe, of the Supreme Court of New Hampshire, to whom (more than all other American jurists combined) we are indebted for the overthrow, in many of the American states, of the innovation made in the law of England

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after the McNaughten case, making the knowledge of right and wrong the test of criminal responsibility of the insane.

His associate, Judge Ladd, of the Supreme Bench of New Hampshire, and Judge H. M. Somerville, of the Supreme Bench of Alabama, who wrote the prevailing opinion of the court of that state, asserting what has come to be known as the New Hampshire doctrine, is entitled to our tribute of praise and commendation. Among the eminent men of the bar, who have taken part in the labors of the Society and in advancing its work, may be named: Hon. David Dudley Field; Hon. E. A. Stoughton; Judge A. L. Palmer, of the Supreme Court of New Brunswick; Sir John C. Allen, Chief Justice of that bench; Judge W. D. Hardin, of Savannah, Ga.; Judge Charles P. Daly, and Mr. Austin Abbott. Of those whose labors have ceased, not to mention the lustrous and brilliant names of those still living, and among medical men: Dr. James C. Wood; Dr. Frank H. Hamilton; Dr. Carnochan; Dr. S. W. B. McLeod and Dr. Fordyce Barker.

Consider the views of Chief Justice Charles Doe, of the Supreme Court of New Hampshire; Associate Justice Ladd of the Supreme Bench of that State; Judge Montgomery, of the Supreme Court of the District of Columbia, and Judge Dillon, of Iowa, all members of the Medico-Legal Society; Shaw of Massachusetts, Edmonds of New York, Bell and Perley of New Hampshire, in contrast with the language of the Lord Chancellor of England as late as 1862, who, in referring to insanity in the English House of Lords, declared that "The introduction of medical opinions and medical theories into this subject has proceeded upon the vicious principle of considering insanity as a disease," and he condemned the "evil habit that has grown up of assuming that it was a physical disease."

And it was less than 100 years prior to this utterance (1769) Lord Chancellor Blackstone said; "To deny the possibility, nay actual existence, of witch-craft and sorcery is to at once flatly contradict the revealed word of God," and also added, "And the thing itself is a truth to

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which every nation in the world hath in its turn borne testimony."

The following are among the eminent French collaborators in the work of the Medico-Legal Society; Dr. T. Gallard, Ex-Secretary of the Medico-Legal Society of France; Dr. Louis Penard, Ex-President of the Medico-Legal Society of France; Dr. Devergie, Ex-President of the Medico-Legal Society of France; Mr. Ernest Chaude, Ex-President of the Medico-Legal Society of France; Dr. Devilliers, Ex-President of the Medico-Legal Society of France; Prof. Dr. Benj. Ball, author; Dr. Emile Hourteloup; Dr. Lunier; Dr. Briere du Boismont; Dr. Chevalier; Dr. Legrard du Saille; M. Hemar, Ex-president of the Medico-Legal Society of France; Dr. August Voisin; Dr. Carpentier; Prof. Dr. Luys; Marcel Briand and Dr. Foville.

Living members of eminence identified with the progress of medical jurisprudence in America: Prof. Brouardel; Dr. Motet; Dr. Lutaud; Dr. A. Leblond; Dr. Magnan; Dr. Ritti; Dr. Christian; Dr. Bertillon and Dr. Forel.

The following are deceased honorary members of the Medico-Legal Society: Prof Francis Wharton, writer on Legal Society of France; M. Barnier, President High Court of Cassation of France; Dr. Louie Penard, Ex-President of the Medico-Legal Society of France; Prof. Charcot, Paris; Sir James Fitz James Stephen, of London, England; Visitor in Lunacy, London; Dr. D. Hack Tuke, of London and Dr. Fordyce Barker, of New York.

WORKS ON MEDICAL JURISPRUDENCE.

Besides those already named, Prof. James J. Elwell, of the Cleveland, Ohio, bar, contributed a volume, "Elwell's Medical Jurisprudence" which had a large sale among lawyers and jurists.

Prof. J. J. Ordnoux was the author of a treatise entitled "The Jurisprudence of Medicine," which was published in 1869, and which was greatly used at that time and influenced public opinion and legislation at that period.

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Allan McLane Hamilton, M. D., published a work in 1894 entitled "Hamilton's System of Legal Medicine."

Francis Wharton, M. D., published in 1885 a small work on "Mental Unsoundness," which was followed in the same year by a work entitled "A Treatise on Medical Jurisprudence," by Francis Wharton and Morton Stile, M. D. This was an elaborate work of 815 pages and successive editions were published in 1860, 1872 and 1873; and in 1882 a fourth edition was published. The work is a valuable contribution to the science.

Prof. William A. Hammond published several works and edited a journal of Psychological Medicine for several years.

Dean's Medical Jurisprudence was published early but did not supercede Beck or attain as much prominence as Prof. Elwell's work. He was a contemporary of Beck.

The most complete bibliographical contribution relating to the works on American Medical Jurisprudence, and also the best enumeration of the general treatises of Italy, Germany, France and Great Britain, up to September, 1876, is that made by Prof. Stanford E. Chaille in his masterly address to the International Medical Congress in Philadelphia in 1876, to which I refer the student with great confidence.

If my time permits I will submit an appendix of the later works in America, since September, 1876.

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Affections of the Nervous System Causing Sudden Death. By P. C. Knapp, M. D .

The Coy Moy Murder Case. By F. K. Paddock, M. D.

Identification of the Human Skeleton. By S. W. Abbott, M. D.

Sudden Death Due to the Heart. By W. T. Councilman, M. D.

The Rights and Duties of Medical Examiners in Homicidal Cases. By W. A. Dolan, M. D.

The Leach Case (Abortion). By T. M. Durell, M. D.

Pancreatic Hemorrhage as a Cause of Sudden Death. By W. F. Whitney, M. D.

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The Farror Murder Case. By J. A. Mead, M. D.

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The Post Mortem Signs of Drowning. By G. de N. Hough, M. D.

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The Gilbert Murder Trial:—

A Medico-Legal Review. By F. W. Draper, M. D.

The Defendant's Mental Condition. By G.F.Jelly,M.D.

The Microscope as a Witness. By W. F. Whitney, M. D.

A Case of Homicide Without any External Marks of Violence. By S. D. Presbrey, M. D.

A Murder by a Stab-Wound of the Pulmonary Artery. By O. J. Brown, M. D.

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Two Cases of Medico-Legal Interest. By J. G. Pinkham, M. D.

Identification of a Human Skeleton. By Robert Burns, M. D.

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Three Deaths from Head Injury. By F. H. Baker, M.D.

The Iodine Test for Semen. By Wyatt Johnson, M.D.

The Duties of a Medical Examiner. By H. M. Knowlton, Esq.

The Medical Examiner as a Witness. By Sherman Hoar, Esq.

The Identification of Seminal Stains. By W. F. Whitney, M. D.

Sudden Death by Alcoholism. By E. P. Hurd, M. D.

A Case of Gun-Shot Wound of the Head. By W. D. Swan, M. D.

The Kaiserling Method of Preserving Anatomical Specimens. By W. F. Whitney, M. D.

The McCloud Murder Case. By F. S. Ganedy, M. D.

Contre Coup and its Relations to Head Injuries. By B. H. Hartwell, M. D.

Carbolic Acid Poisoning. By Frank Holyoke, M. D.

The Butters Murder Case. By G. E. Titcomb, M. D.

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Cholin in the Iodine Test for Semen. By W. F. Whitney, M. D.

THE RHODE ISLAND MEDICO-LEGAL SOCIETY.

Was organized June 11th, 1885. No published work containing a record of its transactions or a list of the papers read before it.

THE CHICAGO MEDICO-LEGAL SOCIETY was organized in the City of Chicago in the year 1886. There were eighty-four physicians upon its first roll as announced by the Chicago Legal News.

This body has since maintained a thorough and active organization and its officers have been selected from the prominent men of both professions.

The papers read before it have been of a high character by distinguished members of the bench, bar and of the medical profession. I have been unable to find any volume of them.

PHILADELPHIA SOCIETY OF MEDICAL JURISPRUDENCE was organized more than twelve years since in the City of Philadelphia and had a large and influential roll of membership. The papers read before it were of a very high order and were valuable contributions to the literature of the science of forensic medicine.

DENVER MEDICO-LEGAL SOCIETY.

In 1890 the Denver Medico-Legal Society was organized greatly through the efforts and labors of Prof. J. T. Eskridge and Dr. Donald McLennan.

SOCIETY OF MEDICAL JURISPRUDENCE OF NEW YORK CITY, was organized and incorporated March 5th, 1883.

The following papers were read and discussed before the Society in 1898-1899:

Address by the President-elect, S. B. Livingston, Esq., on the "Profession of Law and Medicine, a Comparison and Contrast."

"Circumstantial Evidence," by E. H. Benn, Esq.

"Expert Evidence from the Standpoint of the Witness," by F. X. Dercum, M. D., Ph. D.

"The Legal Disabilities of Natural Children, Justified Biologically and Historically," by Edward C. Spitzka, M. D.

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"The Development of Mental Competency from a Presumption of Law into a Question of Fact." By Hon. John Dewit Warner.

"The Status and Legal Rights of the Soldiers," by J. Hampton Dougherty, Esq.

"Apparent Death," by Henry J. Garrigues, M. D.

"Expert Medical Testimony, a Defense of the Present Procedure," by Hon. John Woodward, Justice Supreme Court, Appellate Division.

Address by the President, S. B. Livingston, Esq., on "Citizenship and the Age of Maturity."

The Medical and Legal Aspect of Hysteria Induced by Injury," by Pearce Bailey, M. D.

"Unreliability of Drugs," by Edmund J. Palmer, M.D., Commissioner of Quarantine.

"Natural Law vs. Statutory Law," by Gino C. Speanza, Esq.

"The Logical Character and Function of Opinion Evidence," by William Allaire Shortt, Esq.

"Extremes in Anthropometry with Reference to the Bertillon System," by Edward C. Spitzka, M. D.

"The Medico-Legal Autopsy, a Plea for Medical Precision and Legal Recognition," by Hugh Hamilton, M. Sc., M. D., Harrisburg, Pa.

"The Law and Science of Capital Punishment by Electricity," by Roger M. Sherman, Esq.

NOTE—This paper will appear in full in the Medico-Legal Journal.

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AUTOPSYCHORHYTHMIA OR REPETITION PSYCHO-NEUROSIS.

Morbid Rhythmic Forms of Automaticity and Rhythmic Forms of Mental Alienation.*

By C. H. HUGHES, M. D., St. Louis.

THE pathetic story of the accountant who, in a state of nervous exhaustion and cerebrasthenia, was carried to Bethlehem Hospital pitifully repeating, "once one is two, once one is two," the mistaken calculation having ruined him, is well known in the literature of nerve perturbation. The record is a story of brain exhaustion often repeated in other forms, the real nature of which is often not well understood in time, either by the family medical adviser or the public, to avert disaster. There are other phases of this morbid mental state in which a fear of mathematical inaccuracy or mental agitation on account of the interrupted rhythm are not characteristic, but where simply an insistant impulse to automatic repetition exists that will not readily down at the bidding of the normal will, even though regard for the proprieties of environment demand suppression. The constant repetition of a rhythmical movement in the mind, regardless of time or place or circumstance and which an enfeebled volition can not regulate to conform to the requirements of environment, characterizes this symptom of brain overstrain and psycho-motor automatic impulse. Neuropathic and consequent psycho-motor

*Presented to the Section on Nervous and Mental Diseases of the Third Pan-American Congress at Havana, Cuba, February, 1900.

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neurasthenia appear to be at the bottom of this condition, or have probably been, at some time in life of the nervous mechanism, before the inception of the morbid automatic repetitional impulse. It is as much a symptom as the ill at ease, restless, tired and fidgety state and morbid phobias of neurasthenia are.

Tuke (Psychological Dictionary) touches this subject closely under the discussion of imperative ideas, corprolalia and obsession, and mentions the instance of a friend who wrote him after composing a poetical work, saying in his letter he longed to get the poetical work out of his brain and begin on "fresh fields and pastures new," but found it "difficult to make the vibrations cease when the intellectual chimes have been set to a particular tune," recognizing the brain automaticity which is an essential feature of what we are attempting to describe.

We would take this case from the class of imperative ideas and place it in a new psychologic class like the following, to which we would apply the new term we coin —autopsychorhythmia or repetition psychosis or psychoneurosis.

A handsome, bright and accomplished young lady of eighteen years, with a maternal unstable nerve heritage but a healthy father, a student of music, advanced and promising, came to me from a distant city suffering with exaggerated reflexes, insomnia, hyperideation, troublesome illusional fancies and a musical rhythm continually running in her mind. Day and night the automatic repetition of tunes and musical cadences ran constantly through her mind. Upright or recumbent, in waking state or in her fitful sleep, the automatic rhythm persisted. She thought and dreamed of music and felt its rhythmical influence continually throughout her nervous organism. Her pulse was rapid, her heartbeats overforceful, her pupils were abnormally mobile and dilated, her digestion was tardy but finally adequate, bowels torpid, skin relaxed and she felt continually tired.

She recovered under rest, change of environment, cessation of study and piano practice, withdrawal from

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musical companionship, brain tranquilizing galvanizations, aether menthol evaporating lotions to head, chemical brain restraint and pepsines and laxatives. Had she continued much longer in her vicious course of incessant overstudy, this handsome and promising girl would have passed from the morbid psychic automatism of cerebral fatigue excitability into positive insanity as I have seen others pass, especially ambitious, self-sustaining teachers, beyond the line that marks the morbid psychic automatism of incessant overaction into the realm of actual insane aberration. These cases can be saved, if treated in time by the alienist and neurologist, but not by any local treatment outside of the brain, unless, perchance, the change of environment and its influences are so tranquilizing, diverting and restful a kind as to bring about through nature's unaided resources, the needful recuperation of the nerve instability and morbid automatism of brain overtax. If these unfortunates get only throat treatment they are likely to be lost, unless perchance, the brain rest from cessation of work and changed environment should bring about a cure.

A young unmarried man who speedily became hopelessly insane and soon after died demented, displayed the beginning of his breakdown by exclaiming *sotto voce*, while riding with me, "Beethoven! Beethoven! "This he would continually repeat. An aged lady over seventy years of age, who became somewhat demented soon after and senile, would often repeat, "Yes, I love God! Yes, I love God!" in the midst of conversation and when alone.

A music teacher and composer of great genius, and now perfectly well, could not refrain when he first saw me, from going through the movements of fingering the keyboard of the piano and a tra la la accompaniment. He had just finished a Herculean task and was on the verge of a disastrous breakdown characterized by profound insomnia, marked general restlessness and psychical excitability.

A charming young lady patient of mine at the asylum at Fulton, Mo., in 1870 first attracted attention by repeating a call to the chickens, of which she was very fond at home.

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"Chicky, chicky, chicky," she would repeat, and as her insanity became pronounced she would say "Chicky" all day and far into the night until put to sleep on hypnotics. A suppression of the menses accompanied or preceded her insanity and returned with her return to sanity. She was recovered at the end of six weeks' treatment with bromide of potassium, timely hypnotics, tonics, aloetic laxatives and gelsemium.

Another patient of mine at Fulton, a man of upwards of fifty years of age who had gone insane and turned gray in a few weeks time under the strain and misfortune of the civil war, having lost most of his property, principally in slaves, and become suddenly bankrupt, assumed a bent-over attitude as he walked about night and day exclaiming, "My God, how can I stand it; how can a man carry the world on his shoulders?" This man, who was possessed of good physical vigor for his years and was an excessive user of tobacco, reminded me of the mythological pictures of the mythical Atlas. After the acute stage of his malady had passed he would repeat only the words "How can I stand it?" and this utterance he would make years after the inception of his insanity, even at times when provoked to smile or when asking for a chew of tobacco, after the fires of the early mental conflagration had gone out and his life seemed to be no longer one of psychic pain. The scar remaining among the cerebral cinders kept up the automatic cerebral refrain, "My God, how can I stand it? How can I stand it?" long after he had ceased to feel the poignant mental pain of the acute stage of his disease.

The peculiarity of Samuel Johnson who, after a good deal of mental strain, could not pass a single one of the stone posts which stood at regular intervals along the pavement of the streets in his native town of Litchfield without laying his hand on the top of each one is also apropos to our subject. Fortunately Johnson never broke down seriously in his nerve centers. His repetition automaticity did not pass to an extremely morbid stage.

Under the caption of "Letter Counting," the Paris correspondent of the *British Medical Journal* mentions a case

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in point reported to a Bordeaux society by Dr. Ginostos. The subject was a young man who has, since the age of ten years, had an irresistible impulse to count the letters in a word or phrase that he hears, sees, speaks or thinks. At night he sleeps without dreaming. When he does not talk, he invents phrases and counts the letters in them. Thirty-two is a number that gives him satisfaction; thirteen displeases him, but nevertheless he does not recoil from arranging phrases with thirteen letters in them. This unceasing automatic operation does not in any way interfere with his daily work, or reading or carrying on a conversation. A reference to this interesting case appears in the columns of a number of the *New York Medical Journal*, which, I do not at present recall. Echolalia, corprolalia, etc., are likewise somewhat germane to this subject, as showing a similar but graver state of repetitional impulse and obsession, but rhythmic repetitional automaticity is what we are now considering. There are likewise references of interest, not wholly malapropos, in Forbes Winslow's *Obscure Diseases of the Brain and Mind*. Indeed they may be found in many books of the literature of psychiatry.

I have heard a chronic alcoholic repeat over and over through the day, "Little Bo Peep, he lost his sheep, and doesn't know where to find them," etc., and have known chronic lunatics who would repeat some long-ago-learned distich or rhyme or some insanely-constructed jingle of words in maudlin monotone, from the day's beginning to the ending thereof, in all their waking hours, some of them singing their peculiar song, like the dying swan, to the end of their unfortunate lives. Some would alternate their phrases backward, a transposition from the way the verses were written. If we carefully scan the speech and song of the insane we will find much not yet recorded and many forms of this morbid psychic display of automaticity. It has as many peculiarities of expression as the singularities of autograph and speech in agraphia and amnesia and other forms of aphasia.

More extended rhyming forms of speech or song, evincing mental spontaneity and sometimes marked ability of

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improvisation among the insane, are interesting and common in the psychiatric hospitals, but they do not strictly belong to our present subject.

"A lady who had been eighteen months insane detailed to Forbes Winslow, after recovery, the symptoms of her derangement. She informed him that for nine months previous to her being considered mentally afflicted, she was fully aware that she was not 'quite herself.'

"'My general health' she said 'became much out of order, and I had a severe attack of English cholera, followed by great debility, which confined me to my bed for several weeks. It was during this illness that my foolish fancies began to annoy me. At this time I used to talk out loudly to myself, a thing I never did before. This was irresistible. I ejaculated the most foolish remarks, and at times too with wonderful volubility of speech. I did my best to control myself, in this particular, but found it difficult to do so. I was quite conscious that my mind was affected, and yet no delusion had taken possession of my intellect. For several days I succeeded, by strong efforts of thought, in checking this ridiculous inclination to utter absurd expressions, but I awoke one night in an excited state, from a troublesome dream, and I began then to vociferate a number of most incoherent expressions to this effect: "You shall do it." "No you sha'n't." "He is like Satan." "Why don't you say the devil?" "Ah! Ah! Ah!" "It is beautiful." "No he devils." "I can't be saved." "You have no hope." "Suicide." "Poison." "Hang yourself." "They are after you." These strange remarks continued for nearly two hours, when I fell asleep, and arose much relieved. My mind, however, was for sometime afterward not in a right state, although I had intermissions from the misery I suffered. Eventually I became quite insane, and I am informed, remained so, for nearly eleven months. During the whole of that time, I fancied I was in hell, and tormented by evil spirits. I thought every person near me to be a devil. My mind was gradually restored to a healthy state. I cannot say when I first began to feel that I was recovering.'"

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I should like as forcefully as possible to call your attention, as I think Forbes Winslow has done before me, to the significance of absent-mindedness, abstraction, inattention and what, since Carpenter, we have called psychic automaticity, as precursors of mental aberration. Of course these states signify little, unless they are progressive or until they have reached the verge of morbidity with profound and uncontrollable disregard of the proprieties and harmonies of environment. Nevertheless they are worthy of note and mean much, very often, to the closely observant alienist clinician. They may serve to start him in the right direction of search for grave impending psychical malady in its avertable stage.

I saw once a charming-voiced lady suffering with this form of cerebrasthenia and neurasthenia, who, subsequently while abroad cultivating her voice, developed a condition of rhythmical chanting psychic aberration, *folie chantant*, while mistakenly having her throat and vocal cords treated. She once consulted me. I saw the impending catastrophe and could have averfed it, but was not asked to treat her further and my further advice of prompt brain rest and nerve recuperation was not followed and the catastrophe came. Her trouble began with musical cerebrasthenia.

A young manustupral neurasthenic was brought to me by his father some years ago. During my first examination of him he interrupted the proceedings, saying often "It don't correspond." He had been a studious youth of good morals, and his mind was probably vaguely reverting in automatic manner to some problem in mathematics worked at in other days. I could not get him to say what he meant or to take treatment. After that he passed speedily into stuporous dementia and soon died. His mother was neurotically enfeebled at the time of his birth and his malady was evolutionally predestined, the masturbation having been an incidental developmental sequence probably, as well as contributing cause.

A gentleman of extensive business affairs who came to me on the verge of financial and business bankruptcy, but now after many years of health, successful in a new but

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less harassing line of business, would continually say to himself, "Too many irons in the fire, too many irons in the fire." His intellect was clear but his brain was jaded and unstable, in that stage of cerebrasthenia that so often precedes the final brain-break of insanity. The closing out and winding up of his business saved him for recuperation and another and less harassing and more successful career.

These cases are significant to the neuropsychologic clinician and amenable to cure if timely treated and if we are not misled from the brain, which is the central origin of the trouble, to the peripheral symptomatic expression. Insomnia and other forms of restlessness precede and accompany their expression, as likewise do disturbed visceral states dependent upon vagus innervation. Like most voice failures and many altered chirographic expressions, the autographs of morbid brain and nerve states, as in general paralysis, disseminated and posterior spinal sclerosis, the disease is not in the organs of expression in which the symptoms show, but chiefly in the brain, the allied peripheral neural mechanism only subserviently participating. Other clinical illustrations might be cited from the author's experience, as, for example, some forms of choristers' and pianists' palsy, etc., but these are omitted for the sake of essential brevity and to avoid possible contention. To an audience of savants like that before me one word will suffice for many.

This morbid state of the nervous system is so distinctively peculiar as to be entitled to distinctive designation. All have observed it, especially those who have added to their neurologic experience opportunities for extensive observation in psychiatry. It is a symptom and precursor, if unarrested, of insanity, and though it may stop short of the greater denouement, by fortuitous change in the life habits or thorough, timely, skillful treatment of the individual, it is a serious condition of the brain, demanding our best thought and effort for its prompt relief and calling for cautious, forceful admonition as to the impending peril of its persistence.

I have used, for want of a better term, autopsy:

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chorhythmia, since under the dominance of this morbid state of brain and mental expression the mind loses to a degree its volitional spontaneity and becomes abnormally automatically rhythmical in psychic feeling and expression. And when the stage of insanity is reached, the mind so expresses itself, regardless of the proprieties of place or occasion and out of normal harmony with rational environment.

The distinction between morbid and normal autopsychorhythmia is in the persistent and inopportune obtrusion of the rhythmic repetition in manner not in harmony with the environment of the individual. The will does not attempt its suppression, or if it does, it cannot, when and where the proprieties demand it, whereas, so long as this symptom phenomenon remains within normal limits, it selects suitable occasions for permitting the rhythmic repetitions that run through the mind, to go on uninterruptedly and can effectually check them on proper occasions.

All perfected education of the psychic neuron centers develops an automatic aptitude for easy repetition. This is not a morbid feature of mental action and is not what I have attempted to describe. It is the morbid aspects of this mental state, when normal regulated control is impaired and, in the graver conditions, lost, to which I invite attention as of significance to the neurologist and alienist. It is evidently a lesion, more or less grave, of the psychic inhibition centers that claims ours consideration and demands attention from the profession that it has thus far not adequately received. There is a neuriatric with a psychiatric, as well as a psychologic side to this interesting and important subject. It is the latter to which I would call professional attention.

Involuntary psychic automaticity in many forms, including the feature we are now discussing, is a forerunner of grave insanity which displays itself paramountly in lessened inhibitions of normal mental action as well as impulsions to erratic conduct and in the many forms of automatic mental aberration revealed in the actions and speech of the acknowledged insane, both within and without asylums.

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All symptoms, therefore, which point in that direction even though remotelv, claim thorough investigation and prompt remedial endeavor. Brain strain like that under discussion passing the line of morbid autopsychorhythmia is always a matter of gravity and solicitude. It is the limp that precedes the paralysis of the mental gait. The beginning spasm of overuse that may end in wrong movement. The brain thus going wrong should be made to rest and be brought back by neuropsychological treatment into habit of normal action.

Dr. Martin W. Barr in the January, 1898, number of the *Jour. of Nerv. and Ment. Dis.* discusses an interesting subject akin to our theme and rather more germane to it than the various forms of aphasia under which it is generally considered, namely, echolalia. Hammond, copying from Winslow, gives the case of a woman who always said at her prayers "our Father which art in Hell," meaning to say Heaven, and the case of a man from his own observation who said automatically "saw my leg off" to any question asked. There is no connection, in my judgment, between my subject and any form of hypothetical transcortical aphasia or to the motor aphasia of Broca's speech center. It is neither echolalia nor corprolalia, though I agree with Tuke that echolalia and corprolalia as some forms of aphasia and other speech defects do, portend, like autopsychorhrthmia, insanity. They are morbid impulsions, and morbid impulsions are lesions of inhibition not far in advance of oncoming psychic aberration. Corprolalia, a tendency to express as well as to repeat foul language, is often heard among the insane, even among naturally modest and cleanly minded women.

Mills* records the case of a refined and cultured lady who would suddenly swear and gesticulate, and a boy who would suddenly utter filthy language and move his head, shoulders and arms violently. These are common symptoms in the observation of insanity.

These two cases are quoted by Barr as combining palmus or myriachit and corprolalia, as they undoubtedly do.

*Review of Insanity and Nervous Diseases, September and December, 1891.

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The Jumpers of Maine are victims of impaired volition and morbid psychomotor irritation and impulse, some of them not far removed from insanity.

Mills then very properly classes echolalia under morbid impulse rather than aphasia* and had he rested there he would have remained on undebatable ground but in a later article, as Barr observes, he classes true echolalia as a characteristic symptom of transcortical or suprapictorial sensory aphasia.†

A similar but not the same state of mind to that of autopsychorhythmia may be seen in the feeble-minded as in the volitional repetitions of Barr's pupils at Elwyn, Pa., which he discribes as echolalia. The boy Kirtie repeating "Kirtie, come to school tomorrow; Kirtie, come to school tomorrow morning," etc., is similar but not the same. It is the voluntary habit of a feeble mind to fix a mental impression. Something similar is sometimes also the habit of the infantile mind when learning to speak. The feeble and the morbid brain sometimes come in close touch in mental operation.

ADDENDUM.

The form of insanity in my observation to which autopsychorhythmia tends is that in which imperative conceptions predominate or have predominated in the initial stage of the mental disease. In aggravated form it is an imperative, resistless impulse to repetition of psychic impression in the form of verbal expression. In the Dictionary of Psychological Medicine Tuke broaches this subject under the definition of imperative ideas, but he does not compass it. He briefly discusses there under echolalia and certain of the morbid fears of neurasthenia, but my subject does not include morbid fears, illusions or hallucinations, though they may coexist with it. It means a tendency of the mind more or less resistless to continually and non-volitionally

*American Text Book of Diseases of Children: Speech Aspects and Anomolies, p. 663, quoted by Barr.

†Echolalia. By Martin W. Barr, 6th page. Dercum's Text Book on Nervous Disease, p. 440, 1st Edition.

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repeat its once volitional actions even at inopportune time and place. It is a habit volitionally induced which has passed into a too often invoked normal mental morbid automatic impulse of over brain strain or excitation. The habit excites the patient's concern and sends him, if he is an intelligent man, familiar with the possible resources of neuriatry, to seek relief in neurological medical advice and remedy.

When this condition displays itself in unrestrained impulse of speech or song to the chagrin of the individual and surprise of his friends, it is an act out of harmony with his rational character and environment and is then initial insanity.

Another feature of our subject is shown in a tendency to imitative acts, such as grimaces and stuttering and spinal cord and motor center movements(Jumper's palmus), which by often and long repetition have become organized automatic impulsions no longer volitional with the individual and which sometimes are seen to pass into the acts of the insane. To discuss these now *in extenso* would make this paper too prolix.

In the ALIENIST AND NEUROLOGIST for January, 1897, under the caption Imperative Conceptions, I have discussed more *in extenso* this subject. I have there recorded the case of a victim of corprolalia, who upon being advised to quit breaking out with sudden profanity, said: "I can't; I would that I could. I go about my work crying and talking. I will say, 'I will not do that any more,' and it will not be five minutes until I will be at it again," etc., etc. "I think and say such awful things. I never did so before and do not believe I want to now."

Discussing echolalia, Martin W. Barr records a case under his observation of a beautiful and refined girl attending a boarding school who would at intervals give sudden expression to three words successively, the first vulgar, the second foolish and the third profane.*

This condition, in some of its features, is related when in intense morbid degree, to our subject and proves its psychopathic relation and grave alliance.

*Echolalia, *Jour. Ner. and Ment. Dis., Jan., 1898, p. 20.*

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Morbid autopsychorhythmia has relation to the spasmodic word outcries of the insane, (corprolalia and echolalia, etc.), similar to the rhythmic spasm of athetosis in comparison with the jerky spasm of tetanus, chorea or the spastic movement of lateral sclerosis.

The pathological lesion of autopsychorythmia is evidently in the mind area of the brain cortex. It is truly transcortical and not focalized exclusively in the speech area. It is a psychical and not purely psychomotor involvement. A psychical lesion shown in peculiarity of psychomotor expression.

If in "this frame the bearings and the ties, strong connections, nice dependencies," an ancestral "blot upon the brain," has left for transmission a latent hereditary scar of aberrant mental action, we may expect to see the psychic perversion of insanity develop under stress of brain and mind, such as destroys or weakens its normal regulating power. "That way madness lies; let us shun that." It may show in obscure, if not in plainer form or in mental eccentricity, to mark and mar the after life.

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A STUDY OF FOUR CASES OF MENTAL DISEASE AND FOUR INTRACRANIAL TUMORS CONNECTED THEREWITH.

By J. W. BLACKBURN, M. D.

Pathologist to the Government Hospital for the Insane.*

CASE I.

Hemorrhagic spindle-celled sarcoma of the cerebellum and multiple soft fibromata of the skin.

A. B.; AGED 61; white; single; laborer; late soldier; nativity, Pennsylvania. Mental disease, chronic epileptic mania; duration over four years. The patient was admitted to the Central Branch National Home for Disabled Volunteer Soldiers, September 2, 1892. Medical history of chronic rheumatism, hemorrhoids and epileptic seizures. He had fits of violence at intervals of four or five days, in which he tried to injure his attendants, break furniture, etc. Mental power weak when admitted to the Soldiers' Home.

On admission to the Government Hospital for the Insane, May 4, 1893, he was weak; was soon confined to his bed; moderately demented; memory, perceptions and comparative faculty all impaired, but he could talk rationally, for the most part. He had no delusions, but showed progressive dementia, with occasional attacks of impulsive fury, in which he would beat his bed and attack anyone coming within his sight or reach, at the same time uttering inarticulate cries of rage. These furors were of brief duration,

*Abstracted from the Forty-fourth Annual Report of this Institution.

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