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THE

Alienist and Neurologist

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—OF—

Scientific, Clinical and Forensic

NEUROLOGY AND PSYCHOLOGY,

PSYCHIATRY AND NEURIATRY.

Intended especially to subserve the wants of the General Practitioner of Medicine.

"Quantam ego quidem video motûs morbosi fere omnes a motibus in systemate nervorum ita pendent u morbi fere omn es quodammodo Nervosi dici queant."—*Cullen's Nosology: Book II., p. 181—Edinburgh Ed. 1780.*

VOLUME XX.

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THE
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ORIGINAL CONTRIBUTIONS.

WHAT ARE MENTAL DISEASES?*

By PROF. RUDOLF ARNDT, Greifswald.

THE question, which I have chosen as the title of this paper, has been asked many times, and likewise answered according to the standpoint of the person replying. The psychologist answered it from his psychological standpoint accepted at the time, the anthropologist from his standpoint represented in anthropology, if he were a materialist, according to the materialistic view of life, if he were a monist, then in accordance with monism, if he were a dualist, then corresponding to dualism, and so true to the view of life as vitalist, animist, spiritualist, which is the foundation of vitalism, animism and spiritualism, if he were a pathologist, especially and likewise a physician, then in harmony with the pathological views he entertained. As special pathologist he answered it according to the teachings of special pathology, as general pathologist, in accordance with those of general pathology, *i. e.*, that local troubles may be merely the expression of general disorders, as, *e.g.*, certain liver affections, kidney troubles, the consequence of fright, certain nervous disorders, neuralgias and spasms,

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anaesthesias and palsies, the result of uraemia and urataemia, of the toxic effect of alcohol or tobacco, as well as that certain diseases of the mucous membranes or bones, are the consequence of dyscrasias, like scrofula, syphilis, scurvy, or, that general troubles are developed, when only a very small part of the body is affected, that a simple fracture, a periostitis limited to a small area, simple dentition, may cause considerable fever with a rise of temperature to 40° to 42°, a very marked feeling of indisposition and *malaise* of the whole body, a profound depression and finally a complete instability in the person otherwise apparently normal. If he, the pathologist, physician, still has no independent views and is unable to shake off the traditional teachings and opinions, although he no longer wholly approves and regards them as inviolable, so he states, because he knows of nothing better to offer: We do not yet really know what mental diseases are. However, as we know that it is the brain by which the mind and all that ascribed to it according to prevailing opinions, is manifested, so it must be affections of it and its parts, which cause mental diseases and determine their nature. He could then well say: Mental diseases are brain diseases, in consequence of which the so-called mental faculties, the feelings, thoughts and efforts have especially suffered, and, nevertheless, after just saying what mental diseases are, we still do not know exactly or perhaps not at all, for according to the opinion of special pathology they are regarded merely as brain diseases.

It is certainly correct, that which we call *mind* or *soul* in ordinary parlance, where the two expressions are not strictly separable, or *psyche*, according to foreign, antique Greek usage, that this something is only brought about, according to all experience, by the brain and certainly by the cerebrum and in particular by its gray cortex; still is it likewise demonstrated that mind, soul, psyche necessarily originate merely in the brain, solely by its action, so to speak, or is only thus manifested? There is a very prevalent theory which claims that. According to it the brain and its individual cells, respectively cell combinations, secrete the various mental or psychical actions, and, accord-

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ing as these are endowed, they appear as feelings, sensations, perceptions, as thoughts chiefly, as ideas, combinations of ideas, as will, and so finally as intellect, reason and volition. By their consequences they become tangible, sensible, perceptible in the same person, in that their manifestations, corresponding actions are again felt, again experienced, again perceived. The brain acts, according to this theory, somewhat like the liver in secreting bile, somewhat like the kidneys in excreting urine, the sweat glands, perspiration, the lachrymal glands in secreting tears, or also somewhat like the heart in effecting the circulation of the blood, similarly to the lungs in the interchange of gases between the blood and the air. According to this theory the brain and its cells act automatically, just as the organs should, which have been mentioned. And the reason of it can be nothing else than the autonomy, the sovereignty of the cells, of which they are composed and which also has been learned for their numerous combinations, but evidently does not exist. All cells are conditioned by their surroundings and, corresponding to these changes, their action and their appearance. The cells of all many-celled bodies are mutually conditioned. Then all these cells with the exception of the blood, lymph, migratory cells and the like, are united with each other, if the majority, perhaps by wide detours, and mutually effected by means of their unions. Every cell of a many or several-celled body, except those mentioned above, are united with every other cell of this body and is dependent on them. Therefore a true autonomy cannot be spoken of in regard to them and so equally as little of an autonomy and its corresponding automatism of the brain and its parts. The brain, as the mental organ, as the organ of the soul, as the so-called psychical organ, is wholly dependent on the rest of the body, *i. e.*, its cells. The nerves, by which it is connected with these, and without which no action, mental or psychical, can occur, demonstrate the dependence in question.

But now if the brain is not an autonomic and hence not an automatic organ, what else does this show?

The brain of vertebrates, man, originates, as is known,

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from the posterior horns or posterior columns of the gray nucleus of the spinal cord, besides at a time when this has long been active and even experienced a certain differentiation. In the present individual it then originates relatively late. Still the spinal cord is produced from the uppermost, epidermoidal blastoderm, the epiblast. After the development and cleavage of the undermost or so-called hypoblast from it, which latter may also be termed the epithelial or entodermic layer, nevertheless the two layers now present remain intimately connected in the so-called axial cord of the embryo, and this union continues through the whole life. An active cell growth occurs in the axial cord. Its cells multiply by division; still their division is never complete. They always remain connected by fine protoplasmic masses, usually of a fibre-like nature. Consequently this cell proliferation produces in the middle of the axial cord two longitudinal folds, the dorsal or medullary folds, and proportionately as these become higher and higher, a groove or furrow appears between them, the primitive furrow or medullary groove.

The primitive furrow or medullary groove is lined with the cells of the epiblast, in which it originates. Its cells are then in the most intimate connection with the cells of the latter, and the protoplasmic masses, which in each of the cell divisions in question continue, make up the stated connection. That is brought out in paths established by transmission. From these cells by their multiplication, be it by accretion from without of and over the dorsal folds, be it by divisions which have taken place in them, the bulk of the spinal cord is produced! Meanwhile the dorsal folds are raised more and more, their free upper borders incline towards each other, meet, coalesce and so form a canal, in whose interior lies the spinal cord, and hence has been named the neural canal. It is usually taught that this neural canal with its contents, the spinal cord, is formed in the way described, but is also marked off from its surroundings. Yet this last expression leads to misconceptions. For in reality the spinal cord is not marked off from its surroundings, especially not from the latter or peripheral part of

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the blastoderm called lateral plates with respect to the axial cord. By several cell tracts, which traverse the wall of the neural canal with its manifoldly differentiated cells in the path above mentioned established by transmission, they remain united with these, especially with several of their groups.

In the meantime the two blastodermic layers, respectively their lateral plates, have split to the axial cord. From the two former cell layers four have originated, and of these the new ones, the secondary, lie between the old ones, the primary. The primary blastodermic layers are the sense layers; the secondary are the fibre layers. They are all connected with the axial cord and by the axial cord with each other and again in the stated paths with the spinal cord.

Similarly as the spinal cord originates from the epiblast, the trunk of the sympathetic nerve is developed from the hypoblast. But the former occurs on the upper surface of the axial cord, so the latter is formed on its under surface and hence the former is enclosed in the neural canal, so at this time of life lies free on the surface. By definite cell tracts descending from the formative period of the embryo it nevertheless remains connected with the former, and in paths rendered constant by heredity, which in part coincide with the former, by which the connection of the spinal cord with the cells of the epiblast occurs, makes it evident.

According to the previous statements, all cells, formative cells, of an embryo, and for the present purpose, especially an embryo vertebrate, respectively a man, are connected, and in a connection effected by fibrillary protoplasmic masses which unite them, so this connection is still especially intimate between certain cell groups. So, *e. g.*, it is particularly close between the several layers and the fibre layers belonging to them, then again, *e. g.*, between the first and second and between the fourth and third and the so-called secondary blastoderm. The more the body is developed, the greater it becomes and it occurs preferably by accretion and development of the lateral layers and their elements, the more in respect to it as the whole of its axial cord is

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diminished, particularly atrophied, so that from it in the completed state only vertebral column and head are produced, the more so at any rate the more distinctly certain is this connection shown solely by means of the spinal cord and trunk of the sympathetic nerve. By the spinal cord and trunk of the sympathetic nerve, which are united with each other, all parts of the body are connected, and so then each cell is connected with every cell of the body.

The protoplasmic masses combining the cells become stronger, coarser, more or less thread-like, and by the union of many such lying in the same direction, nerves are formed. The nerves originating in the sense layer appear from the periphery and are further developed to the spinal cord and trunk of the sympathetic nerve; whereas the nerves occurring in the fibre layer are formed from the spinal cord and trunk of the sympathetic nerve and are developed toward the periphery. In the direction in which the nerves originate and are developed they can be excited in the way peculiar to them, *i. e.*, in their energy, and they conduct only their own excitement, respectively their stimulant, for the time being. The nerves originating in the sense layer, the sense nerves in the broadest meaning of the word, which, as we know, cause feeling, conduct the excitement merely from the periphery of the body to its centre, and to the spinal cord placed in it, respectively trunk of the sympathetic nerve, whereas the nerves springing from the spinal cord, as well as from the trunk of the sympathetic nerve, which are propagated in the fibre layer, from the centre of the body to its periphery. Therefore the former are called centripetal, the latter centrifugal nerves. The former transmit the impressions of the world and its forces, stimulants, from the surface of the body to its interior: they receive the stimulants, respectively the immediate effects on it; the latter conduct them again to the periphery and so convey them to the surroundings, *i. e.*, to the world. Therefore the former may be termed *receptive*, the latter *reactive* nerves. For the former, as said, convey the effects of irritation, which ensue to the body and cause perceptible feelings, vague sensations or definitely clear perceptions;

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whereas the latter cause the actions. So by the former, sight, hearing, smell, taste, touch, hunger and thirst and the feeling of all the needs, are effected, that may be active in the animal; by the latter, processes of nutrition are effected, which are manifested in growth, in secretion and excretion or general movements.

Each sense nerve passes into an action nerve, which takes its origin from this, through the spinal cord or trunk of the sympathetic nerve, in whose protoplasmic masses between its cells or in its individual cells it is resolved. But each sense nerve and action nerve belonging to it hence represents in a certain measure only a single nerve, which has its origin in a sense layer, its termination in the related fibre layer and is interrupted in its course by cell masses, masses of the spinal cord, sympathetic cell masses, individual cells even. The beginning and terminal parts of such a nerve, its receptive portion, as a rule, lie close together, in that, in the spinal cord, in the sympathetic cell mass, it is sharply bent, reflexed; the part of the spinal cord, the sympathetic cells in question, the occasional single cell seems consequently to depend on the arc, reflex arc thus produced, of the whole of these nerves and to unite a receptive and a reactive function with each other.

Thousands, millions of such nerves lie together, well isolated in their course to and from the centre, but amalgamated with each other in the interior by their spinal cord, respectively sympathetic cell masses. The amalgamated spinal cord masses of individual nerves form the spinal cord as a whole. The amalgamated sympathetic cell masses form the contents of the ganglia of the trunk of the sympathetic nerve. As in the spinal cord, so in the ganglia of the sympathetic nerve, the centripetal, receptive, sense nerves are bent, reflexed into centrifugal, reactive, action nerves, so the spinal cord and the ganglia of the trunk of the sympathetic nerve prove to be mere reflex apparatuses, in which the forces of the world, respectively the universe, are transformed into the so-called vital forces of the body and their manifestations. In the spinal cord such a transformation occurs chiefly of those forces which

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act on the external surface of the body; whereas in the ganglia of the sympathetic nerve those ,which exert their effect on the interior. As spinal cord and trunk of the sympathetic nerve are united—by the rami communicantes, an interchange of their elements—so in both reflex apparatuses both of the categories of force mentioned are transformed into all the vital processes peculiar to the body concerned. The spinal cord and trunk of the sympathetic nerve united with it, are therefore a reflex apparatus, by means of which any irritation which acts on the vertebrate animal, can be transformed into its proper manifestation.

The longer the spinal cord and trunk of the sympathetic nerve are developed the better they are. Their cell masses are differentiated, in that some are transformed into larger cell-like bodies with longer or shorter processes, so-called ganglion bodies; their others with their protoplasmic masses serve for the formation of nerve fibres, by which the most diversely fixed relations and combinations are maintained. In the spinal cord these differentiations are especially vast, and consequently the spinal cord itself is a mechanism finely perfected for so many relations of the kind, that it seems in the whole reflex apparatus the spinal cord-trunk of the sympathetic nerve is by far its most important part. The spinal cord is pervaded by nerve fibres its whole length, from above downwards and from below upwards, and transversely from right to left, as well as from left to right, contains groups of ganglion bodies of every form and size, of protoplasm of definite limits and form, the so-called gray nerve substance, so that the sympathetic nerve with respect to it gives an impression of inferiority, dependence, that it is rather to be regarded as a mere offshoot, branch of the spinal cord. Yet it is not, according to its entire origin, its whole development; still in consequence of its union with it by the rami communicantes it has been subordinate to it in its creation of the brain, at least to a high degree. *Qui a compagnon a matre!*

From this principal part of the reflex apparatus, the spinal cord, which in a certain measure lies in the midst

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of the general nervous system, the receptive and reacting, as well as the sympathetic portion usually regarded equivalent to both, the brain is developed. It is developed from the masses of protoplasm of the posterior portion of its so-called gray nucleus, *i. e.*, from the part, which later, after further differentiation, is given the name of posterior horns or posterior columns. In the fowl it occurs between the first and second, perhaps first in the second stage of incubation, in the rabbit not before the ninth stage of development, in man in the second week of development. (Bischoff, His, Haeckel, Kölliker).

But the gray posterior horns or posterior columns of the spinal cord belong wholly to the receptive portion of the nervous system; its gray anterior horns or anterior columns to the reactive; the parts uniting them are perhaps of a mixed nature, belonging in part to one and in part to the other. In common parlance the receptive portion of the nervous system is called the sensory, feeling portion; the reactive, as its opposite, the motor, inducing motion. Yet this is not well. It causes misconceptions and these lead to further erroneous ideas, respectively grave errors. The receptive portion effects only feelings, sensations. These occur somewhere else, in the brain, and in a definite manner, in that part we call the cerebrum. But the reactive portion also causes other actions than mere movements, *i. e.*, the gross mechanical, which are generally thought of; its chief function is the introduction of metabolic processes, then chemical movements, causing according to their kind, evolutions and involutions, thus leading to enlargements, growth, or diminutions, atrophy, which in the glands produce secretions and excretions, and in the muscles by alternating contraction, shortening, and relaxation, extension, resulting in gross mechanical movements, motions, accordingly they receive the name of motor nerves.

From the receptive, the so-called sensory portion of the spinal cord, the brain then derives its origin, in that it is put forth in its first elements from it, as the spinal cord as such originated from the cellular basis of the whole nervous system. The same formative impulse, Blumenbach's *nisus*

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formativus, which is simply the expression of a chemical, metabolic process induced by the forces of the world and brought about by the centripetal nerves at the given place, the same formative impulse, *nisus formativus*, which is asserted in the formation, production of the former, is manifested also in the formation, creation of the latter. The brain originates fundamentally from the spinal cord and conformable to the effect of the forces of the world, just as the latter originated from the nerve elements already present, likewise fundamentally and conformably to the forces of the world, which acted upon it. The brain is a product of the reflex action of the spinal cord and bears in itself all the marks of a reflex apparatus.

The spinal cord in its developed and, in a certain measure, perfected state is in the vertebrate a long, relatively slender, cylindrical body. Its superficial part is formed of nerve fibres, of which we have already spoken, and its interior is composed of the protoplasm which forms its gray nucleus, also mentioned. This gray nucleus of the spinal cord consists of a slender middle portion and four longitudinal processes projecting from it, two forward and outward, two backward and outward, into the more superficial masses of nerve fibres, which are named the white substance of the spinal cord. The middle portion is permeated nearly its whole length by a small canal, which, owing to its location, is called the central canal. On transverse section of the spinal cord a picture is presented to us in which a white mass encloses a gray one, sending out two sharply defined processes forward and outward, two backward and outward, and in its centre a point apparently excavated, porous. The former are the gray horns or columns aleady mentioned, its anterior and posterior horns, anterior and posterior columns, the latter its central canal.

In its upper portion, later cephalic part, the spinal cord undergoes a marked development at a definite period. In this part a number of sensory nerves inosculate, which have been very definitely changed in their character by very definite external forces and since then give rise to very definite and hence special functions. These are the so-

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called higher sense nerves with their specific energies, the nerves of sight, hearing, smell and taste, or the optic, acoustic, olfactory and gustatory nerves, which besides the nerve of general sensation, respectively tactile, the trigeminal nerve, all arising from the same group, are the cause of especially common and powerful irritations, as well as processes effected by development. The spinal cord and its essential part besides the gray nucleus increases in size, grows; still, going hand in hand with this, a greater differentiation occurs. From the cellular structure arise different, especially formed ganglion bodies according to the locality, from the protoplasmic substance combining them isolated nerve fibres and with them both elements effecting numerous, fixed unions between those previously present. The indefinite, complicated relations, so to speak, between them are thus done away with and replaced by those more definite, simpler, if also more numerous.

By the increase in size of the gray nucleus its envelope, the fibres of the white substance, becomes too small for it. It separates between the two so-called posterior columns, respectively *funiculus gracilis* and *funiculus cuneatus*, thus opens the central canal and forms from it the *fovea rhomboidalis*, the floor of the fourth ventricle. Then at their external borders the *funiculi graciles* and *cuneati* pass into the restiform bodies, *corpora restiforma*, which with other similar columns are disseminated in the *crura cerebelli ad pontem* and *ad corpora quadrigemina* in the substance of the cerebellum. The cerebellum forms the roof of the fourth ventricle and likewise the union, a sort of commissure, between the two halves of the spinal cord cleft by excessive distention, which is here called medulla oblongata, or spinal bulb, *bulbus rhachidicus*. So the cerebellum seems to be like a substitute, at least a perfected substitute for the posterior gray commissure of the spinal cord, which must necessarily be lacerated in opening the central canal, and with its hemispheres placed on the *corpora restiforma*. Has the gray substance of the cerebellum arisen from it? Its origin, particularly of its cortex, is otherwise undiscoverable.

The cerebellum is connected with the spinal cord, from

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which it has arisen, merely by the pedicles and columns previously specified and are composed of afferent as well as efferent nerve fibres. Hence it may be proper to conclude that it, like the spinal cord itself, is merely a reflex organ. Observations ever more indicate it.

By the experiments of physiologists we have learned that the cerebellum is especially concerned in motor processes. It looks after coordinations, and in particular those dependent on the hearing. When the fish in the water, *e. g.*, the carp, all of a sudden turns from where it is lying quietly and hastily darts away, because someone who walks heavily has stepped on the bridge which spans the brook; when a flock of birds, sparrows, starlings, crows or doves, suddenly rises and with loudly flapping wings flies away, because a gun has been fired in the vicinity; when we involuntarily spring aside and make various motions, because a loud crash has occurred near us;when, on the other hand, we listen to a quickstep, our legs involuntarily keep time to the music or in dancing to the rythm of the waltz, polka or gallop, these are all purely reflex movements. The sound impressions are taken up by the acoustic nerve, conducted to its so-called primary nucleus, yet in reality discharge nucleus, in the medulla oblongata, peduncles of the cerebellum, which form a part of the restiform bodies, to the cerebellum, itself, and here are finally transferred by the coordinating apparatus to the primary nucleus of the centrifugal nerves in the medulla, by which they will be manifested, in this case the facial nerve and nerves of the arm and leg.

The *fossa rhomboidalis* is narrowed anteriorly, in that the *crura cerebelli ad corpora quadrigemina*, which form its anterior external boundary, approximate more and more. From it arises the *aquaeductus Sylvii*, whose cover, roof, is formed by the *corpora quadrigemina*, and which are produced from the existing components of the spinal cord similarly as the cerebellum at its place.

The *corpora quadrigemina* are an apparatus, which serves for the coordination of movements and, according to all experience, those particularly arising through sight, the

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eyes. They are then a reflex apparatus which is chiefly engaged in transforming the impressions of sight into appropriate, suitable movements, without their being really intentional and thus having been willed, as it seems. Actions occur, which look as if willed and yet are not. They are involuntary. After they have been executed or as they were being executed, the individual is first conscious of them. The person is often ashamed of them, regrets and is unable to pardon them; and do we not find these in animals, particularly in the well-trained dog?

A light, a bright flash, occurs, and at the same instant we quickly jump aside, possibly cry out, thus pushing, even injuring persons, upsetting, destroying valuable objects. We were startled, as if stupefied by fear; we involuntarily sprang back; how and what happened we only clearly understand later, after it has occurred. We then become conscious of what has transpired, and how improperly we had behaved. A dog often acts very much in the same way, which, surprised by the unusual sight of a person and is thus startled, leaps at him, seems inclined to bite, until it recognizes the person as a friend and now ashamed slowly sneaks away with lowered head and tail. When the horse quietly trotting along the pleasant path of the shady park suddenly sees a large gray stone threateningly projecting from the thicket and so, startled, shies, then to all appearances a very similar process has occurred as in the dog, which snapped and would bite, and very similarly it might also be finally with a wild animal, *e. g.*, a doe, which I had approached to within six or eight paces, by stealing upon it through the bushes, and the moment it spied me on raising its head, turned and leaped into the pikes.

Above the *corpora quadrigemina*, in man and the higher mammals covering them by its posterior parts, the so-called occipital lobes, lies the cerebrum, that part of the entire brain, which our experience has taught that in it alone our conscious actions, which in daily, ordinary life are called the mental, and in the sense of certain philosophers, the intellectual actions or briefly the ideas. The cerebrum is the organ of ideas, soul, mind or, as it is called by naturalists

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and physicians, the psychical organ. All psychical actions, all mental processes of these creatures, occur in or through it—at least not alone, but chiefly—and again there are certain parts by which this especially happens.

As the most prominent of these parts, based on the observations and experiments in physiology and pathology, is the gray matter, which forms its cortex. This, according to what we know of it, is the real, true substance of consciousness and hence also the real, true substance of ideas by which all feelings, sensations, perceptions, thoughts and volition are called to life and so what we call soul and mind, produced. And we likewise have the more right, and are even obliged to assume this, because wherever we have reason to presume cosciousness, we find this substance, a protoplasm changed in a definite way, as its probable basis: so in the central nervous system, particularly in the esophageal ganglia of articulates, insects, spiders, crabs, worms, the so-called mollusks and radiates, as well as finally in the entire body substance of the so-called zoophytes and infusoria. Indeed, should conscious processes exist in the vegetable world and the corresponding states be manifested, they are certainly united with a similar substance, a protoplasm always well characterized as such. Even to a certain degree all protoplasm seems sensitive, *i. e.*, of being capable of sensation, and so then to a certain degree all might have consciousness.

Nevertheless in my opinion it would be very, very wrong to assume that the substance of consciousness, and especially the gray cortex of the cerebrum of vertebrates and with them of man, produces consciousness in a form, principally as abstract concepts and combinations, thoughts, thus solely of itself, in a certain measure automatically. It is often erroneously believed however, in my opinion, as I have shown. This belief descends from an older period, when automatism played a greal role, and not much is known either of the constancy of force or its continuity. Still we do know that no force is lost, but also that no new can originate, but where one or the other seems to be the case, it is always merely a matter of the transformation of

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a definite force into another, especially the transformation of a molar force or movement into a molecular and atomic or inversely, since automatism is out of the question; surely as such strictly. For as there is no real automatism in the whole great universe, so in no part or parcel of it. Such of its parts are however the creatures of Mother Earth gifted with consciousness and such particles the substance of consciousness found in them and with it naturally the gray matter of the cortex of the cerebrum of vertebrates and man. The gray cerebral cortex of man, its substance called the psychical organ, owing to its being the organ of consciousness, concepts, feelings, thought and volition of this creature, never acts automatically, but always to incitement, and to incitement from without, in the latter case from the world; it then acts, as we say in physiology, reflexly. The cerebrum as such is then to be considered a mere reflex organ, like the *corpora quadrigemina* and the cerebellum, or also the spinal cord, from which both have been produced as results of reflex action, as has been shown. Its genesis, its adaptations are evidences of this, if they are considered unbiased and not obscured by old and antiquated dogmas.

The *aquaeductus Sylvii*, the part of the opened central canal of the spinal cord, which is bridged over by the *corpora quadrigemina*, is now widened into a larger cavity, the remnant of the former, original vesicle of the embryo's forebrain. But be it expressly said, in a certain measure superfluously, that this vesicle of the forebrain, like all the other brain vesicles, is only a dilatation of the primary spinal cord, and the cavities merely expansions of its cavity, *i. e.*, its later central canal. Then the *aqueductus Sylvii*, evolutionally a part of the central canal of the spinal cord or spinal cord canal in itself, is broadened anteriorly into a larger cavity of the developed brain, namely its so-called third ventricle and, itself connected with the lateral ventricles by the foramen of Monroe, into the ventricles of the cerebrum. These ventricles in their connections are the remnants of the cavity of the embryonal anterior brain vesicle, which is not filled like its other, far larger part

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with nerve elements from their wall in consequence of growth of its elements, which later become special nerve structures, nerve fibres and layers of gray matter forming the cerebrum, *i. e.*, its two hemispheres.

In this filling of the forebrain vesicle with the products of growth, respectively differentiation, of its wall elements, originally spinal cord elements, on the whole, the type is retained, like that of the spinal cord itself and from it, *i.e.*, according to its design, the cerebellum and the *corpora quadrigemina* are developed. In the division of the spinal cord in its uppermost cervicle portion between the *funiculi graciles* and its thus opened central canal to the floor of the fourth ventricle those of its parts, which had formerly been placed behind each other, now lie side by side. The parts, which formerly were placed anteriorly, now appear in the middle, those found posteriorly, now externally, at the margin. The gray nucleus in its details now shows this very plainly. Its anterior horns, respectively their descendents, now lie close to the middle line, near the raphe, whereas its posterior horns, respectively their descendants, exteriorly to them. The former are connected with reactive, commonly called *motor* nerves, in a certain sense give them their origin; the latter with the receptive, sensitive, commonly called *sensory* nerves, effect their entrance into the central nervous system, indicate, in a certain sense at any rate, their terminal point in it. Yet, as will be remembered from what has been said, the terminal point of the sensory and origin of the motor nerves, which has recently been termed their nucleus, are always related, if many times indirectly, and for this reason, as we have learned, the spinal cord and with it the whole central nervous system, is then the well organized reflex organ, which I have repeatedly tried to describe.

Then the nuclei of the receptive or sensory and the reactive or motor nerves are always united, if the arc of nerve structure, by which it occurs, the so-called reflex arc, is often quite long and frequently turned and twisted, and their nuclei, as in the true spinal cord in the back, lie one after the other, or as its part in the head, beside each other, as well as appear greatly changed in their form.

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In the ventricles of the cerebrum, the third and its lateral ventricles, which we have become acquainted with as an expansion and so as a mere continuation of the central canal of the spinal cord, just as in the fourth ventricle and the *aquaeductus Sylvii*, the conditions correspond. Also in them, respectively in their walls or merely in definite parts, groups of nerve nuclei are collected, as well receptive, sensory, as also reactive motor nerves, and groups of both representing large structures, are separated, being half beside, half behind each other. The *thalami optici* and *corpora striata*, strictly *corpora caudata*, are the most important of this group and correspond, respectively are produced, from the original horns of the spinal cord, the former from the posterior, the latter from the anterior. The former are hence united with the centripetal, receptive, so-called sensory nerves, which they receive especially through the *tegmentum pedunculorum cerebri*; the latter with the centrifugal, reactive, commonly called motor nerves, which they send out through the *pedunculorum cerebri* to the different organs of the body.

I must here expressly state that the centripetal nerves have been formed toward the centre and therefore, so to say, ascend toward the centre, whereas the centrifugal nerves appear from the centre and hence in a certain measure descend from the centre. The processes of conduction, *i. e.*, the motor processes of atomic and molecular kind at their foundation, were the cause and conformable to the way the appropriate motor processes of the world as so-called irritation, acted on them. The world with its motor processes, irritations, and the direction in which these occurred, created the nerves as they are, as centripetal to a definite centre, as centrifugal from this centre to the world again. The centre itself, *i. e.*, its substance as a rule a larger or smaller collection of gray matter, effects the transfer from the former to the latter, brings about the most strongly pronounced effect of the former in the latter and consequently represents what we call force, *i. e.*, motor transmittor or, briefly, a transfer, in physiology, a reflex organ. In it the movements, irritation, are transformed

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into the other, as, *e. g.*, in the closure of a broken electric conductor the electric current into chemical action, light, heat, and by the apparatus connected with it into letters, words, whole sentences, whole songs, and so, if you like, into ideas, feelings, sensations, thoughts, but appropriate motor nerves arising from it, never originate in it of themselves, *i. e.*, automatically.

The *thalami optici*, which correspond to the posterior horns of the gray nucleus of the spinal cord, respectively to its like named processes or columns, are, like these, of receptive nature; the *corpora striata sive caudata*, which in my opinion are homologous structures to the anterior horns of the gray nucleus of the spinal cord, respectively the like named processes or columns, serve, like these, the reactive processes. They effect the reactions, which are produced by the irritation received or, as it is usually expressed, has been apperceived, by its nucleus of gray matter, and these processes are rendered possible, induced by the force transmittor, which exists between the optic thalami and *corpora striata*, *i. e.* through the cerebral hemispheres.

According to this description the optic thalami and *corpora striata*, although as has been said, they are located in the cerebrum, yet do not belong to it, but entirely to the part of the spinal cord from which they have been produced; other authors, brain experts of the first rank, have similarly comprehended and described them, if not in the same way. They have been described as belonging to the large ganglia at the base of the brain and as essential parts of the brain stem, *i. e.*, of the modified, I will say, cephalic spinal cord. But the cerebrum in itself, its real mantle so-called, could then have developed from the part of the gray nucleus of the spinal cord in itself, which is located close behind and beside the central canal, from which, as we assume now, the cerebellum has been formed. From this part of the substance of the gray nucleus of the spinal cord, which might attain a certain capacity for feeling, sensation, the brain mantle as the real organ of consciousness and the gray matter in it, particularly the gray cortex

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covering it, as the real substance of consciousness in vertebrates, man, could then finally have originated, first by ever further elaboration of its chemical condition in the special direction, again by ever further decomposition, as well as organization in the details of its mechanical structure.

Accordingly as the brain mantle has arisen chemically and mechanically, it must act; accordingly will occur the processes of consciousness, which originate in it, *i. e.*, the ideas, feelings, sensations, perceptions and then again the corresponding efforts, impulses and volitions, in short all that we embrace under the term "emotion, mind, psyche." Yet in whatever way it acts, it never acts automatically, but only from excitement, stimulation from without, and this is the creation of consciousness of what excited, stimulated it. Its actions make the individual to whom it belongs, conscious of how the world with its various irritants acts on it, and then how it has to behave properly, because conscious. This organ of consiousness, this substance of consciousness, which according to our statement was developed from and through the whole nervous system of the creatures provided with it, hence originates from whatever these originate. Like all the forces which they manifest, are the forces which come from the universe, in which the force had like value. All individual consciousness, whenever and however it is manifested, can only be a part, a component, of a consciousness which fills the universe. If every thing, every being, is a component of the great, infinite, eternal universe, so must all consciousness, whenever and however we find it, be a component of a great, broad, infinite, eternal consciousness, which extends as far as the universe extends with all that is in it.

Therefore, we may conceive the whole affair as follows: Into the thalami optici, respectively into its nuclei of the gray matter, pass the nerves from the periphery, *i. e.*, the centripetal, reactive, coming from the various organs, because originating in them. Some, *e. g.*, going from the corpora quadrigemina, from the cerebellum and hence centrifugal, reactive, pass to the periphery, to again return as

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new centripetal nerves after they have entered and been broken up in the gray nuclei of the organs named, in a certain measure collected from them. Yet surely by far the most of them ascend as centripetal, reactive,from the corpora quadrigemina into the brain mantle, the real cerebrum, and these are especially the posterior portions, *i. e.*, lying behind the central convolution, with whose mass of gray matter they are united. But now the nerves coming from the periphery, from the sense organs, are reduced in number and size in the collections of the gray matter, which they had to pass through, consequently their mass is as good as collected in the tegmentum pedunculorum cerebri, so now in their transition into the brain mantle multiplications occur. They multiply in corresponding layers of gray matter, in which they break up and, increased in number, again pass out of it. The gray matter in the external inferior portions of the corpora quadrigemina, which, permeated by the so-called concentric laminae medullaris, causes their radiations, especially plain on transverse sections, seem to do this particularly. The centripetal, receptive nerve fibres markedly increased in number in this way, then pass into the gray cortex and unite more or less intimately with its elements. Then from these, new nerve fibres are developed which again pass to adjacent as well as more remote parts of the cortex and unite either directly or by means of the third and fourth or also tenth and twentieth of such transitions, and finally pass out of the cortex as nerve fibres, very similar or like those arising from the anterior parts, *i. e.*, in front of the central convolution, into the medullary masses covered by if, the great medullary layer, to reach through this the corpora striata, respectively its adjacent structure, the lenticular nucleus. In the layers of gray matter, from which these two bodies, belonging together to a certian degree, chiefly consist, the masses of nerve fibres, which come from the cerebrum are reduced in size and number. The opposite of what transpires in the corpora quadrigemia occurs within the corpora striata and lenticular necleus in apparently quite similar manner. In the former the incoming nerve fibres are likewise broken

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up; in the latter those in a certain measure recurrent are again collected. The collected nerve fibres reduced in number then enter the pes pedunculorum cerebri, there undergo further reductions, to all appearances by Sömmering's substantio nigra and then pass on, forming the pyramidal tracts so-called, to the spinal cord, from which they pass out in very definite, characteristic way as centrifugal, reactive nerves to the periphery or various organs of the body.

The last mentioned ways are those by which the corresponding centripetal, receptive nerves from the periphery, from the organs, pass in to be transformed, as has been shown, in the gray nucleus of the spinal cord into centrifugal, reactive nerves, which manifest their action in these organs. Thus reflex arcs originate, by whose arrangements this transformation into reaction nerves can occur and likewise affords the possibility that such reflex arcs are always able to be constructed one from the other, whose efferent and afferent portions are always rooted in or to like named portions of that arc from which they have been developed. That has now actually happened with respect to the brain and likewise the cerebrum. For it represents, as we have seen, merely the closure arc, which exists between the elements of the corpora quadrigemina coming from the periphery in the last instance and the components of the corpora striata finally terminating in the periphery. The nerves originate on the internal and external surface of the body, as well as in the organs lying between them, *e. g.*, the muscles, as so-called sensory nerves, pass up to the corpora quarigemina, from there go through the cerebrum and then, what is of the greatest importance, through the gray matter of its cortex to the corpora striata, from there descend to the places, organs, from whence they came, and terminate in their most minute parts, by whose action the function of the whole organ is manifested.

Still, to awaken to misconceptions, the nerves, their axis cylinders, as their most important components, are threads of protoplasm. From the protoplasm a number of formative cells, which at a certain period of the process of

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development are arranged in rows, have produced them, the centripetal, receptive, as above shown, from the periphery to the central organs, spinal cord and brain, the centrifugal, reactive, from these central organs toward the periphery. Protoplasm in itself is a very unstable body, in so far all movements, which effect it, to the smallest of its components, its molecules and their atoms, are immediate and appropriate and thus produce its so-called vital properties. These last movements we call molecular and atomic motion; of these we know that they can increase and be transformed into molar movements the ordinary mechanical processes, which we are able to sensibly perceive as such, while we merely infer the former from their results. Movements, which we are unable to sensibly perceive, but must admit as existing from certain of their effects, are termed forces, and those of these forces, which act on protoplasm, or through it, irritants.

The movements of the world, which we are unable to sensibly perceive, of which we know however that they are the basis of chemical action, light, heat, electricity and magnetism, are the principal irritants of the nerves, nervous system. Their relative movements cause an appropriate chemical movement in the ends of the receptive nerves; this is conveyed wave-like in the direction of the origin of the nerves and those connected with them, *i. e.*, by their axis cylinders, so in the receptive nerves centripetally with respect to the centre, *i. e.*, the central reflex arc, whereas in the reactive nerves centrifugally. The irritations of the world, the movements of the universe, hence put the nerves, especially their axis cylinders,in motion and through them the whole body. These nerve movements begin in the apparatuses for the reception of irritation, the sense organs, as chemical, atomic movements, proceed along the centripetal, receptive nerves with an average rapidity of 60—90 m. per second, in the centrifugal, reactive, never more than 30—33 m., and in the deposit of the gray matter between the two, where they are always inhibited, with a still lower rapidity, to finally be transformed in the organs where the centrifugal nerves terminate, into molecu-

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lar movements and through these into molar movements, as such they again return to the universe from whence they came. The chemical, metabolic processes, then manifestations of heat, electricity, occasionally light, finally growth, glandular action, muscular action, mere contractions as entire acts, are all evidences of this. All living beings provided with nerves behave like puppets, which dance, *i. e.*, move, to imperceptable forces, tracks of irritation, when the irritants act on them which are conveyed to them. In vertebrates and man these irritants, if they pass through the cerebrum, particularly its gray cortex, are conscious.

How does this happen? Unfortunately we do not know! As we are forced to assume that consciousness is something inherent in the material of the creature, like all the rest of its forces and so came from the universe, as we naturalists, physicians, comprehend it and its manifestations, which we always merely perceive in connection with the rest of the manifestations of the world, will only comprehend it in a slight degree. However, what happens, when it is produced, when it is active, which had previously been latent, restrained, and is now free, can be determined.

The beings provided with a definite consciousness evidently begin life as an independent creature with a certain degree of it, *i. e.*, are born with it, when all pertinent conditions are considered. Vertebrates and, of them, man, which, especially the latter, are here alone concerned, are born as conscious and, at least to a certain degree, self-conscious beings. During their embryonal, their fœtal state they have had their experiences, and from the first moment that certain of their irritable formative cells became capable of feeling, sensative in the ordinary sense of the word, they have become more and more and so better and better, plainer and plainer, acquainted with the different effects of irritation on them, *e. g.*, the collective and collateral, as well as the successive. But on the collective and collateral effects of different irritations depend the ideas of space, and on the successive, those of time. It has always been claimed, and, as I know, among others by Kant, that the ideas of time

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and space are congenital in man. They are in my opinion; this is due solely to the fact that man, like every animal, particularly vertebrates, meets with experiences, on which they are founded and conditioned, before birth, as a fœtus, embryo. He develops under their influence, grows and matures with them and is therefore born with them. Consider the shark moving in its egg, as this is observed from time to time in large aquariums; consider the chick in the egg, as it becomes ever more cramped by the shell, finally picks its way out; then the so-called movements of the child which are performed by the human fœtus weeks before birth, at first superficial, slow, sluggish, then with every week becoming more numerous, quicker, more energetic, more plainly visible, first here, then there protruding the mother's abdominal walls, because it first here, then there pushes against them and they, as well as itself, are pressed upon; when all this is considered, it must be involuntarily said: It can scarcely be otherwise; at least that is the simplest explanation, as the origin of time and space occurs, as well in and of themselves, as also in so far as they seem congenital.

On the ideas of time and space depends the idea, the feeling, sensation of being something in time and space or, perhaps better, something special in time and space, different from the causes, influences, processes determining them, outliving them, of another kind, existing for itself, independent, in short a self. On the ideas of time and space then depends the self-feeling, the feeling of being a complete whole, an individual, a person, an *ego*. In a certain measure it must be universally developed, where the former have been developed, and, as the ideas of time and space are congenital, so it cannot be otherwise with that, being a self. It may be very weak, dark and vague, a very feeble, indefinite feeling; still present, I might say, it must be. How otherwise could it be understood that the chick, duckling, gosling, but a few hours out of the egg, moves about nimbly, seeks food, like its mother, which has brought it into existence; how could it further be explained that the guinea-pig just born securely trots about and feeds on the

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grass, which it sees its older companions eating, and in some cases when the mother is dead, acts in this way? The mare, cow, goat, ewe or sow, the bitch, cat and others of the kind, might offer the new born young their udder; that these press forward and seize the teats, in which perhaps a sort of chemotaxis co-operates in the form of odor and smell; it might be that an aversion is felt by all these young for their mother and her udder, that they feel as a self in the presence of her and her milk, which can only be doubted by those who doubt their own existence. And as in animals, so it is in man also. Man is also born a conscious being, conscious of himself. This consciousness might be merely limited to a vague feeling of itself; might it be ever so indefinite and mean, it cannot be wanting. Where pain and pleasure are felt, consciousness must be present and pain is surely felt by the new-born when it cries. The first cry of man is one of pain.

On this being, conscious of itself, act the forces of the world, those of the universe, like so many irritants. On its external and internal surfaces, as well as the organs connected with them, they are manifested. By the nerves ascending from them to the brain, as the organ of consciousness, they are conducted to it and then felt according to their kind, as pressure, heat, light, sound, odor, taste, hunger and thirst, as desires to defecate and urinate, motor impulses, etc. But the effect of all these irritations on the organ of consciousness is to produce a state of excitement in it, which is felt as so-called general feeling, is known as general feeling, the existing sensation in itself is pleasant, it is pleasure; if the existing perception, perception itself is unpleasant, painful, it is a pain, respectively displeasure.

Of these processes, conditions, the conscious life, which we ordinarily term mind, is generally composed. For mind is nothing else than the something which makes the living beings and with them man, conscious, self-conscious creatures; the expression *soul* is used more with respect to the mere feelings and particularly the general feeling as to pleasure and displeasure, and the expression *mind* more

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with respect to definite perceptions and their comprehension. In this connection almost without exception we employ the word *soul* especially with respect to mere affective life, which we also term emotional processes, as you like, and the word *mind* with respect to clear ideas which we call intellectual processes, understanding. When we will avoid such a comparison and presume nothing, we then often use the expression *psyche*, particularly in scientific circles.

What has transpired in the affective life, what in the mental life and hence in the intellectual, in the psychical life, is readily repeated as soon as a sufficient impulse recalls the special chemico-physical process on which it depends. This fact is the basis of what we call recollection, what we call memory.

From all these processes and especially from their cooperation, so far as this occurs among them, is produced an ever stronger and clearer consciousness, especially self-consciousness. This creature is ever more, ever clearer, more definitely conscious of itself, as something complete in itself, as a whole existing for itself. The sense of individuality, personality, the ego takes root; the ego, its ego feeling perceives, *i. e.*, recognizes itself as such, as something special, peculiar.

On this ego now depends all emotional, all mental processes; on it depends the determination of the mental, or as is usually said, the moral stamina; on it depends in the given case whether mental health or mental disease exists. This ego, and in its entirety, must be diseased if we can and will speak of a mental affection; otherwise we should, as it happens in ordinary life, speak of its morbid states, which can affect it and make it ill in its entirety, which have not as yet so far affected, pervaded it.

The ego is a feeling. It is the total of all the feelings which have contributed to its formation, and so it is the sum or product of the feelings which have at any time effected it. It is therefore never the same, but changes every moment. However the larger the number of ideas from which it has been formed, the less is the change it undergoes by the addition or subtraction of several new or

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old ideas. It then seems to possess a certain stability, solidity, completeness and on the whole under definite conditions is always manifested in the same, definite, characteristic manner; it presents character, is a character. Whereas the fewer the ideas that entered into the formation of the ego, although many have perhaps cooperated in the course of time, because only a few permanently adhered, and the majority, displaced by new, repeatedly succumb, the ego is weak, very changeable, lacking in a special stamp. It lacks all character, is characterless. Dependent on every irritation, which effects it according to its degree of intensity, it changes every moment; it appears unstable, easily effected, hence undisciplined, profligate, a dependent, respectively a go-between, an instigator, morally insane, whose occurrence has recently been disputed, but nevertheless as certainly occurs as morality and propriety. In the latter case the ego is decidedly out of health, and the more and surely so as the more readily changeable it is, because of its rickety constitution. The ego is always changeable, the permanent, so-called normal, but changes gradually; if it changes easily and at every moment it is unstable, irresistive, frail and hence diseased, at least morbid. As a feeling the ego cannot well be readily diseased. Of affective diseases, emotional diseases, mental diseases, which latter are only definite forms of modification of the first, and consequently to speak of diseases of the ego is, correctly considered, real nonsense. Still it happens very generally, and every one knows well what he is to understand by these expressions. For mutual understanding in ordinary daily life they a re therefore very applicable; but how about it scientifically and where clearness as well as distinctness is desired? In all such cases the persons concerned must be conscious that all these so-called diseases are merely functional derangements in consequence of disorders in the functioning body, *i. e.*, what we otherwise call it in consequence of disease. The fevers in themselves are not diseases, although they are called such, as *e. g.*, the expressions hay fever, intermittent fever, tropical fever, hospital fever, etc., prove; but they are nutritive changes,

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respectively the organic changes produced by them, and these have produced the fever. But the fevers are merely symptoms of diseases, yet not such of themselves.

It is the same with regard to dropsy, jaundice, diabetes, dysentery, etc. They are all in and of themselves merely symptoms, not real diseases. The diseases, which are indicated by dropsy, are those of the heart, liver, kidneys, nerves, especially in the vasomotor nerves. Jaundice is a symptom of liver diseases especially, diabetes, of nervous disease and dysentery, of intestinal diseases, particularly of ulcerations. What then are the diseases at the basis of the so-called mental diseases, affective diseases, diseases of the *ego*, psychical diseases?

Except fever, pains in the head and limbs, digestive disorders, disorders of sleep and other general conditions, except these derangements or symptoms, which are found in every disease and originate in very different localities, respectively in very different organs of the body, the chief, the most significant of the disease concerned, the symptoms the most characteristic of it, arise at the place of the disease, then in the organ diseased. So the symptoms especially important for cardiac diseases originate about or in the heart, those the most characteristic of lung diseases in the lungs, those of liver diseases in the liver, those of kidney diseases in the kidneys. The most prominent symptoms of urinary and sexual diseases are developed in the bladder and genital organs, those of certain diseases of the spinal cord and brain, like many pains, losses of sensation, anaesthesias, like many contractures and palsies, motor disorders chiefly, in the spinal cord and brain; so it is thought that diseases symptomatic of the mental, affective, psychical, which together I have briefly named diseases of the *ego*, that the real diseases at the basis of these must have their seat and be manifested where the *ego* is formed. The cerebrum, particularly the brain mantle, the gray cerebral cortex, which we have become acquainted with as the organ of consciousness, of the *ego*, should consequently be their seat. In mental diseases or, as he calls them, psychical diseases, Griesinger says we have to recognize

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diseases of the brain, and later writers claim mental diseases are brain diseases, or, more strictly, diseases of the forebrain.

All that is correct to a certain degree. Yet on it depends what is understood by disease, diseases. If the gross, readily perceptible changes are implied, which we usually term material, organic, or those sometimes produced by poisons, which may still always be ascertained, if by various expedients, I do not know what counter proof may be employed; but if the states of enfeeblement are implied, which are manifested by a certain lack of resistance, a certain liability of balance in behaviour and character, as we have occasionally referred to them, much opposition might be raised. If every state of enfeeblement is regarded from the purely physical, purely biological and therefore from the purely scientific standpoint, because it depends on an implied and hence defective development, as well as excludes a further favorable development, and entails a more or less marked deficiency, every state of enfeeblement is thus to be considered from this standpoint as due to a morbid condition, disease, extinction, still it is not a disease in itself. It facilitates the origin of such a condition, disposes to it, perhaps represents its first incipiency; however a disease as such it is not. Incomparably more than to real diseases, so-called material, organic changes such a state of enfeeblement disposes to functional, physiological changes when adequate irritants, *i. e.*, those altering function, act upon it. At any rate, when such functional changes occur, which depend solely upon atomic and molecular movements, the material or organic changes are developed in time as expression of molar movements; still ere that occurs a certain time elapses, and other irritants may be active and have other effects.

Therefore according to our description it is in fact correct that mental diseases are due to diseases and morbid states of the brain, particularly of the cerebrum or forebrain and its gray cortex, yet by no means by these alone. Morbidly constituted and hence weak, resistless must the brain always be and particularly the cerebrum or forebrain, as

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organ of consciousness, ideas, the ego, when a mental disease occurs, a mental disease can be developed; yet, if the latter actually happens, its cause may be entirely different. And reflect how the ego was originated, that it has been produced by the effects of irritation from the world on the body and its organs, and by these facts again as special irritation to the organ of consciousness, *i. e.*, by ideas, especially feelings, which are induced in it by them, that the *ego* has been formed in a certain measure from the reports, respectively information, from the body and the reception they receive in the individually differently constituted organ of consciousness and hence consciousness itself. Further, as all individuals belonging to a definite group of creatures, to a definite group of vertebrates and hence man, possess on the whole the same organization—because they possess the same organization they therefore represent a special group in their phenomena—and as with this organization they possess the same arrangement of the nervous system, so their consciousness and especially that of themselves, then their *ego* feeling, is on the whole the same. These qualities, which, if presenting a certain, slight difference in their development, are still always met with in all the individuals of a definite group of living beings, are called their existence, their health, briefly normal. The *ego* feeling which is manifested in a definite group of living beings, particularly man and other vertebrates and which we recognize in their character, we consequently name the ego feeling, respectively *ego*, is normal to this group. It is the result of the effect of regular, daily irritants on the nervous system, in general similarly constituted, and particularly the organ of consciousness.

But now it is different, irritations, enfeebled by too frequent occurrence, act without uniformity, first very intensely, then relatively weak; the nerves, changed for some reason or other, conduct the same impulses differently than usual, too rapidly or too slowly; the morbidly constituted and hence weak and resistless, easily paralyzed organ of consciousness receives them in accord with its constitution, it perceives the unusual irritations, which effect it, in

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an unusual, especially too violent or too feeble,manner and, as any violent or so-called dull pain teaches, more or less strangely, unpleasantly, the ego apperceives relatively new ideas in a way not unknown to it, with great pleasure, displeasure or indifference, in short, in an unmistakably changed manner, unmistakably changed character, then it is diseased, and without being able to prove that it is based on a real, material or organic disease of the brain, respectively forebrain. The individual is then mentally diseased, is insane or, however else we may call it, and is then in and of itself wholly indifferent whether it is an animal or a man. For a corresponding change of character also occurs in animals, and change of character is generally the surest sign of mental disease, is the surest sign of a mental disease, an insanity.

And all that can be without our being able to discover, respectively prove, the reason, cause. It is usually nothing else than a mere functional change, a so-called functional disorder or functional disease, which, as we have already seen, depends on changes in the fundamental atomic and molecular movements, of which we further know that they may be transformed into molar movements and the mere functional disorders into material ones and the functional diseases into organic, but which, namely the latter, when we find them, are not the causes of the existing disease processes, but rather their terminal states.

Still I must emphatically say it is not always so. There is a large number of mental diseases and mental disorders solely the result of diseases of the brain; they are the so-called idiopathic or, as they are called, without material foundation; yet a much larger majority are without them and only occur in the way previously described; they are the so-called deuteropathic or without demonstrable material foundation. They form, as stated, by far the largest number, and on this fact the older alienists in their time advanced the proposition; mental diseases are merely brain diseases, which in a certain degree was raised to a dogma. No, mental diseases are not only diseases of the brain, but rather of the whole person. Mental disease may now and

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then be the sequel of brain diseases; still they are especially the sequel of diseases of the whole individuality, which manifest them through itself.

But that largely depends on that which we have learned as to their nature. The ego appears changed, morbidly changed, diseased even, because irritations, differently constituted than formerly, morbidly changed, produced by disease, have acted on it. And that forced us to the assumption, which I find confirmed daily, and which anyone ever so little experienced will also find confirmed, if he can and merely will see that all diseases of the body, whether more of a general or more of a local nature, that each of these diseases are, respectively can be, the cause of a mental disease, of insanity. Rheumatism, gout, typhoid, cholera, influenza, malaria, every pulmonary inflammation, cardiac inflammation, every disorder of the stomach, intestines, liver and kidneys, the diseases of the bladder and genital organs, of the subcutaneous cellular tissue and also periosteal inflammations, tenosynitis, so-called paronychia and dental abscess, can in this way be the cause of a disease of the ego, of insanity; it is essential that the individual be predisposed or, as is usually said, disposed. For if he is not, this lacking the proper disposition, he does not really become ill mentally; he goes through life safely, meet what he may; yet if he is disposed and strongly disposed, in a high degree, any disease which attacks him is only too often the cause of his mental disorder. Even the temporary demands of development, as, *e. g.*, the accelerated growth at the period of puberty and immediately subsequent to it, then become such a cause, and unfortunately with it then a permanent mental debility for the balance of the life.

The disposition repeated referred to, as has been stated previously, consists of a more or less greater weakness and lack of resistance in the individual concerned. Arrests of development in consequence of a hereditary constitutional weakness, inadequacy of the so-called ***nisus formativus***, are to blame. In all such individuals the vascular system, together with its contents, the blood, and the nervous sys-

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tem, are especially weak and frail, because to a certain degree immature. Both are too small and immature for the body and hence are physiologically inadequate or defective, faulty. These persons are both chlorotic and neurasthenic.

Chlorosis and neurasthenia mutually condition and together constitute the chloroso-neurasthenic constitutional anomaly or diathesis, which is a degenerative state. Even though it occurs frequently, daily, it is nevertheless a state of degeneration. Where we find it we have degenerated individuals, and according to the degree it has attained, whether mildly degenerating or profoundly degenerated. The chloroso-neurasthenic diathesis is therefore to be considered very momentous as the chief sign of degeneration, and the more so as its bearers generally present many other degenerative states, as signs of their general degeneracy.

And so then we come to the conclusion that it is only degenerates who are mentally diseased, and that the mental disease which affects them is merely a sign of their degeneration. This is also in accord with the theory of so-called hereditary taint, namely the taint with disposition to various severe diseases, respectively incurable debility, and especially nervous diseases, mental diseases, mental disorders. Unbiased observation and calm reflection show that the so-called hereditary taint is really nothing else and can be nothing else than degeneration due to heredity, which continues from generation to generation, as Nature, at all times and in all places, teaches.

Mental diseases are diseases of the ego, and the ego is a feeling. The requisite details have been given; anything further in this respect seems to me unnecessary. If that is true and it is realized that the feeling is merely a function, a manifestation of life, then it is only natural that mental diseases will be brought about like all other manifestations of life. The fundamental biological law in fact bears upon it, and especially it is the law of excitement of the exhausted and insensible nerves, as Pflüger became acquainted with it, by which they arise and disappear. They vary from the mildest onsets of a changed ego feel-

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ing or, as is usually said, self-feeling, as it occurs in every disease, to the most intense, I might say, falsifications of the ego, when nothing corresponding to the reality can longer be appreciated. The first are not usually included among the mental diseases; the latter alone constitute their real province. However, between both forms innumerable transitions occur, and where this or that case is to be put depends solely on the views and opinions entertained by the experts concerned. Certain cases are always in dispute as to which of these forms they will be assigned, and in Court that will repeatedly present itself to skilled experts.

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THE SUCCESSFUL MEDICAL MANAGEMENT OF EPILEPSY.*

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

EVERY now and then new treatments, so called. which are only combinations or adjuncts to the bromides, are announced for this affection. Nitrate of Silver, the old remedy, Cyanuret of Iron, the next oldest, lately heralded as new, Atropia, Codeine, the latest, *et id genus omne*, have come and gone. All the bromides and every agent that has shown power to suppress spasm, has at one time or another, been heralded as a cure for epilepsy, whereas no antispasmodic unaided by other remedial resources has probably ever cured it. The Brown-Sequard combination and the Bromide of Potassium of his English predecessor and later combinations of newer bromides—sodium, strontium, ammonium, etc.—have proven the best suppressors of the spasmodic recurrency in epilepsy, but to cure epilepsy something more than suppressing, postponing or modifying the explosive paroxysm must be accomplished. To restore the idiopathic epileptic, the victim must be made anew, the epileptic habit and its underlying neuropathic substratum must be corrected and to cure epilepsy in any of its varying forms, the Jacksonian, traumatic, post-febrile, syphilitic, uric acid or other diathetic forms, the whole patient must be treated. The paroxysmal habit must not only be broken, but the causes and conditions which lead to it must be remedied.

The trephine and the toxine, whether autotoxic or coming from without, and the ancestral entailments and present environments, are to be considered in every case. Developing

*Read before St. Louis Medical Society, Dec. 3rd, 1898.

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psychical influences and curative impresssions—hypnotism—are not to be ignored.

I have seen paroxysms developed and prevented by mental impression. In *La Charite*, I have seen the revolving discs postpone its accesses as those of hysteria are overcome there, and even labor delayed.

In the time of the gospels, it was cured by the psychical power of Christ, as Matthew relates, xvii, 15.

"There came to Him a certain man, kneeling down to Him and saying, 'Lord have mercy on my son; for he is lunatic and sore vexed. For oftentimes he falleth into the fire and oft into the water.' And Jesus rebuked the devil; and he departed out of him; and the child was cured from that very hour."—Matthew, Chap. xvii, Verse 15.

To postpone or prevent paroxysmal accesses in epilepsy is one thing, to cure the causative conditions is another. Only continuous nerve rebuilding treatment and persistent long continued complete suppression of the paroxysmal tendency even in the vertiginous forms of *petit mal* will give hope or prospect of cure and in the best handled cases, only in a small per cent., say not over ten per cent. (as in my long experience), will ever a prolonged appearance of cure be established, *i. e.*, where the treatment may be cautiously reduced and withdrawn after a period of from one and a half to two years of absolute freedom from all manifestation without paroxysmal return long after therapy ceases. It is not even then safe to leave the patient without some daily treatment and the maintainance of medical suppression by moderated treatment for another stretch of time equally as long. My rule is to maintain the bromide impression with a daily dose of thirty grains of strontium bromide, alternately substituting from time to time, the sodium, ammonium, lithium, calcium or potassium, salts, with or without Iodide of Potassium, Arsenic, Quinine, etc., as circumstances require, and always with a reconstructive hæmo-neural therapy and alvine digestives and laxatives, as experienced clinical judgment suggest, remembering always that I have under management an unstable neuropathic organism to be re-established in normal stability and

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oftentimes an entire personality of body out of harmony with its environments, to reconstruct and restore. The suppression and control of the paroxysmal currency is but one of the indications in epileptic and epileptoid disease, as in hysteria. In both diseases the time for treatment is in the interim of the attacks. Often the sudden suppression of epilepsy establishes or brings out that far worse psychical alternative, epileptic automatism, epileptic mania or insanity in other forms, showing all too plainly that grave forms of epilepsy are not essentially and exclusively the explosive convulsion, but that the physical psycho-motor convulsion finds expression in a pure psychical equivalent, which is an explosion of automatic violence or of insane automaticity of conduct without actual violence, as we see in the so-called larvated forms of this disease. The action of many cases under bromide suppression of the physical paroxysmal form shows therefore quite plainly that the paroxysm is not all there is of epileptic disease. The epileptic change in the brain of these patients that causes its spasmodic, vertiginous, maniacal and other automatic impulsions, the automatisms of epilepsy and epileptoid states alone constituting a large part of the literature of the disease, must be overcome and altered back to the normal before they may be considered as recovered of their malady. When this may be accomplished with the same certainty that its paroxysms or its vertiginous attacks may be controlled, then shall we have a certain cure for epilepsy. No one remedy probably will ever do this, because we have an underlying morbid condition resulting from many different causes to overcome and reconstruct.

In view of these facts and many other familiar to the neurologist, how futile appears such periodic publications as the Codiae treatment, the Bechterew treatment, and those who put their entire trust in them for the exclusive cure of this formidable disorder, do but lean on broken reeds. These treatments usually include the Bromide of Potassium, not the best of the bromides, and cite a certain limited number of cases in which paroxysms have been reduced in number or suppressed for a time, whereas the only test of

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a reasonably reliable cure of epilepsy is the ability of the patient to remain free of its recurrence for several years, without being under the influence of paroxysm-suppressing medication. We could name a number of such cases in which the original suppression treatment was Bromide of Potassium with hypophosphites and general rebuilding and therapeutic treatment of the whole patient, including cephalic galvanizations,* and others after many years, even twenty or more, where other bromides alternated, filled the same therapeutic office, but compared with the number treated without cure, though with long time suppression, they constitute a comparatively small proportion. Bechterew's is about the latest new plan of treating epilepsy. It is only an evanescent fad. He is reported as giving to the public the record of eight cases treated for a period of six weeks. I have completely suppressed almost any epilepsy I have ever attempted to treat for that length of time and usually much longer on any one of the bromides alone but particularly with the Bromide of Ammonium or Sodium.

Bechterew combined Bromide of Potassium, Codeine and Adonis Vernalis, and gave the combination twice a day with the following results:

"In four cases there was complete suspension of the fits, in the three other cases the fits were replaced by infrequent attacks of vertigo, and in the last case there were four attacks of vertigo and two convulsions. In each case the attacks were very much reduced in frequency; no bad results were obtained. The digestion was not impaired,

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*I claim to have originated the practice of regular cephalic constant current electrizations for restoring normal conditions in the epileptic. Many years ago I was laughed at by members of this society, but not deterred thereby, for my enthusiasm as to the adjunct value of this important therapeutic resource and for my enthusiastic faith in the curability of a certain proportion of cases of this disease.

In a paper read at Toronto, Canada, June 14th, 1881, before the American Medico-Psychological Association and published in the ALIENIST AND NEUROLOGIST for January, 1883, entitled, The Therapeutic Value of Cephalic and Spinal Electrization, my views on the electrotherapy of thebrain in Epilepsy and other morbid cephalic states are fully shown, as well as the physiological experimental results of Laborde, Condorceau and Duval on animals. In that paper is also put forth the experience of Althaüs with this agent in resolving "morbid depositions within the brain" and in the cure of diabetes insipidus, melancholia and auditory delusion by applying the current respectively to the medulla, the occipital lobes and Ferrier's Auditory centers in the superior temporo-sphenoidal convolutions, with our own clinical confirmations.

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the pulse was fuller, the temperature normal, diuresis increased, sleep uninterrupted and calm, the mental condition unchanged. The author believes the results were due to the combination of drugs, not to the bromide alone."—De Cesare (*Rif. Med.*, August 13, 1897), *British Medical Journal.*

Now this is not such repression even as I am accustomed to secure almost habitually in all my cases whether they finally recover or not, and I have had a number of cases to recover when put on a course of Bromide of Sodium, alternating with Bromide of Strontium, Ammonium, etc., and combined with pepsine, pancreatin, laxatives, largely milk, vegetable and bread and lean meat diet, and neurotic reconstructives, and go out from under a three or four years' treatment without ever having a second or third or fourth paroxysm from the time treatment was begun in earnest with them. The returning vertiginous sensations are as ominous and foreboding of failure as the recurrence of the convulsive paroxysm. Recent fractures are to be trephined, old ones may be explored but they are not hopeful, syphilitic conditions treated, and when epilepsy appears for the first time in middle life without a history of traumatic cause and not following the eruptive fevers, syphilis may be reasonably suspected.

Such announcements as those of Bechterew show the novice in the neurotherapy of epilepsy. There is no safety or assurance of cure in either grand or petit mal where a sign of the spasmodic neurosis appears after treatment is begun. To be safe all expression of the disease, convulsive, vertiginous or automatic, must be wholly suppressed and kept so, pending the reconstruction of the underlying morbid substratum which determines paroxysmal manifestation.

Combinations of the bromides with Cannabis Indica, Chloral, Codiae, etc., which modify and partly suppress the epileptic spasmodic explosion, add nothing to our simpler armamentarium and but encumber the already over-burdened literature of this subject with superfluous rubbish.

Neurotherapy in this affection has passed the period of paroxysmal control and modification of the epileptic status.

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Glonoin, Nitrate of Amyl and other inhalents, rectal Chloral enemata, and the bromides blended with narcotics, have all been duly rated in Neuriatric judgment. What neurology yet seeks to discover is a cure for the brain change that makes the epileptic or epileptoid symptom display, not new combinations to control either the vaso-motor or psycho-motor spasm or the morbid impulsions of epileptic disease. This knowledge is coming to us in what we are learning of the treatment of neurotherapy in general and neurotic individuals in particular.

I am inclined to attach a good deal of importance to the auto-toxine theory of the excitation of the epileptic paroxysm and to engastric and lower intestinal and septic irritative conditions as causative factors of epileptic paroxysm, but not of the epileptic predisposition in the brain.

The reputation that nitrate of silver once had in the treatment of epilepsy was acquired, I think, by its property of destroying intestinal toxines. It is still good for that purpose. The first case of monthly recurring grand mal paroxysm I ever successfully treated in the beginning of my career, was apparently cured by a principally milk and porridge diet, the Argenti Nitratis and open bowels. This young man was fond of a mixture of one part beer and two parts milk, which I allowed him to take moderately every day. He recovered in 1859 and 1860 and has been well ever since. When nature fails the mineral acids and proper intestinal antiseptics are necessary, in my judgment, to recovery of any case of epileptic or epileptoid disease. The rational management of epilepsy consists, as already intimated, in treating the entire patient by all agencies and every environment, mental or physical, which will exalt the patient's nerve tone, improve his nerve stability, especially in the psycho-motor areas of the brain and promote his general welfare. Prof. William Pepper has recently reported a case (*Southern Practitioner*, vol. xx, no. 2) successfully treated for eight years with Antipyrine and Sodium Salicylate, and I have certainly cured epilepsy and paralysis both in isolated instances with quinine and salol, once, a child's paraplegia simulating polio-myelitis anterior with quinine,

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and have often cured epilepsy coming on in adult life with protiodide of mercury, potassium iodide and the bromides.

Every form of toxhæmia calls for removal in the treatment of epileptic disease, just as much so as the gummata of syphilis, the depressions or osseous spiculae of cranial injury, reflex influences or cardiac disturbance.

While the symptom complex is comparatively simple, in grand mal, *viz:* a characteristic trinity of unconsciousness, convulsion and recurrency, its etiology is often a complex problem taxing all clinical resources. Lithemic, gouty, neuropathic, syphilitic and malarial, states, etc., all present matter for consideration in the study of epilepsia and epileptoid disease.

To know epilepsy well is like knowing rheumatism, gout, syphilis and the neuropathic diathesis, etc., well, and to know these well, is to know very much of the broad field of clinical medicine.

It must be plain, then, that the alternation of the bromides, the blending of them, the employing of them singly, the immunizing of the *primae viae*, the perfect digestion of its contents, the regulation of the whole organism back into physiological channels of action wherever it has gone awry, constitute the scientific and clinical rationalé of the treatment of this grave disease, for very much is wrong when the cerebral inhibitions can let the brain go into coma and convulsions and the alternative psychic states of epilepsia. A weakened vaso-motor mechanism and stricken consciousness or psycho-motor center disturbance fraught with after consequences involving the after mental stability and integrity of the individual, the degeneracy of offspring and often the safety and life of others about the victim, are involved in the question of the management of this disease in its various phases. Our success depends upon the proper management of the convulsion, while failure is likely to follow the exclusive treatment of the convulsive features of this disease, for it also has vertiginous, somnambulistic, automatic, psychic and impulsive alternative aspects and an underlying cerebropathy and a neuropathy often involving more than the brain in disease.

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ADDENDUM.

In the discussion of this paper before the St. Louis Medical Society, Dr. Geo. I. Stevens' and Ambrose L. Ranney's marvelous claims of success in the treatment of this disease through rectification of errors of refraction, etc., in the eye, were cited and the following record was given from Stephens: Out of twenty-six cases, seven were pronounced cured, nine ameliorated, three practically cured, three not cured and four not counted. Of the three not cured, two had floating kidney. Now here are seven cases pronounced positively cured and nineteen of them not cured, yet the doctor includes all of these but three in his net of cures, though he pronounces only seven as emphatically cured.

Floating kidney accounts for two cases not being cured, but floating kidney is not an ordinary cause of epilepsy. Like any other condition external to the brain but in nervous communication with it, floating kidney may be an exciting cause. But more people with floating kidney are found without epilepsy or other neurosis than with this anomaly.

We would suggest if Dr. Stevens would trace up his cases with a neurologist's and an alienist's knowledge of the alternative states epilepsy assumes, its epileptoid, somnambulistic, automatistic, maniacal, impulsive, procursive, and other psychical equivalents and alternative states, as nocturnal epilepsy, which supplement and substitute grand mal under new environment and psychical impression, he would not be so positive about the value of eye treatment in the cure of epilepsy.

Visiting a distant city under the influence of expectancy and new psychical impression may postpone or alter paroxysmal manifestation in kind and time, and the removal of irritations through either the eye, the ear, the nose or other sense, or of peripheral disturbance elsewhere as genital, rectal, laryngo-pharyngeal or cutaneous, may and does ameliorate, postpone or alter the paroxysms sometimes and all extraneous disturbances communicating with the brain should be removed in the treatment. A diseased rectum

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or bladder, a flatulent bowel or stomach, deranged catamenia, ulcerated cervix, damaged ovary or any organ, ought to be corrected in any rational plan of treatment, but the *casus epilepticae* is neither in a diverted nasal septum, damaged accommodation or uterine trouble, though each may act as exciting or developing cause of a paroxysm. These ophthalmologic gentlemen, Messrs. Stevens and Ranney are troubled with mental obliguity on this subject. Their errors of mental accommodation prevent them from duly considering all the facts. They are exophoric in their logic and leave out some of the clinical features in their calculations of this multiform display disease. They see only with ophthalmic vision and confine themselves too closely to the range of their perimeters. The neuro-psychiater does not see epileptic cures as they discern them. One of my melancholic patients went once to Dr. Stephens to get his eye trimmed (as he called it) and after the first operation came back, saying he was going to get well. He went again for a second operation, and in the mean time came out from under the codeine, nux vomica, phosphorous, etc., which I had given him, and in a resistless morbid impulse of depression, shot himself on his return home, at Chicago.

To avoid lengthening the paper into a book and because it is not a kindergarten effort for kindergarten pupils in neurology, I contented myself in the body of the paper by saying that the whole patient is to be treated all over wherever a remedy of any function or removal of any irritation is required, in the successful management. This includes the correction of all errors of refraction, whether they precede or follow the neurotic causes which make the epileptic habit, or are developed by and from the evolutional neuropathy of epilepsia or epileptoid. The latter being most usual. The same is true of the so-called eye migraine. We have no objection to dividing our work with our ophthalmologic friends, but object to surrendering to them the whole field of neurological medicine.

In the discussion of this paper the habitual use of glonoin as a continuous treatment was advocated by my friend, Dr. Given Campbell, not as a mere aborter of parox-

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ysms. This method of using glonoin should have further attention bestowed on it. It may be possible to so employ it as to supplant the bromides or often supplement them. It ought to be a valuable resource in intractable forms of cardiac epilepsy, the most unpromising of all epileptic conditions.

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DEGENERACY AND MARRIAGE.*

By EUGENE S. TALBOT, M.D., D. D. S.

Fellow of the Chicago Academy of Medicine; Professor of Dental and Oral Surgery, Woman's Medical College, Chicago, etc.

In that point so precise in each degree
That they bred in and in, as might be shown,
Marrying their cousins—nay, their aunts and nieces,
Which always spoils the breed, if it increases.

BYRON has thus sung of the old popular belief in the advantages of cross-breeding, which arose originally in the practice of exogamy (marriage outside the tribe), or, more often, outside those having the same totem, or coat-of-arms. In all probability, casual observation of deformities after intermarriage enforced the prohibition which arose after the killing of female children had led to exogamy. Totemic relationship was often far from being consanguinous. The idea of incest, as Byron's stanza denotes, is of religious origin rather than innate. Its original nature was often removed by priestly dispensation in Latin countries. From this practice sprang the medical, theologic and legal notions to which D. Hack Tuke thus refers:

The danger arising from marriages of consanguinity has been insisted upon from time to time by medical writers, and has been recognized by ecclesiastical authority, civil law, and by popular belief. As regards ecclesiastical and civil law, it would be more correct to say that the marriage of those very nearly related has been forbidden on other grounds than that of the alleged danger to mental health. At the same time the justice of such laws receives support if medical observation leads to the conclusions that consanguineous marriages tend to generate idiocy and insanity."

*Chapter IV of Degeneracy: Its Signs, Causes and Effects: being the forthcoming Volume XXXVI of the Contemporary Science Series.

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The biologic evidence from experiments of Maupas on parthenogenesis elsewhere cited, are seemingly supported by the results of animals breeding in-and-in. The evidence advanced against such marriages seems at first sight exceedingly strong from a biologic statement in man. Rilliet cites cases tending to show that consanguineous marriages in themselves pernicious, tend with certainty to lower vital force. The effects he divides into two catégories; those which relate to the parents under which head are:

a. Failure of conception.
b. Retardation of conception.
c. Imperfect conception.

Those which relate to the progeny:

a. Imperfections of various kinds.
b. Monstrosities.
c. Imperfect physical and mental organization.
d. Tendency to diseases of the nervous system, such as epilepsy, imbecility, idiocy, deaf-mutism, paralysis and various cerebral affections.
e. Tendency to strumous diseases.
f. Tending to die young.
g. Tendency to succumb to disease which others would easily resist.

C. H. S. Davis, of Meriden, Connecticut,* states that intermarriage in families leads to a degeneration that manifests itself in deaf-mutism, albinism and idiocy.

Isaac Ray is of the opinion that consanguineous marriages repeated through successive generations account for numerous instances of insanity and idiocy occurring in quiet, rural populations of New England, far from the excitement of city life, which are generally supposed to be more productive of mental unsoundness.

S. M. Bomiss, of New Orleans, Louisiana (after giving a report of the condition of the offspring of 580 intermarriages of first cousins gathered mostly by medical men from nearly every State in the Union), says: 2,776 children were born of these cousins of whom 793 were defective, 117 deaf and dumb, 63 blind, 231 idiotic, 24 insane, 44 epileptic, 189 scrofulous, 53 deformed and 637 died early.

While these figures seem very demonstrative, they contain a great many elements of error. One of these is incidentally pointed out by Arthur Mitchell,† who finds that under favorable conditions of life the apparent ill effects of con-

*ALIENIST AND NEUROLOGIST, October, 1898.
† *Edinburgh Medical Journal*, 1865.

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sanguineous marriages are frequently almost *nil*, whilst if the children are ill-fed, badly housed and clothed, the evil may become very marked. He calculates that the percentage of consanguineous marriages generally in Scotland is 1.3, or ten times less than with the parents of idiots. Taking his figures a strong case seems to be made out in support of the opinion that idiocy, among other evils, results from intermarriage. Langdon Down, although his figures are not of so unfavourable a character, admits consanguinity as one of the causes of deterioration.

George H. Darwin concluded from a careful investigation that about 4 per cent. of all marriages in England are between first cousins, and between 2 and 3 per cent. in the smaller towns and in the country; with these he compared the rate of similar marriages among the parents of lunatics and idiots in asylums, and found it to be about 3 or 4 per cent.—not higher, therefore, than in the general population.

Huth* cites instances occurring regularly at the present day among certain isolated communities (St. Kilda, Pitcairn, and Iceland) without apparent evil consequences to the race. Such marriages were (according to Strahan) common among the North American Indians and the South Sea Islanders, people among whom idiocy and other degenerate hereditary conditions were, remarkably rare. These cases, Strahan remarks, deal with peculiarly healthy communities. Therein lies the secret of such intermarriage proving innocent of evil to the offspring. Were such intermarriage common among the degenerates the result would be disastrous.

In 1869 the New York State Medical Society† appointed a committee to investigate the influence of consanguineous marriages upon the offspring. Their results show clearly that if the family be free from degenerate taint, marriage among its members in no way diminishes the chances of healthy offspring. This conclusion is in accord with the findings of recent investigators like Anstie, George Darwin, and A. H. Huth, according to whom there is no greater

* *Marriage of Near Kin.*

† *American Journal of Insanity*, 1869-70.

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amount of morbidity or abnormality among the offspring of consanguineous parents than among the children of parents not so related, provided the parents be equally free from tendency to disease or degeneration. With a perfectly healthy stock, as every breeder of animals knows, remarks Strahan,* "in-and-in breeding" may be practised with impunity, but where the stock is tainted with disease or imperfection, safety is only to be found in "crossing."

Where the error lay in the old doctrine, upon which was founded the prohibition of consanguineous unions, was not, as Strahan remarks, in asserting that disease and deformity were more often met with in children of these than in those of other unions, for that is true, but attributing these unhappy results to the mere fact that the parents were related by blood. Over and above the fact that these consanguineous marriages are almost certain to transmit in an accentuated form any defect or tendency to disease already present in the family, there is no physiological reason why such marriages should not take take place. Breeders of prize stock frequently breed "in-and-in," not only with impunity, but with marked benefit. But this fact, while going to prove that it is not the mere blood relationship of the parents which induces the degeneration so often found in the children of consanguineous marriages, can but rarely be advanced as an argument in support of the marriage of blood relations. The stock-raiser only permits the more perfect members of his flocks and herds to continue their kind, and for this reason the "in-and-in" breeding is innocuous, just as it would be in the human family under like conditions. But where shall we find the perfect human family? Such families are certainly rare. The laws of natural life have been so strained and perverted that almost every family nowadays has a taint or twist of some kind, and as all such imperfections are transmitted and rapidly deepened and fixed in the family by the intermarriage of its members, it is best that such unions should be forbidden.

Recently acquired characters, whether physiologic or pathologic, are very liable to disappear when the individual

* *Marriage and Disease*, p. 266.

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bearing such characters intermarries with another of the same character. The natural tendency is then to revert in the offspring to the normal or healthy type, so that unless the new character be very deeply impressed upon the parental organism it is almost certain it will not appear in the offspring if the other parents have nothing of the character. But when both parents are possessed of the character, whether it be physiologic or pathologic, this natural tendency to revert to the original is often overborne and the character is repeated in an accentuated form in the offspring.

Now this accentuation of all family characters is what must always happen in the case of consanguineous marriages. If there be any taint in the family each member of the family will have inherited more or less of it from the common ancestor. Take the case of cousins, the descendants of a common grandparent who was insane and of an insane stock. Here the cousins are certain to have inherited more or less of the insane diathesis. Even if the taint has been largely diluted in their case by the wise, or more likely, fortunate marriages of their blood-related parents, yet will they have inherited a certain tendency to nervous disease, and if they marry they must not be surprised if that taint appears in an aggravated form in their children. Some of the children of such parents are generally idiotic, epileptic, dumb or lymphatic, and the parents marvel whence came the imperfection. It may be in some cases that the parents, and possibly the grandparent, of the unfortunate children, have not up till that time displayed any outward evidence of the tendency to disease which they have inherited and handed on to their descendants; and, not looking farther back, the parents boldly assert that such a thing as insanity, epilepsy, scrofula, &c., is unknown to their family. They themselves have never been insane; why, then, should their children? In like manner children may be epileptic, blind, deaf-mute, lymphatic, cancerous, criminal, drunkards, or deformed from direct inheritance, and yet the family line be honestly declared to be healthy. Hence the truth of Sir William

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Aiken's maxim, that "a family history including less than three generations is useless and may even be misleading." From the foregoing it is evident that the similarity of temperament induced by a common environment, which Strahan would call "social consanguinity," must be a potent factor in the production of all hereditary degenerations. Living under similar customs, habits and surroundings, laboring at the same occupation, indulging in the same dissipation, tends to engender like diseases and degenerations, irrespective of any blood relationship. Hence it not seldom happens that persons not even distantly related by blood are, in reality, much more nearly related in temperament than cousins, or even nearer blood relations who have experienced widely different modes of life. This "social consanguinity" is the great curse which dogs every exclusive tribe and class, and hurries them to extinction. It has aided real or family consanguinity in the production of the degeneracies which have fallen so heavily on the royalties and aristocracies of Europe.

A crucial test of the opposing positions taken respectively in such a positive manner by Bemiss and Strahan would be a family intermarrying extensively, but placed under favoring conditions unlikely of themselves to create degeneracy. Excellent cases of this kind are furnished by Bourgeois* and Thiebault.† Bourgeois gives the history of his own family, which was the issue of a union of the third degree of consanguinity. During the ensuing 160 years there were ninety-one marriages, of which sixteen were consanguineous. All of these latter were productive. There was not a single case of malformation, or other physical or mental disease in the offspring.

Thiebault reports the case of a slave-dealer who died in the year 1849 at Whidah, Dahomey, leaving behind him four hundred disconsolate widows, and about one hundred children. By the order of the king the whole family were interned in a particular district, where reigned the most complete promiscuity. In 1863 there were children of the

* Cited by Ribot, Heredity.
† Cited by Huth.

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third generation. Thiebault, after verifying these facts, states that at that time although these people were born from all degrees of incestuous unions, there was not a single instance of deaf-mutism, albinism, blindness, cretinism, or other congenital malformation. From these cases it is evident that the position of Strahan is not too strongly taken.

While it is true that "like clings to like," still this does not imply kinship, but it very often implies likeness in mental characteristics. This tendency has been shown to be present in the neurotic by Roller,* De Monteyel,† Kiernan,‡ Bannister,‖ and Manning,§ so far as Germany, France, the United States, and Australia are concerned. Bannister puts the statistical proof of this tendency very forcibly as follows: "There are in Illinois, according to the most recent estimates, in round numbers, about 6,000 insane, or one to a little over 500 of the population. Even if we double, treble, or quadruple this frequency to include all that have been or are to be insane, as well as those insane at the present time, it would not appear that there was much probability of two insane persons being married according to any ordinary law of chances. In fact, we find four out of the 104 with insane heredity had both father and mother insane. In one of these cases the insane heredity involved both parents and both grandparents on each side, though in the case of the latter the histories show it only as collateral. Besides these, three patients had direct paternal and collateral paternal heredity, and in one case there was collateral heredity of insanity on both sides. This makes altogether nearly 10 per cent of those with insane heredity with it on both sides, maternal and paternal, and thus favored with a double opportunity to inherit mental disease. If we add to this the instances where, with insanity of one parent, there is reported either

* *Allgemeine Zeitschrift fur Psychiatrie*, B. xxvii.
† *L'Encephale*, Oct., 1882.
‡ *Detroit Lancet*, October, 1882.
‖ *Journal of Nervous and Mental Disease*, 1883.
§ *Australian Medical Gazette*, 1886.

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epilepsy, hysteria, or drunkenness, "brain disease," nervousness of the other, the ratio of double inheritance is over 20 per cent.

The beneficial effects which may result from atavism are, it will be obvious, offset by this tendency of the neurotic to intermarry, thus perverting the principle of atavism to the assistance of degeneracy.

The age of the parent plays a part in degeneracy. Conger* (whose results have been corroborated by Joseph Workman,† of Toronto, and Kiernan† of Chicago) points out that in all degenerative forms we must take into consideration this factor, since it determines the development of degeneracy in childhood. Hereditary taint may be transmitted to descendants as a simple neuropathy, as a neurosis, or as a defect of development reaching even to idiocy. Conger finds the prevailing age, especially the age of the mothers of degenerates, is often between twenty and twenty-five years, and that hence there exists a relation between this age and the greater transmission of degeneracy to the offspring. Marro, who has specially investigated the influence of the age of the parents, both in the normal population and among criminals,‡ finds that among all classes of criminals there is an excess of immature parents (under 26) or senile parents (over 40), and that only but few and these minor offenders possessed a normal number of mature parents (26 to 40 years).

Man between 20 and 25 is in as favorable condition for procreating degenerates as in the very aged. Because of incompleted organic development he has been unable to free himself from hereditary taint which he transmits to his descendants, but which in maturer age, through the influence of adaptation, evolution, or education, might perhaps be more or less notably modified. The organism between 20 and 25 is yet incomplete; education has not been able to exert much influence in determining those possible changes which are adapted to modify congenital

* *Il Manicomio*, May, 1886.
† ALIENIST AND NEUROLOGIST, January, 1857.
‡ *La Pubertà*, 1898, pp. 242-60.

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tendencies. In a word, the individual between 20 and 25 feels too much the influence of atavic characters, and too readily transmits to his posterity the brands of degeneracy. Experience has made it well known that the children of the aged readily show degenerate types. Many children of old fathers have undoubtedly inherited all the characters of the weakness of the age in which they were begotten. Old age represents the period of retrogression, of involution, and hence readily transmits the mark of degeneracy. The children of either too young or too old parents, failing to escape hereditary predisposition, may from birth inherit those characters which are proper to incomplete organic development or to the period of involution.

Kiernan has had under observation a Nova Scotian family of Scotch extraction, the mother of which continued to bear children until she was 63 years old. There had been no pregnancy between 50 and 56. At 56 a son was born who had ear, jaw and skull stigmata, and became a periodical lunatic at 25. A son, born a year after, was a six-fingered idiot, with retinitis pigmentosa. Three of the next children (two boys and a girl) became paralytic idiots in infancy. Here the degeneracy was expressed in that tendency to military aneurismal weakness of arteries to which E. C. Spitzka* called attention a decade ago. One of the next children was a periodically sexual invert female. The last child was an epileptic. The children born before the age of 50 were normal and averaged 60 years of age. The association of multiple fingers and hemeralopia is as Darrier† has shown far from rare as an expression of degeneracy. Darrier's cases had the following hereditary antecedents: One father had hemeralopia; one mother had defective vision; a grandfather was blind at 30; a grandfather was blind in one eye, and an uncle had congenital iris coloboma. Only one patient examined did not have hemeralopic descendants. Six patients examined belonged to five different families, all consisting of five or six chil-

* *Transactions International Medical Congress*, 1887, p. 264, vol. v.

† *Archives d'Ophthalmologie*, 1887.

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dren, one-third of whom had hemeralopia. Among thirty-five children there were eleven hemeralopes and two (six-fingered) children, who died too young to determine the existence of retinitis pigmentosa. The disease in all began in childhood, and hemeralopia was absent in but one case. J. Matthews Duncan,* Arthur Mitchell, and Langdon Down, have called attention to the influence of premature and late marriage in the production of idiocy. Factors capable of producing idiocy are of course capable of producing less decided expressions of degeneracy.

* *Lancet*, October, 1883.

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STATISTICS AS TO THE FREQUENCY OF SIMPLE ACUTE MANIA WITH RESPECT TO ITS PERIODICAL FORMS.*

By OTTO HINRICHSEN, Zürich.

MENDEL, in his work, Die Manie, eine Monographie, Vienna, 1881, compares "typical mania" with its "varieties" and divides the latter in three ways, by employing as principles of classification: 1. The intensity of the attack; 2. The course; 3. The etiology and 4. The pathological anatomy. So by the first principle of classification, that of the intensity, he gets three types:

1. Hypomania.
2. Mania hallucinatoria.
3. Mania gravis.

Whereas, if he takes the course as the determining factor, he acquires three other forms:

1. Mania transitoria.
2. Mania periodica.
3. Mania chronica.

He then claims it is impossible to define different types by means of the two last differential indications: the etiology and the pathological anatomy. The final results of Mendel's considerations form the basis of four "varieties" of mania:

1. Hypomania.
2. Mania hallucinatoria.
3. Mania gravis.
4. Mania periodica.

Mendel then, as could be expected from his many prin-

*Translated from the *Allgemeine Zeitschrift fur Psychiatrie*, Bd. 54, Heft 5, by Dr. W. Alfred McCorn, Assistant Physician at McLean Hospital, Waverly, Mass.

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ciples of classification, arrives at no further result than that of placing side by side, according to purely external signs, the different varieties of mania accepted by him. Still nothing is said as to the nature of the disease. This censure applies of course not only to Mendel, but in a certain sense to the psychiater, who has always been essentially satisfied with an encyclopediac description of the conditions, instead of trying to group the psychoses *organically*.

But the opinions of different psychiaters as to the nature of mania differ very widely, for Magnan (*Psychiatrische Vorlesungen von V. Magnan*, Heft VI, *Ueber Mania*, Leipzig, 1893, S. 1) claimed that: "Mania, which we class among the simple forms of mental disorder, is, with melancholia, the clinical entity admitted by all and known to the majority. As much as opinions may vary as to its causes, its pathology, all authors diagnose one form at least, acute simple mania;" while Kraepelin, in the fifth edition of his textbook of Psychiatry for students and physicians (Leipzig, 1896), has taken an entirely different position on the question as to the nature and importance of mania, and has directly disclaimed the existence of acute simple mania.

Irrespective of other details, heretofore two quite different forms have been distinguished with respect to the course and nature of mania: 1. simple acute mania and 2. the typical periodical forms of this disease, which are then joined to the circular forms. The latter, the periodical and circular, are regarded as affecting those hereditarily tainted, while acute simple mania is looked upon as a disease which attacks the normal brain. Cases are always observed, which can in no way be easily classified in the preceding scheme, and so controversies always arise. Many a case is neither typically periodic, circular, nor one of simple acute mania. Such observations seem to have induced Magnan to propose his "*Folie intermittante*." This "intermittent insanity" of Magnan should only occur in hereditarily tainted individuals, but also receives the cases, which, receding from the typical periodic and circular forms, approach still more the acute simple mania. Such cases have now and then been called "recurrent mania." But

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Magnan, as far as he might extend the idea of intermittent insanity, was far from wholly eliminating acute simple mania, as Kraepelin has recently attempted. He was content rather to call it a rare disease.

Kraepelin, in the fifth edition of his text-book of Psychiatry for students and physicians, made an entirely new classification of mental diseases, in which he would draw nearer the idea of grouping the psychoses organically. I cannot discuss this classification here. I see in it at least an interesting and worthy effort to advance a step toward this aim and ideal, and limit myself solely to the discussion of one of the questions, which have arisen from this innovation, the question of the existence or frequency of acute simple mania.

Kraepelin divides the mental diseases into: A. Acquired mental disorders and B. Mental disorders from morbid constitution. Under B. then appear those which interest us particularly:

I. Constitutional mental disorders.
II. General neuroses.
III. Psychopathic conditions.
IV. Arrests of development.

The constitutional mental disorders embrace:

A. Periodical insanity:

1. Maniacal forms.
2. Circular forms.
3. Depressive forms.

B. Paranoia with two sub-forms.

In this classification by Kraepelin a large part of what was previously called functional disorders disappear from the "acquired mental disorders," and acute simple mania in particular passes into the "maniacal forms of periodical insanity." Here then the question of etiology becomes important. Shall we then hold to the former idea that simple acute mania is a disease of the normal brain *accidentally* impaired, or is Kraepelin right in considering all and every maniacal attack as *constitutional?*

To settle such doubts we must appeal to facts by investigating definite material: Is there a simple acute

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mania, does a simple maniacal attack terminating in recovery occur in a mentally normal individual untainted hereditarily, or not?

Such an investigation is not easy. It is first of all essential to have sufficient material, which must be subject to observation for the longest time possible, and at best by one and the same observer.

Dr. Delbrück, Privat docent of the University of Zürich, called my attention to the interest which the question of the existence or non-existence of acute simple mania has at present, and referred to the fact that the insane hospital at Burghölzli offers material, which, to examine in this respect, would be remunerative. We have an observation period of twenty-one years. As the diagnoses were often not entered in the books of the hospital in the early years of its existence, we must give up using the material from 1870 to 1875. The number of cases seems large enough to permit a conclusion of some certainty. The requirement that *one* observer should have watched the material, was not complied with. Still only the first four years of this time were under the direction of Professor Hitzig, the balance of the diagnoses were made by Professor Forel. Nevertheless doubts were not wanting from the first, difficulties which justified them, were present soon enough. First of all I must eliminate false diagnoses, hence forms of disease were not counted and included by me, which according to Kraepelin, cannot be allotted to mania, and those within the period reviewed by me must be accurately described and separated from mania. This part of my task could not be easy. I had access to the books of the hospital, to the clinical histories, to conferences and written reports, and in the majority of cases must accept the diagnoses as I found them. Only a few cases in which numerous hallucinations and sense deceptions and a marked confusion were found in the clinical histories, I have excluded as acute confusion. Also other statements of the clinical histories, which naturally present much inaccuracy with respect to the questions advanced at present, caused doubt and hesitation. But still I believe I have guarded against voluntary errors as much as possible.

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If such an investigation as this cannot be allowed absolute value, it always has a relative one. If it is added that the questions pending cannot be solved by another procedure, that one is necessarily referred to the actual material and its statistical elaboration, so the effort expended may not seem to be wholly wasted.

Not only "may we argue, formulate a system in words," but, as is known, with numbers also. Therefore I consider it first advisable to exactly outline my method of procedure.

As a starting point for the figures to be gotten, I had the admission book of the hospital. The clinical histories served for the more exact study of the individual cases. Then letters afforded further insight. These informed me as to what happened to the patients after discharge from the hospital. I first took from the admission book of the hospital all cases, which were admitted with the diagnosis of mania, hypomania, frenzy, further all cases denoted as circular and periodical insanity, as well as those of periodical melancholia. Excluded were: 1. All patients who had died or become chronic in the first attack (first attack in the insane hospital of Burghölzli) and then those in the second place where the note was found, that they had been transferred to Rheinau, the asylum for incurables; 2 all non-residents of the Canton or country, for it could not be assumed that they would return to the Zürich hospital in a new attack. By elimination of the non-residents of the Canton and country, those dying and becoming chronic in the first attack and transferred to Rheinau, my statistics afford no idea of the total number, either of those admitted to the Burghölzli hospital with the diagnosis of mania, or of the attacks of mania among the citizens of the Canton of Zürich admitted to the Zürich hospital from 1876 to 1896. But it embraces *all* the citizens of the Canton admitted with the diagnosis of mania, in whom a recovery might be a question. The percentage of patients and certain recoveries and not becoming ill again to the total number of attacks is then still lower than the numbers I attained. My number only expresses the proportion of those certainly

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recovered and not becoming ill again to the sum of the cases counted by me. There was perhaps among those who died or became chronic, a whole series of cases, which would have increased the number under my heading—established *periodical* mania.

In the books of the Burghölzli hospital every patient receives a number on admission. If he comes a second time, he is admitted under a new number, a note refers the new number to the old one. So it was the result of my first work on this material that I found a number of patients, who had been admitted to the hospital *two* to *four* times, while another group seems to have only been admitted *once*. That all cases admitted several times are those of periodical mania, was not to be doubted. In what sense I here use the term periodical mania, I will more fully explain later. But in regard to those other cases, which had only *one* admission number, it was shown by examining the clinical histories that some had been admitted to Burghölzli, that others had had an attack of mental disturbance, with or without hospital treatment.

It may be asked as to how far I believe myself justified in briefly labeling periodic, all cases admitted several times, without more careful examination and certain evidence of their periodicity. For the purpose of definitely ascertaining, whether there is an acute simple mania, a single maniacal attack terminating in recovery in an otherwise mentally normal individual, it is necessary to create two distinct divisions. It must at least be possible to isolate the cases certainly recovered, and to place opposite these the indistinct bulk of those cases in which many attacks have occurred during the life time, which then could be called "periodical insanity" in the Kraepelin sense. Whether and how far Kraepelin's idea is authorized, even when the statistical evidence of the non-existence of simple mania (in the Kraepelin sense) is furnished, is naturally an open question still, to go into which, would far exceed the limits of this paper. I limit myself solely to the statistical investigation. For this the evidence is sufficient that all these cases are not to be interpreted as simple

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mania in the above sense, and in this respect it was indifferent to me, whether the periodicity is more or less evident, whether the cases were to be called according to Mendel's terminology, chronic mania or true periodic mania. "As periodical insanity," Kraepelin says (*Lehrbuch der Psychiatrie*, V. Auflage, Leipzig, 1896, S. 595), "we call those mental disorders, which recur many times in a life time without external cause." And below on the same page the author continues: "Individual outbreaks of the psychosis are not independent diseases, but merely the outward signs of a constant morbid state, which is gradually predisposed to the attack." Such an idea perhaps better accords with natural circumstances, than the artificial separation into periodic and chronic mania, to which many cases with very irregular attacks cannot be subordinated. The "chronic morbid state" may here be the essential factor and produce the individual attacks independently of external influences. Kraepelin goes still further and will consider this *one* attack the sign of a periodic disturbance, though only *one* attack occurs during a life time. On such a basis naturally every attack of acute simple mania, *i. e.*, every attack of maniacal disturbance, in which I prove that it occurred only once in the individual's life, and who was otherwise mentally normal, could be explained by calling it periodical, *i. e.*, developed on a chronic disposition, and not simple and acute. This idea is supported in part by the rarety of such single attacks, and I have undertaken to prove this by the Zürich material.

My first result taken solely from the admission book of the hospital shows that:

128 patients were admitted only "once,"
129 patients were admitted several times.

Of these 128 admitted only "once," 74 on examination of the clinical histories prove to be periodical in my sense, so that I had in all 203 periodical cases. In ten cases I failed to obtain sufficient information, as there were no clinical histories. They were wholly excluded and not counted at all, and I have also hesitated about three others, because I was convinced that they were not mania, but acute confusion.

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The 203 periodical cases embrace: Ten cases of pure periodical melancholia, nine circular and two cases which I found labeled periodical insanity. The 128 or, on deducting the seventy-four known to be periodical, fifty-four cases only admitted once include: One case of periodical insanity and two circular cases. The ten cases of periodical melancholia mentioned, in no way show the total number of periodical melancholiacs admitted from 1876 to 1896. A more thorough investigation, as I made in the cases which are not recorded in the admission book, but entered in the clinical histories and shown in their report to be *all* melancholiacs, not apparently periodical at the first glance, will probably afford greater results.

I first give my cases according to the number of *patients*. The number of patients examined is 257, of whom 98 are men and 159 women. Admitted in the first decade: 55 men and 104 women, in all 159 patients. Admitted in the second decade, which is exactly eleven years; forty-three men and fifty-five women, in all ninety-eight patients.

Of these 257 patients admitted once and several times with the diagnosis of mania, there were:

1876-1885: 52 men and 97 women.
1886-1896: 37 men and 47 women.

1876-1896: 89 men and 144 women, in all 233 patients.

In this compilation are included all those admitted with the diagnosis of mania, on whose admission the diagnosis of hypomania, mania, frenzy occurred once or several times, if on other admissions different diagnoses are made. Other diagnoses to be mentioned are: Melancholia, delirium, hysterical insanity, delirium tremens, circular psychosis, paranoia, periodical insanity, moral insanity. I will give the numbers later.

Whereas if I take those cases in whose course in each new attack, what is here equivalent to each readmission, the diagnosis of mania is also given, I obtain the following figures:

Patients with *pure periodical* mania:

1876-1885: 18 men and 27 women.
1886-1896: 10 men and 8 women.

1876-1896: 28 men and 35 women, in all 63 patients.

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The number of patients with pure *periodical melancholia* is:

1876-1885: 3 men and 5 women.
1886-1896: 1 man and 1 woman.

1876-1896: 4 men and 6 women, in all 10 patients.

And to complete the picture, the cases in whose course the diagnosis of mania and melancholia alternate, there are:

1876-1885: 0 men and 9 women.
1886-1896: 3 men and 3 women.

1876-1896: 3 men and 12 women, in all 15 cases.

As to the kind of alternation, I am unable to say anything as to these fifteen cases. It seems to be completely anomalous. To be better acquainted with them I would have had to read the clinical histories, which was beyond the scope of my work. To these fifteen cases the nine cases of circular psychosis already mentioned would have to be added, so that we have twenty-four circular cases.

For greater clearness I will summarize what has been said: Of 257 patients, 233 were diagnosed as mania. Of the 257 patients, 128 were admitted "once," as will be remembered, the balance several times. These 128 are omitted here. In the number which is given for the pure periodical artacks of mania, for the circular and for the cases where other diagnoses incidentally obscure the picture, it is a matter at most of 129 cases admitted several times. Of these 129 cases, only sixty-three are diagnosed as mania, in fifteen the diagnosis of mania and melancholia alternate, but not regularly, twenty-one are not diagnosed as mania and in the remaining thirty cases the diagnoses above mentioned are found besides mania.

If one will now have the total number of cases in which the diagnosis of mania always recurs, to the sixty-three cases called pure periodical mania, fifty-one cases only admitted "once," would have to be added, which fifty-one cases were only admitted once and diagnosed as mania. Hence the total number of cases in which the diagnosis of mania was made once or several times amounts to 104.

These numbers of patients are compared to the number

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of *admissions* (diagnoses). My investigations embrace 506 admissions.

Those in the first decade, not including the cases only admitted "once," are 242, and 136 in the second, in all 378. If I add the cases admitted "once," there are 325 for the first decade, 181 for the second, in all 506. The attacks of these 128 patients admitted "once," I could not count, whereas the sum of the attacks of the patients admitted several times are 242, 136, 381. In them I had a certain sign for each attack (the admission to the hospital); while I had elicited from the clinical histories of these 128 cases the number of attacks, from the indefiniteness of the statements I would have been left too much to discretion. So these 128 cases were always counted as 128 admissions (and attacks), although the number of their attacks is probably much higher and could not be ascertained exactly.

To these 506 admissions from 1876 to 1896, forty-six, which occurred prior to 1876, must be added for the sake of completeness, because the patients of these forty-six admissions were re-admitted later (1876 to 1896).

Of these 552, respectively 506 admissions, only in 280 (without the "single" cases), 195 in the first, 85 in the second decade, was the diagnosis of mania made. If I add the "single" ones, the figures increase to 276 and 129, in all 405. Besides thirty-seven of the admissions with the diagnosis of mania were prior to 1876, which are all referred to the cases admitted many times. So the sum of all the cases in which the diagnosis of mania was made amounts to 442. Patients with pure periodical mania participate in this total number with the following admissions:

1876-1885: 154 admissions (+ 26 before 1876).
1886-1896: 42 admissions (+ 5 before 1876).

1876-1896: 196 admissions (+ 31 before 1876).

Consequently for the 63 patients with pure periodical mania there are 196 + 31 admissions. To one patient with periodical mania there are then 3.6 admissions.

To the 257 patients of my statistics there are 552 admissions. From 1876 to 1896 there were 506 admissions, 46 prior to 1876, so that to each patient of my statistics there were 2.2 admissions.

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If I finally compute the proportion for the patients with *periodical mania chiefly*, no matter whether the diagnosis is pure or not, I get:

To 147 patients 1876-1885: 203 (+ 36) admissions.
To 84 patients 1886-1896: 109 (+ 3) admissions.

To 231 patients 1876-1896: 312 (+ 39) admissions.

Each patient with periodical mania was then admitted 1.5 times. In the above table the numbers embraced in parentheses give the number of admissions prior to 1876. But the numbers given are not pure, for from the 203 admissions in the first decade, 58 are to be subtracted, which really occurred after 1886, and from the 109, 16 admissions are to be subtracted and added to (203-58) those which occurred prior to 1886. The real totals of admissions in the first and second decade then are 203 (+ 36)−58+16 =161 (+36) and 109 (+5)−16+58=151 (+5). These 16 admissions, which are included in the second decade, although they occurred prior to 1886, refer to 15 patients, who then would really have to be reckoned in the first decade. I assign them to the second, because they were admitted with the diagnosis of mania for the first time subsequently to 1886.

I do not consider it worthless to arrange all the attacks of mania in another way, namely, as to the number of times admitted to the hospital. Twelve is the highest number I have found.

125 patients, 45 men and 80 women, were admitted *once* with the diagnosis of mania. Thirty were admitted twice from 1876 to 1885; 26 from 1886 to 1896, in all 56 cases. From 1876 to 1885, 13 were admitted three times, from 1886 to 1896, 11, in all, 24 cases. Eight were admitted four times, 6 five times, 6 six times, 4 seven times, one eight times, one ten times and 2 cases twelve times. Then of 106 cases of periodical mania (admitted several times), 42 had been admitted more than twice, then 39, 62%, of 233 cases of mania, 106 were admitted more than once, then 45, 8%. That 125 instead of 128 appeared in the beginning of this abstract, as the number of those admitted "once," was due to the fact that it is here a matter of the sum of those

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admitted "once" with the diagnosis of mania, and among the 128 were found two circular and one case of periodical insanity, 3 cases in all, which had to be excluded.

When it was proven, as above stated, that 74 of these 125 patients are periodical cases, there were only 51 cases for further investigation. Among these 51 cases, were to be sought the possible cases of acute simple mania, the proof of their presence being the purpose of my paper. In 24 of the 51, I could find no evidence of a prior illness, *i. e.*, the patient had always been well. As I received no answer to my written inquiries as to what had become of the patients since being discharged from the hospital, I was wholly in the dark as to the possible relapses. I will designate these 24 cases as "possibly recovered." Now the 17 remaining of the 51 are the fortunate cases of my investigation. I will designate them as "certainly recovered." The clinical histories show that these patients had always been well; and written inquiries indicate that they have had no mental disorder since this one attack.

I present the 24 possibly recovered and the 17 certainly recovered cases in two tables.

TABLE I.

Possibly recovered cases, in whom only one attack could be proven.

PATIENT.	Date of attack	Duration of attack	Date of birth	Age at time of attack	Not re-admitted after
Margaret T.	1876	131			21 years.
Joseph G.	1878	14	1860	18	19 "
Louise M.	1878	190			19 "
Sophia T.	1878	185	1856	22	19 "
Anna T.	1878	252	1847	32	19 "
Carl C.	1878	36	1860	18	19 "
Henriette L.	188	16	1858	22	17 "
Jacob E.	1880	153	1820	60	17 "
Joseph C.	1880	5	1839	41	17 "
Rudolf C.	1883	176	1866	17	14 "
Katherine, B. T.	1884	55	1819	65	13 "
Barbara S.	1884	33	1849	35	5 " *
Selina T.	1884	252	1861	23	13 "
Gertrude O.	1884	208	1861	23	13 "
Susanna L.	1885	60			12 "
Marie C.	1886	79	1862	24	11 "
Barbara C.	1886	890	1832	54	11 "
Emilia L.	1886	37	1857	29	11 "
August N.	1887	74	1855	32	10 "
Rudolf C.	1888	158			9 "
Selina U.	1890	71	1847	43	7 "
Albert Q.	1891	13	1864	27	6 "
Marie T.	1892	858	1851	41	5 "
Eliza C.	1895	352	1866	29	2 "

*Died in 1889.

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The table embraces 24 patients, 8 men and 16 women. Fifteen, 5 men and 10 women, belong to the first decade, nine, 3 men and 6 women, to the second.

The duration of the attack, as above shown, varies greatly from 5 to 90 days. The following table presents the cases according to the duration of the disease:

Less than 30 days, 4 cases.
Less than 60 days, 4 cases.
60-80 days, 4 cases.
100-200 days, 6 cases.
Over 200 days, 6 cases.

The following table presents them grouped according to the age at the time of the disease:

Under 20, 3 cases.
Under 30, 8 cases.
Under 40, 3 cases.
Under 50, 2 cases.
Under 60, 2 cases.
Under 70, 2 cases.
Unknown, 2 cases.

It is still to be remarked that the cases, Elise C. and Marie T., have remained well until April, 1897. I do not include them in the following table, because they have had no relapse in less than 5 years.

In reading the clinical histories of the above cases, as well as those in the following table, I gave special attention (1) to ascertaining the causes which could have produced the attack, (2) to the degree of excitement. Rarely, very rarely, did I find a factor in the clinical histories which could be regarded with any certainty as the cause of the attack. It seems wholly worthless to relate and count and classify vague presumptions of relatives; either untenable at the first glance (unfortunate love affairs and the like), or, if possible, when their causative role is so little proven. My memoranda as to the degree of excitement, whether the patient was hypomaniacal, maniacal or raving, were similarly vague, as I could not elicit the degree of excitement from the clinical histories, which were made by others, so that I prefer to say nothing as to these memoranda. Only it may be said, that, so far as I could judge, among the 51 possibly and certainly recovered

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cases, hardly 3 or 4 cases of hypomania appear, so that mania and frenzy especially predominate.

TABLE II.

Patients certainly recovered, who were admitted only once, had always been well previously and have not become ill again since the attack.

PATIENT.	Date of attack.	Duration in days.	Date of birth.	Age at time of attack.	Years without relapse.	Present age.
Caroline C.	1876	133			21	
Anna C.	1877	95	1835	42	20	62
Susanna S.	1878	333	1858	20	19	39
Bertha C.	1880	138	1802	25	17	95
Jacob J.	1880	43	1842	38	17	55
Fredericka T.	1881	25			16	
Henry T.	1883	30	1838	45	14	44
Henry M.	1886	268	1861	25	11	36
Anna L.	1886	118	1853	33	11	44
Jacob G.	1888	237	1860	28	9	37
Ida S.	1888	128	1870	18	9	27
John C.	1888	212	1867	21	9	30
Maria L.	1888	51	1856	32	9	41
Bertha C.	1891	83	1866	25	6	31
Philip C.	1891	109	1865	26	6	32
Josephine T.	1892	48	1868	24	5	29
Alfred T.	1392	234	1842	38	5	27

Of the 17 persons mentioned in this table, 7 are men and 10 women. In the first decade are 2 men and 5 women, in the second, 5 men and 5 women, in all 7 and 10 persons.

The duration of the attack varied between 25 and 233 days.

Less than 30 days in 1 case.
Less than 60 days in 4 cases.
Less than 100 days in 2 cases.
Less than 200 days in 5 cases.
Over 200 days in 5 cases.

By grouping the cases according to the *age at the time of the attack*, we have:

Under 20, 1 patient.
Under 30, 8 patients.
Under 40, 4 patients.
Under 50, 2 patients.
Unknown, 2 patients.

Nine cases, 3 men and 6 women, have had *no relapse* in over ten years; 2 cases for over twenty years. The others are as follows: 1 case for 19, 16 and 14 years; 2 cases

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for 17, 11, 6 and 5 years, and 4 cases have had no relapse for 9 years.

When arranged according to the *present age* of the patients still living, we have:

3 patients are between 20 and 29.
6 patients are between 30 and 39.
3 patients are between 40 and 49.
1 patient is between 50 and 59.
1 patient is between 60 and 69.
1 patient is 95.
2 patients' ages are unknown.

In regard to table one, I have little to say, I do not doubt that one or two of the cases would have to be classed with the 17 certainly recovered, if it were possible to ascertain the whole truth as to everything. But I have little doubt that this is not true of the majority of the cases, and that on more careful investigation, relapses would be found. Still I do not know how many of the patients of the first table are still alive, nor how many years have elapsed since this attack. So, if I be exact, I am as little justified in regarding these cases as chronic as I am to consider them recovered, and in including them.

As to table II, we have a more favorable ground. The patients are alive, have had no relapses up to April, 1897, and a prior disease can at any rate be excluded with considerable certainty. Still we will be cautious, as is proper, and only consider cases as certainly recovered, in which we can prove a period of more than 10 years without a relapse, and of these we have only 9 cases. Kraepelin might not consider such a period sufficient, for on page 616 of his text-book, he says: "Intervals of 10 years and more may elapse; yet the new attack generally occurs much sooner." We do not then have in these cases an absolute guarantee that no new attack will occur. The majority of the patients are relatively young, and so may become ill again. Twelve of the 15 patients, whose age I know, are under 50, 9 under 40, 3 under 30. But the results which I have gotten from the material at Zürich, seem more favorable in regard to the prognosis of mania and the occurrence of simple acute mania, than those reported by Krae-

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pelin from his experience. "Among the 1,000 patients," he says on page 615 of his work, "whose destiny I have been able to follow closely, there is only *one*, who, having a brief maniacal excitement at the time of development, has not become ill later. In *all the other* cases, which could be followed long enough, the first maniacal attack was the forerunner of a periodical or circular insanity."

In 1,000 cases, Kraepelin has found only one. In 233 cases, I find 9 at least, who have recovered* and when one reflects that there are cases with a period of no relapse for 14, 16, 17, 19, 20 and 21 years, further than that these persons to-day are 44, 55, 95, 39 and 62 years old, in 3 cases then over 50, it is somewhat probable that in these 9 cases we really have only *single* attacks. Of course, what does 9 cases signify! The prognosis of mania, as shown by my figures, is certainly not favorable. Heretofore, in speaking of the good prognosis of mania, that of the single attack and that of the maniacal disorder has not been separated strictly enough. If I had gone merely by what I found in the books of the hospital, and had accepted the note, "recovered," "improved" or "unimproved," as made on the patient leaving the institution, I would have been able to arrive at something different. Then if the "non-recurrent" cases were compared with the recurrent, the first forms 56%, the latter 44% of this whole number. But such a procedure would be worthless.

I now give the results of the whole work briefly, the highest and lowest number of recoveries, which can be computed from my material.

By taking the whole 51 cases, 24 possibly and 17 certainly recovered, assuming that they have all recovered, the proportion of the recurrent to the non-recurrent cases is as 233: 51, then 21, 9%, have recovered. If I take the 17 certainly recovered, then 7, 3%, of the cases recovered. If I am still more rigorous and consider only the 7 cases of the first decade as certainly recovered, in whom I could

*I. e., 9 cases with no relapse for 11 to 21 years. If the percentage is wanted, as near as I can give it, for the 7 cases in the first decade with no relapses, is 14 to 21 years. These 7 cases (recovered in this sense) are then referred to the total number of the first decade, which is 144; then 4, 7..., recovered.

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prove that no relapse had occurred from 14 to 21 years, then only 4, 7%, of the cases have certainly recovered. In all these calculations it is to be considered that the number of periodical cases, which appear in my statistics, is more likley too low than too high. I can scarcely have erred in ascribing too many admissions to one case called periodical, but possibly it escaped me from inaccuracy in the report of the attack. It is still more imporrant that many cases, as I have shown above, have not been included, which died or became chronic in the first attack, by whose addition the percentage of recoveries, would then have been again lowered.

At any rate it is proven that simple acute mania is a rare disease. The authority to do away with it entirely seems to me doubtful from the results I have gotten from my material.

It only remains for me to express my most sincere thanks to the Direction of Burghölzli for the kindness in permitting me to use the material of the institution, as especially to Dr. Delbrück for his excellent assistance in the composition of this paper.

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GASTRIC PNEUMATOSIS,*

(Trommelsucht).

Nervous Vomiting and Another Gastric Neurosis. A Review Epitome of Ewald.

WITHOUT doubt the author on diseases of the stomach who has best of all recognized the neural aspect of diseases of this organ is C. A. Ewald, of Berlin, nearly one-fourth of the concluding portion of his classical work being devoted to the Neuroses and physiological relations of this important organ of the animal body. Ewald's classification embraces:

THE NEUROSES OF THE STOMACH.

I. Conditions of Irritation.

a SENSORY	*b* SECRETORY	*c* MOTOR
Hyperaesthesia	Hyperacidity	Eructation
Nausea	Hypersecretion	Pyrosis
Hyperorexia		Vomiting
Anorexia or Hyperaesthesia		Colic
Parorexia		Torminia ventriculi
Gastralgia		

II. Conditions of Depression.

Anaesthesia	Anacidity	Atony
Polyphagia		Insufficiency of the pyloris and cardia

III. Mixed Form.

Gastro-intestinal Neurasthenia (Dyspepsia nervosa)

IV. Reflexes from other organs upon the Gastric Nerves.

Reflexes from the brain, spinal cord, kidneys, liver, sexual organs, and intestines manifest themselves in the forms mentioned in I and II.

Pneumatosis, tympanites (*Trommelsucht*). Here the stomach is filled with gas and may become so distended

*Supplemental to the course of Nervous Diseases to the students of Barnes Medical College, St. Louis, by the editor, Professor of Neurology, etc., in said College.

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that it causes not only the unpleasant sensation of marked tension, but even more severe nervous symptoms, by pushing the diaphragm upward and pressing on the heart. The patients are seized with typical attacks of asthma—the asthma *dyspepticum* of Hensch—in which at first there is only the annoying feeling of being compelled to take deep inspirations after short periods of normal breathing; at the beginning of this suffices, but later it develops into an incessant dyspnœa. Now there is also palpitation of the heart, pulsation of the peripheral arteries, fullness of the head, and even to the feeling of impending death, or complete unconsciousness—in short, such is the condition that I have been repeatedly told by many sufferers that they were almost driven to suicide. Relief can only be afforded by bringing up some of the gas, and then the attack rapidly subsides. This condition is probably caused by the gas that has been swallowed, together with a spasm of the sphincters of the stomach. The chemical processes were normal in one case which I examined, yet the same state may be produced in dyspeptics by the gas generated in fermentation.

The attacks may be relieved instantly by introducing and allowing the gas to escape. But it seems very difficult itself where it is nervous in character.

NERVOUS VOMITING.

This includes those forms of vomiting which are caused neither by anatomical lesions of the stomach nor by quantitative or qualitative changes in the food. It is pre-eminently reflex, and may be caused either directly bv the vomiting center or indirectly from other points in the central nervous system; or from other organs. As far as we know, the causes of this condition may include palpable changes in the brain and spinal cord, kidneys, uterus, liver, and certain organs of sense. These forms of nervous vomiting may be classed among the reflex neuroses.

I have had the opportunity of observing two such cases of nervous vomiting in close succession; during their course they seemed to be very much alike, yet the nature of the primary affection caused them to terminate very differently.

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The first case was a married lady, thirty-six years old, who had been suffering for three weeks with uncontrollable vomiting and a continuous flow of saliva, together with strong fœtor from the mouth. This condition had come on after an attack of catarrhal jaundice, traces of which were just recognizable in a slight discoloration of the sclerotics at the time I first saw the patient. She had emaciated very little considering that she had taken scarcely any nourishment during this period, for she vomited everything immediately after eating. On examination, nothing could be found anywhere, not even in the liver. The passages were loose and bright yellow. Only temporary relief was obtained by the hypodermic use of morphine with atropine, washing out the stomach with chloroform water, and chloroform internally. Finally, the attacks were controlled by withholding all food and drink by the mouth, and using nutritive enemata for several days. But the salivation kept up some weeks longer, when it ceased entirely. The condition here was probably a reflex irritation from a gall-stone; hysteria was excluded because the patient was otherwise healthy and the mother of several grown-up children. I must not conceal the fact that for a long time the patient caused me a good deal of anxiety on account of the absence of definite points on which to base a diagnosis.

The second case was a lady in the fifties, living outside of Berlin; unfortunately, I had the opportunity of seeing her only once. In the early part of 1888 she experienced profound emotional disturbances; since the following summer she had suffered from mild gastric troubles which lasted, with variable intensity, till November. After that every meal was regularly followed by vomiting, which had continued with few intermissions till the beginning of January, when I saw the patient. The woman, who had formerly been strong, was now very much run down; she had frequent attacks of unconsciousness, and complained of great weakness, especially in the legs. Sleep was good. The urine had been repeatedly examined, but albumen and sugar were not found.

I found a bedridden patient who was still quite well

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nourished in spite of the emaciation she complained of; she could move quite readily in the bed; she spoke with deliberation; in short, she seemed less affected than was to be expected from her history. On examination I could find nothing but a struma, and tachycardia up to one hundred and twenty beats per minute. There was no tumor nor any tenderness in the abdomen. Patellar reflexes normal; pupils reacted well; no limitation of the field of vision, and no complaints about sight. Sensation everywhere normal. Heart and lungs negative.

In my presence the patient ate two pieces of toast and drank a glass of water without vomiting. The tube was easily introduced and the stomach-contents expressed twenty-five minutes after. No hydrochloric acid found; the fragments of toast were scarcely at all digested. This result left the diagnosis in doubt between a severe neurosis and an occult carcinoma; yet the absence of true cancerous cachexia favored the former. The rapidity of the pulse was attributed to the struma; tabes accompanied by gastric crises ,was excluded on account of the absence of its specific symptoms.

The condition seemed to improve at first by using nutritive enemata and restricting feeding by the mouth as much as possible; small doses of digitalis and atropine were also given. But she soon relapsed into the old condition; she gradually grew weaker, till one day she was seized with epileptic convulsions and died several days later. An autopsy was not allowed, yet the whole clinical picture led me to diagnosticate an affection of the medulla oblongata, probably a tumor, involving the roots of the vagus, thus causing the persistent vomiting and the rapid pulse. At all events, this presupposes such a situation of the suspected tumor that the nucleus of the fibers of the vagus distributed to the heart was paralyzed or destroyed, while those fibers going to the stomach were kept in a condition of chronic irritation. The soundness of this supposition remains in doubt, although it is by no means without a parallel (Rosenthal).

Both of these cases are typical examples of severe

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vomiting caused by nervous irritation, and at the same time they show how difficult (sometimes even impossible) it is to make a diagnosis at a given time during life.

For a certain group of cases we are unable to find this proof, although we may suspect the reflex origin. Pre-eminent among these stands the vomiting of neurasthenic and hysterical patients; it is uncommon among the former, but occurs frequently in the latter. It is characteristic of this form of vomiting that it usually occurs without any true nausea, and that the retching is reduced to a minimum. Hysterical vomiting may occur after every meal; sometimes it is less frequent. Either all food may be rejected or only certain kinds or even individual dishes. I made use of this fact in making my first investigations on the course of normal digestion in human beings; my subject was a hysterical girl who could retain all kinds of solid food, but was compelled to vomit whenever she swallowed any fluid. Another young girl, who has now been over five years at the *Siechenanstalt*, regularly vomits nearly all that she has eaten almost immediately after every meal. The general nutrition suffers surprisingly little from this persistent vomiting; thus the second patient's weight has been almost the same during the past four years; she has come down from 40.5 to 39.5 kilogrammes (89 to 87 pounds). In other cases the vomiting does seem to affect the weight. Thus Tuckwell* reports that three children were very greatly emaciated after prolonged vomiting which lasted for months; it was controlled by sitting the little patients up as soon as any tendency to vomiting occurred (and also, to be sure, carefully regulating the diet). Barras speaks of a woman who suffered from nervous vomiting, but who ceased to vomit while she was in the bath; she was cured after her meals were given to her in this way.

This affection may pursue an acute or chronic course; it may begin spontaneously or may follow some demonstrable cause. One young girl was attacked immediately after the death of her father; another as the result of break-

*Tuckwell. On Vomiting of Habit. *British Medical Journal*, March 22, 1873.

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ing off an engagement of marriage. As in other neuroses, the female sex is especially liable.

I must confess that my experience of the infrequent occurrence of vomiting in neurasthenics does not agree with that of Rosenthal, who claims to have seen it not infrequently in this class of patients. I shall simply content myself with giving the headings of two of his histories:

Observation No. 31.—Neurasthenia, hyperæsthesia toward acids with consecutive gastric colic and vomiting. Cured by local remedies (small pieces of ice, with two or three drops of tincture of nux vomica) and general invigorating treatment.

Observation No. 32.—Neurasthenia following onanism, with frequent vomiting. After the latter had ceased it began again after each coitus, while a heavy meal did not cause any complaints. Neurasthenia and vomiting cured by prohibiting sexual intercourse at the beginning of the treatment, increasing doses of potassium bromide, with some pyrophosph. ferri citronatric. [Ph. Austr.] Neptune's girdle, galvanization of the sympathetic, and hydriatic procedures.

This difference in observation might appear striking; yet it may be readily explained by the fact that two observers in places at some distance from each other [Berlin and Vienna] deal with different kinds of patients. Concerning the multiplicity and intensity of all neuroses it is peculiar that they most frequently attack the easily excitable Southerners, and especially the nationalities living near the military border. Hypersecretion seems also to occur more frequently there than in Germany.

Finally, I must speak of a form of nervous vomiting which was described by Leyden.* It may occur as a primary neurosis, or as a secondary spinal affection, or as a reflex form. A peculiarity of this variety is the periodicity of the attacks [whence the name periodical vomiting], which may last from a few hours to a number (ten) of days. They begin with sudden nausea and colicky contractions of the intestines, but the abdominal wall is relaxed. At first the vomit consists of food *debris* and slimy masses, later of bile and streaks of blood; the attacks accompanied by migraine and tearing sensations in the limbs; they are

*Leyden. Ueber periodisches Erbrechen (gastrische Krisen) nebst Bemerkungen über nervose Magenaffectionen. Zeitschrift für klin. Medicin, 1882, Bd. iv, S. 605.

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followed by obstinate constipation, which is due to a spasm of the intestine. The trouble may last for years, but its origin can only be sought in the directions indicated above. In two of my cases the autopsies gave negative results.

A CEREBRO-GASTRIC NEUROSIS WITHOUT HCL.

Mr. K., an actor, twenty-eight years old; slender figure. Previous history good; no organic diseases can be discovered. He was always in good health and lived quietly and regularly. In the winter of 1884-'85 he had to play a very exciting part several hundred times in succession at one of the local [Berlin] theatres. He felt exhausted and languid till in the following summer his condition became as follows, to use his own words:

"It seemed to me as if my entire abdomen was constricted with a cord, so that suddenly I was attacked with a feeling of anxiety; there was also oppression which extended high up into the chest and caused a tormenting dyspnœa. I could not take a long, deep breath, on account of the feeling of undue fullness in the abdomen. This condition persisted even when I had eaten nothing—*e. g.*, on awakening early in the morning. I can not complain of any real pains, yet I have never felt really well ever since. The pressure in the abdomen and the oppression following it continually reminded me that my health was shattered. Although I frequently had a good appetite and relished food, yet not alone after eating, but even during the meal, severe disturbances set in, combined with endless belching and eructation, and great fatigue; in the beginning there was also vomiting, but after a few times this did not return. At times I was suddenly seized with a ravenous appetite, after the satiation of which the above attacks did not fail to appear.

"The family physician's remedies were all of no avail, and this condition persisted till the winter of 1886. Then the discovery that I had a tape-worm gave me hope that with its removal I would be cured. But, alas! even after that, the old state persisted, and, if anything, became worse. My arduous duties in the winter of 1886-'87 did not cause the trouble to be less marked. Since then every part of my body feels very tired and languid, and in spite of careful rest and forbearance this has persisted up to the present time. The pressure from the distended abdomen, oppression (frequently also stitches in the side), and dyspnœa still persist. In spite of this I still have an appetite,

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sometimes a very large one; I usually relish food, but after meals, as a rule, though not always, the unpleasant symptoms make their appearance, and are more marked at some times than at others."

I have now [1889] treated this gentleman about three months, and during this time I have tested his gastric juice for hydrochloric acid nineteen times, at the most varied intervals after the test-breakfast, and also after a more abundant dinner. A small amount of free acid could be detected only three times. Propeptone was always present in relatively large quantities, but the peptone reaction was only faint, and the digestive power of the filtered gastric contents was negative, except in two tests, unless hydrochloric acid and pepsin were added. The rennet-action could be demonstrated in half of the tests, and that, too, in the absence of free hydrochloric acid, but at the same time lactic acid was present; at other times the tests for lactic acid and peptone were positive, although free muriatic acid, pepsin, and rennet were all absent. Large quantities of mucus were never present in the wash-water except the first time, when the patient had evidently swallowed large quantities, which were due to the irritation of the tube. On the other hand, on two occasions I found small shreds which differed from those usually present in the wash-water, by sinking rapidly in the funnel. They consisted of the adherent epithelial cells of the gastric mucous membrane already described. Although I consider this pathological, yet such abrasions continually occur in the mucosa of the stomach as well as in other mucous membranes, though they are usually not found, since the acid gastric juice digests them. Strychnine was first given in small doses; then later on his stomach was washed out and douched every second day with good results. In this case there was surely no mucous catarrh; an atrophy of the mucosa was also absent, since this occurs only as the consequence of a long-standing catarrh, or at a much more advanced age. None of the symptoms indicate cancer; what is, therefore, left but to assume that we are dealing with a neurosis?

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Addendum.—The subsequent course of the case proved the correctness of my diagnosis. The patient went to a well-known establishment for nervous diseases, and then spent a long time in Switzerland. On his return the gastric symptoms had completely disappeared, and in his own eccentric way he could not say too much in favor of his cure.

But he now frequently had attacks of melancholia. The following summer he went to the country near a large lake. One evening he left the house and never returned. His body was found in the rushes at the border of the lake; he had evidently committed suicide by drowning.

The case was thus a neurosis which had at first attacked the vegetative functions, and finally had involved the mind.

A number of cases which were examined in 1887 by Dr. Wolff, of Gothenburg, and myself, at the *Frauensiechanstalt* of Berlin, to determine the condition of the gastric juice, may also be grouped in this category. To our great astonishment we found a permanent absence of free hydrochloric acid in a number of persons without the slightest stomach complaints. At my request, Dr. Sandberg, of Marstrand, examined these same cases again one year later, but in the majority of them he found no change; in a few of them, however, hydrochloric acid was detected. A neurosis is out of the question, since there are no indications of such a condition; but what remarkable and latent disorders can so profoundly affect the functions of the stomach? We can not assume the existence of severe degenerative processes in the mucous membrane, since free hydrochloric acid could be occasionally detected in some of them; furthermore, although I have been watching these cases for a number of years, I have seen no gastric symptoms which would necessarily be present in such a serious condition. After making similar observations Dr. Grundzach has also come to the conclusion that "the mechanism of the stomach performs its functions properly, or is very slightly disturbed, in spite of the complete cessation of this secretion." Moreover, in the course of the experiments on the effects

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of the Carlsbad water mentioned on page 358, I had the opportunity of examining for two months a young, robust female nurse, twenty-eight years old, with good digestion; I always obtained an unusually low degree of acidity, so that I should surely have referred to an anomaly of secretion any complaints which she might have made regarding her stomach.

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THE TREPIDATIONS AND PHOBIAS OF CEREBRAL NEURATONIA.

Timor Contaminationis (Fear of Contamination).

By C. H. HUGHES, M. D.

TO me this term has a more distinctive significance than Neurasthenia or Cerebrasthenia. Hence my preference therefor. Its primary cause is defective nutrition—Neuratrophia—of the cortex area of the brain, especially involving.the psychic neurons. There may be and sometimes is, associated with it, similar involvement of the psycho-motor areas, but not necessarily.

The nutritional failure of the psychic area of the brain may be anaemic, toxhaemic, even hyperaemic, or it may be due to inherent or hereditary neuron defect, leading to those graver forms of phobic manifestation which terminate in the delusions of insanity. And insanity is always to be feared as a possible finale when these phobias appear, especially if there have been no profound causes of systemic breakdown preceding them and no superadded great psychic shock to have excited them. These phobias are morbid fears, with delusional taint and they are often phobias—in transit—to delusion.

The most prominent are the fears of contamination. They often pass into real *folie du toucher* and are sometimes associated with and merged into genuine *folie du dout*, the issue of insanity of touch or doubt depending much on

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the psychiatric skill or want of proper psychiatric skill on the part of the managing physician, the extent of neuropathic heredity, and the influence of environment in each case.

The predeterminating factors, aside from inherent predisposition, in these cases are usually causes of brain breakdown and a marked and timely psychical impression, not always a shock.

Some years ago I reported in the ALIENIST AND NEUROLOGIST, the case of a lad of good parentage and studious habits who had a morbid fear of contamination beginning with "verdiphobia," or a fear of anything green in color, and the beginning of this phobia, which after one recovery, recurred and ended in *folie contaminationis* and final death in an asylum for the insane, was the potato-bug and Paris green powdered paint.

He saw the farmers putting Paris green on the potato vines to kill the destroying potato-bug. After that, though very fond of potatoes, he would not eat a potato or sit at a table if potatoes were on it, or go where potatoes were. From this fear he passed to general verdiphobia, fearing green wall paper, green table cloths and everything that was green, even the current greenback paper money in circulation. No pecuniary consideration was sufficient to induce him to receive in his hands this money which he imagined was contaminated with poison.

PHOBIA CHIROGRAPHICA (FEAR OF WRITING LETTERS).

In December of 1897, there came under my medical care and remained under treatment until cured at the end of May, 1898, an overworked financial business man of Chicago, by nativity a Jew. His fear of writing letters was so great that he adopted the device of covering his right hand with a glove, finally with a dog-skin glove and a woolen mit which he wore in the hottest weather of the summer time.

In the beginning of his malady he would go to his office and yield to the impulse to write and if the letter got posted he would want it recalled from the postoffice or send another after it and then want that brought back and

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destroyed. More often he would partly write and then destroy letters.

He was cured by attention to improvement of all his psychical functions with daily static electrizations, neurotic reconstructives and absolute abstention from his place of business and business men.

During part of the time of his treatment he made short pleasure visits away from the city, sometimes with and sometimes without his wife. The phobia went away when the nerve tone came back to him. There were none of the customary ablutions in this case.

PHOBIA INFECTIONES; PHOBIA CONTAGIOSA.

A young lady teacher of music who has studied hard and broken in her nerve tone, sleeping badly and not eating well, though still retaining her flesh, becomes fearful that she will contract disease from the people whom she meets on the street or in the street-cars, or at people's houses or public places of amusement, consequently she does not like to go home ,even to dine with her pupils' families and persues her calling with trepidation and fear of contamination and has restricted the number of her pupils until she now has but two. She washes her hands as many as twenty-five times a day and is very unhappy from fear and dread.

She has no fear of me however and no fear of my office, being admitted to my consulting room without having previously to come in contact with the other patients. She has faith in my assurances, suggestion and treatment, believes the ozone generated by the static machine and the electricity itself are germ-killers and is now much more tranquil in regard to the subject of her fears and confident of safety. She appears to be getting well after five months of treatment with nerve tonics, the bromides with digestives, and confident assurances of safety.

PHOBIA CONTAMINATIONIS (MYSOPHOBIA, OF HAMMOND).

Through the courtesy of Dr. Chas. B. Fry, Chief Surgeon of the Peoria, Decatur and Evansville Railroad, the following case came under my observation:

Mrs. ———, about 26 years of age, mother of one child,

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has always been of a nervous disposition. She was considered to be an invalid and was treated for some years for piles and retention of urine and was catheterized daily for weeks at a time. Dr. Fry attended her in her confinement and subsequently discovered that she had a fissure of the anus, which he believed to have been the sole cause of all her former trouble, as she has not had any physical ailment since he dilated her anal sphincter.

About a year ago a man who had some horrible sore upon his face came to her door to sell her something and the sight of his face made a profound impression upon her. She soon began to imagine that she had contracted cancer from him. She got hold of some article, in a newspaper or magazine, upon bacteria and after that imagined that everything about her was infected with some sort of disease breeding germs. She would scrub her hands twenty times a day, always after touching anything and finally was afraid to touch her baby from fear of infecting it. Those were the conditions when he was first called to see her. For several days after the doctor's first visit she acted quite rationally at her meals and laughed at her own folly; but she has begun again to act as before, and the doctor advised her husband to take her to me for advice and treatment.

Some flowers brought home from the cemetery by her mother next door to her, and the sexton living near excite fear of infection in her. Her husband steps on some blood in the street, and she is immediately disturbed with morbid fear of contamination from this incident, though he had on India rubber shoes at the time and threw them away before entering his house.

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SELECTIONS.

NEUROTHERAPY.

THE USE OF PYRAMIDON IN DISEASES OF THE NERVOUS SYSTEM.—Horatio C. Wood and Arthur A. Stevens give in the *University Medical Magazine* the following example: Landenheimer (*Therapeutische Monatschefte*, 1898, Heft 4, S. 177) reports upon the use of this antipyrin derivative in more than 100 instances during the past year. In headache of undetermined origin, especially when occurring during convalescence from psychoses, five to eight grains gave relief after the lapse of one hour to two hours. It was equally successful in the headaches of alcoholics. In hysteria the results were uncertain, but for nervous men, those overworked and sleepless, the remedy gave satisfaction. The pain of alcoholic neuritis was not benefited, although the sensitiveness of the nerve-trunks was lessened. Of lumbago, two instances were benefited, a third unaffected by even large doses. Only two patients suffering from acute articular rheumatism came under observation. The pain speedily lessened, the swelling gradually disappeared. Chronic rheumatism was not benefited. The lancinating pains of tabes were temporarily benefited. The maximum dose given above can be safely administered thrice daily. Untoward symptoms have not been noticed.

PILULES CONTRE LE TREMBLEMENT DE LA PARALYSIE AGITANTE.—M. S. W. Gross.—Sulfate de strychnine, acide arsenieux, aa 0 gr. 06 centigr.; extrait de belladone, 0 gr. 30 centigr.; sulfate de quinine, masse pilulaire de Vallet, aa 2 gr. 40 centigr.; extrait de pissenlit, 1 gr. 20 centigr. F. S. A. quatre-vingt-dix pilules.—A prendre; trois pilules par jour. Potion stimulante pour remplance l'alcool apres un exces.—Morphiæ sul., ½ grain; etr. lupulinæ fl.,

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tr. capsici, syr. limonis, aa 1 ounce; aquæ, aa 3 ounces. A prendre par cuilleree a dessert dans un peu d'eau, plus ou moins souvent finit par attenuer la depression qui suit un exces alcoolique.—*La Clinique*, Aout, 1898.

Our much esteemed contemporary takes from another esteemed contemporary, *La Clinique*, all in French, the above prescriptions for the trembling of paralysis agitans and for the depression following alcoholic excess. This is an innovation in the making of excerpts, but as the French is so near like that of our own language in these extracts, a linguistic tyro may translate them. They are therefore not *mal appropos* in an American journal.

ARTIFICIAL SERUM IN THE TREATMENT OF EPILEPSY.—At the meeting of the Academie de Médecine de Paris, Sept. 6th, 1898, Motet directed attention to the medical treatment of epilepsy, particularly the results of the researches of de Fleury. The latter states that injections of artificial serum enhance considerably the efficacy of the bromides, two or three injections of artificial serum causing a dose of two or three grains of the bromides to be equally as efficacious as very large doses ordinarily administered. Not only do the seizures become less frequent, but the mental condition of the patients becomes much improved. The serum is supposed to exert its beneficent action by lowering blood-pressure and acting as a tonic to the heart. —*Philadelphia Medical Journal.*

FUNCTIONS OF THE THALAMI OPTICI.—M. Sellier and M. Yerger (*Archive de Physiologie*, October) have recently made some new researches with new methods to ascertain with greater exactness the effects of injury to this basal ganglion. They selected the dog and adopted the plan of bipolar electrolysis. Fine needles were made to penetrate the thalami and a current of ten milliamperes was passed. In none of these animals were any symptoms of meningitis observed. The necropsy in each case showed small destruction of tissue about the size of a grain of maize. The animals recovered from the operation and were tested for some weeks. Eight to ten days after the operation,

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motility and sensitiveness to heat were always intact. The sense of the position of the limbs and the tactile sensibility were always affected. *At the end of a fortnight the disturbances of sensibility had entirely disappeared.* In two cases there was permanent visual trouble, but Seller and Verger could not determine whether there was complete unilateral blindness or a crossed hemianopsia. They conclude that the optic thalami have no influence on the voluntary movements of the animal and that there were no compulsory or forced movements. The sensory *rôle* of the thalami is undeniable, but thalamic anesthesia, like cortical anesthesia, does not include sensibility to pain and is transitory in duration.

CLINICAL PSYCHIATRY.

A SLEEP OF OVER FIFTY DAYS.—Dr. Markham Skerritt and Dr. James Stewart (*British Medical Journal*, October 1st) record the case of a youth, seventeen and three-quarter years of age, who slept for over fifty days under their observation. Attention was directed merely to the prevention of body waste, there being the greatest possible difficulty in getting him to take any food even in a liquid form. At this time his pupils were much contracted and but little affected by light even after he had been roused as much as possible from sleep. There was nothing in any way suggestive of catalepsy. There was a good color in cheeks and lips; the extremities were fairly warm; there was no anæsthesia; he never complained of headache; the pulse was slow and weak; the temperature normal; there was nothing remarkable about the urine, but the tongue was thickly coated with light brown fur; the knee-jerk was exaggerated, particularly on the left side, and there was at times some ankle clonus.

He lay in a calm, placid sleep uniformly, and when roused to take liquid nourishment (every four hours) he would speak, in reply to direct questions, very much as one does who talks in his sleep. It would sometimes take ten minutes or a quarter of an hour to rouse him sufficiently to

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prevent his being choked in the attempt to get down the egg and milk, or beef tea, or other nourishment. Indeed, he would frequently drop off to sleep while in the act of putting the cup between his lips. The sleep was never a "profound" one, and when the calls of Nature demanded his attention there was an obvious desire to respond to them; but he would frequently drop off to sleep again before he could be assisted, and the inclination to evacuate his bowels or bladder would then disappear. Gradually this partial response ceased, and he passed in bed his motions, which cascara sagrada kept fairly free. Every effort was made to get him to empty his bladder naturally by propping him up against the wall and otherwise, but it was generally a failure. During this period priapism was very marked, but there were never any seminal emissions, and his hands had to be tied to the bedstead to prevent his practising masturbation—a habit to which he had been addicted. Another troublesome symptom was the frequent sickness, principally after the first meal of the morning, but this rarely occurred more than once in twenty-four hours. It may be mentioned that ever since an attack of rheumatic fever, by which his heart was affected, at the age of eight, there had always been a great difficulty in getting him to take sufficient breakfast for a growing lad.

He remained in this condition till the middle of March; then he began, while half awake and half asleep, to talk as if in a dream, sometimes saying things which were ridiculous, and occasionally asking how long he had been ill. He also showed evidence of an emotional tendency unusual to him. His weight, which previously had been gradually decreasing, began now slowly to return to the normal condition, and he was allowed to sit up for an hour or two daily from March 30th. The sense of taste, which was apparently quite absent previously, also gradually returned, but was not entirely restored till very recently.

The first thing he had to do when he commenced to stay partially awake for any length of time was to learn how to balance himself standing; and, next, to learn how to

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walk without falling to one side. (Even at the present time—six months and a half since his seizure, and nearly four months since the end of his sleep—he is somewhat unsteady in his gait, particularly if he is the least fatigued). On April 10th he was taken out in a wheel chair, two months and six days after he had been put to bed. Ever since that date he has been spending as many hours as possible in the open air.

There is no impairment whatever of his mental faculties. His memory is quite clear with regard to events prior to his journey to Plymouth on January 17th, and those which have happened since the beginning of April last. As to what occurred in the intervening period, he has no recollection whatever beyond the fact of his brother and sister meeting him at the Bristol Station on January 27th. Everything between that date and the end of March is to him a complete blank.

INCREASE OF MELANCHOLIA.—The statistics of admissions into the insane hospitals not only in this country, but in Europe, show a diminution of percentage of acute mania and an increase in the percentage of melancholia. It will be remembered that a few years ago an epidemic, to which was given the name of Grippe, girdled the world. Traveling from east to west, crossing oceans and continents, its terrible effects were felt in almost every nation in the temperate and tropic zones. The cause of the epidemic has never been ascertained. By some of our ablest scientists it was attributed to electric disturbances in our atmosphere, produced by some action of the sun, shown by the dark spots on its surface appearing and disappearing with great rapidity. The after-effects of this terrible disease have been noticed by almost every physician. Dr. T. S. Clauson, superintendent of the the Royal Edinburgh Asylum for the Insane, Scotland, in his report for 1896, accounts for the great increase of melancholia by the effects of the grippe upon the nervous system.

Dr. Talcott, in his annual report of the Middletown State Hospital for the Insane, coincides with the opinion of

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Dr. Clauson and says: "As far as our observation in this country extends, the primary effects of the grippe have gradually disappeared, but they have left impressions on the nervous system like those of a cyclone in the forest or or a sand storm in the desert. The great nerve trunks are torn up, so to speak, and prostrated by the sweep of disease; and that, too, beyond the power of help from every recuperative force. We find also in many instances the finer filaments of the nervous system have been pulled by the grippe into an abject condition of chronic and unrecoverable disease. The storm shocks that produce such pathological states in the most sensitive and delicate portions of the physical organization establish likewise a condition of desolation, ruin and despair within the hitherto serene habitation of the human mind. This cause is undoubtedly one of the great factors in the large increase of cases of melancholia which are sent to our hospitals for treatment."

Dr. Talcott's sermon, in the same report, in which he attributes one of the great causes of insanity and distracted, or partially unbalanced, intellects in childhood and after-life to the teachings of the pulpit, the Sunday school and erroneous home training is much more sound and practical than much of the teachings we were accustomed to hear from the pulpit. We say, were accustomed to hear, for the doctrines of hell, fire and damnation are fast being relegated to the past. The element of fear is being supplanted by that of love, which blends with the service of the sanctuary, the teachings of home, and is becoming more and more a part of the rule and the working of our daily lives. In theology as well as in medicine, the heterodoxy of to-day becomes the orthodoxy of to-morrow. Every year the great lines of thought, guided by scientfic investigation and experience, converge more and more towards one broad highway, every milestone of which marks a more complete evolution of that great law of harmony and love which is the underlying principle of life, and even of creation itself.—*N. Y. Medical Times.*

THE PSYCHOLOGY OF RELIGION.—Dr. Edwin D. Starbuck, in a dissertation presented to Clark University for

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the degree of Doctor of Philosophy, has made a noteworthy contribution to the study of religious growth. His method is not less remarkable than his results. The former is in accordance with that adopted by the prevalent school of scientific psychology: it proceeds by a statistical and tabulated study of the phenomena of religious experience as related by the individuals themselves, and attains results that are capable of objective demonstration. The thesis is consequently a contribution not only to mental physiology but also to mental pathology in this most comprehensive field of human experience. Dr. Starbuck, himself, does not apparently realize the full force of his work in the domain of psychiatry, but it is especially to this aspect of it that we have been attracted.

The author demonstrates quite clearly that certain psychologic laws control the development of the religious instincts. Beginning in childhood he traces the influence of early training; then the awakening in adolescence of a capacity for independent thought; then a storm and stress period; then a period of reaction or of inquiry and doubt, and, finally, a period either of settled belief or skepticism. This is all done by a series of ingeniously arranged tables, which permit of a rapid survey of the field.

Religious experience, as a mere psychologic phenomenon, has many phases of hope and fear, doubt and belief, but the one phase that appears to us most vital from Dr. Starbuck's tables, is the subjective sense of personal unworthiness. It is at this point that the study becomes of special importance to the student of psychiatry. This phase of mental depression (for such it is) is commonly and characteristically named by theologic writers the sense of sin. We think that no one can read the author's paper and not realize that this mental phase is the most conspicuous.

From the standpoint of the psychiatrist this sense of debasement of the ego is fraught with great danger to the mental health in some persons, and from the theologic standpoint it would be more wisely controlled if recognized as usually due to a departure from strict mental hygiene.

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We should judge from Dr. Starbuck's paper that this sense of sin or degradation arises often—but not always—from errors in the sexual life, and this is in accord with the observations of psychiatrists. Failure to attain other ideals —especially in social progress and amatory relations—undoubtedly acts also to create in sensitive minds a morbid feeling of personal unworthiness. Physical defects and ill-health may also act thus. It should never be forgotten, however, that this form of psychalgia, or mental pain, from whatever cause, is the fundamental lesion in perhaps the largest group of cases of mental alienation, *i.e.*, melancholia. The morbid fear of death and of the future life does not seem to be as active a cause of this mental state as is commonly supposed.

From the strictly medical standpoint, what we should like to suggest to the scientific psychologists would be a statistic and analytic study in a large number of ordinarily healthy persons of their experience at various periods of their lives of this painful alteration in the ego, which we call the sense of personal unworthiness. We would dissociate it entirely for this study from the religious or theologic instincts, and confine the inquiry merely to this particular mental phase. We are convinced that few persons escape this experience entirely at some period of their lives. Psychalgia may exist in an infinite variety of forms and in many degrees. It is an integral factor in psychic development and experience, and has played a large part in human history. It is with many the object of constant mental discipline—with some the initial phenomenon of degeneration. We suggest that it should be studied with reference especially to the sexual and amatory instincts, to ambition and social progress, and finally to the physical health. To regard it as a phase necessarily or merely of religious growth is, we are convinced, too narrow a view and one calculated to ignore most important aberrations in the development of human faculty.—*Phil. Med. Jour.*

HARDWARE IN HER STOMACH.—Quarts of hairpins, needles, pins, nails and glass swollowed by a women.

A remakable subject was placed on the dissecting table,

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says a daily paper, of a Toledo, Ohio, medical college, November 19th. It was that of a middle-aged woman. On dissection her stomach was found to contain a quart of hair-pins, pumpkin and melon seeds, small nails, pieces of glass and other indigestible substances The intestines and stomach contained at least five hundred hair-pins, all bent at right angles, the same number of brass pins and nearly as many needles. The pieces of glass were from one to three inches long. A ring, set with a fine stone, was also found among the mass. Altogether the mass of iron, brass and glass articles found made a mass as large as a Derby hat.

A hole three inches wide had heen eaten through the walls of the stomach by the constant irritation and inflammation following the introduction of the sharp pointed articles of diet. It is said that the woman was insane. Of course she was. These stomachs which resemble a vagina in the hands of some of our gynecological friends, belong only to the insane. We once had a patient who ate a portion of the broken glass of a window pane and deposited the balance in her vagina. The contents of the stomachs of the insane sometimes resemble those of an ostrich. Patients who swallow pins and needles often, also insert them into the skin. Hundreds have been found in the bodies of the insane.

NEUROPATHOLOGY.

THE ACTION OF CERTAIN NARCOTIC SUBSTANCES ON THE BLOOD ALKALINITY AND THE RED-CORPUSCLES. —Thomas (*Archiv fur experimentelle Pathologie und Pharmakologie*, Band xli, Heft 1, March, 1898) has investigated the effect of several toxic substances on the blood, and reports in the present paper his results with alcohol, chloroform, and ether. In a former study he had found that, after the administration of alcohol to a rabbit, the animal succumbed to one-sixth of the dose of cholera germs that was necessary to kill a sober rabbit. This fact was explained by assuming that alcohol diminished the bactericidal action of

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the blood. In the present paper the studies are detailed, which were made to determine what factors of the blood were affected by alcohol. Experiments were also made with chloroform and ether. The conclusions arrived at are as follows: (1) In acute alcoholic intoxication, carbon dioxide as well as the alkalinity are greatly reduced, due to the fact that there is an increase of volatile fatty acids, which, for the moment, displace the carbon dioxide. The decrease of the red corpuscles cannot be of moment, as it is not constant. (2) The effects of chronic alcoholism make themselves fully manifest only after several months. The alkalinity remains about normal, the oxygen decreases, and later also the carbon dioxide. (3) After subcutaneous injections, of ether, just as after injections of morphine and chloral, the oxygen of the blood is reduced. The carbon dioxide and alkalinity remain practically the same. After the inhalation of ether, the carbon dioxide is increased, the oxygen diminished, and the alkalinity unaltered, while the number of corpuscles is increased, and may even be doubled. This is to be explained on the ground that the blood becomes inspissated and venous on account of the diminished oxygen supply. (4) Chloroform seems to diminish the alkalinity of the blood.—Drs. John Guiteras and David Reisman excerpts in *University Medical Magazine*.

PATHOLOGICAL CHANGES OF MUSCULAR TISSUE IN BASEDOW'S DISEASE.—M. Askanazy has called attention to the anatomical changes in the striped musculature in *morbus Basedowii* which he explained in four cases of the disease. These changes affect, so the author claims, the whole muscular apparatus, but in the individual cases all regions are not affected to the same degree. Microscopically, the pathological changes consist in an interstitial lipomatosis between the muscles which gradually take on a turbid, pale and relaxed appearance and are reduced in volume, so that at some places the muscular tissue is entirely replaced by fatty tissue. Under the microscope it is shown that, besides the new formation of fatty tissue in the perimysium internum and the perimysium externum, the

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individual muscular fibres are in a condition of fatty metamorphosis, atrophy, atrophic proliferation of nuclei, at times with the formation of peculiar figures produced by the running together of conglomerates of nuclei, loss of striation, appearance of vacuoles and yellow pigment in the homogeneous contents, eventually disintegration. The condition is therefore an *atrophia musculorum lipomatosa*. This microscopic finding presents a significant organic affection of the muscular apparatus in Basedow's disease which is of value in the post mortem diagnosis as well as for the purpose of explaining a number of pathological phenomena, *e.g.*, emaciation, muscular weakness, affections of the eye, and Bryson's sign.—*Medical Review.*

THE LYMPHATIC GLAND AS A BACTERICIDES—According to the *Gazette hebdomadaire de médecine et de chirurgie* for October28th, M. Eugene Martin allots to the lymphatic glands the function of elaborating an internal bactericidal secretion; and further considers that they have defensive duty of opposing the further progress of such bacteria as may have escaped destruction at the point of inoculation. The lymphatic gland constitutes a rallying point for the reenforcement of the defensive stand made by the leucocytes at the first place of attack, and it completes its functional activity by attenuating the virulence of the poisons. The lymphatic gland plays an extremely active part both against the microbes and their toxines, not in general and local infection.

HEREDITY; A CONTRAST.—Dr. D. G. Brinton, University of Pennsylvania, in current notes on anthropology *Science* Oct. 28th, thus quotes and comments: In the *Revue Scientifique* for April last, Dr. Cesare Lombroso, in an able discussion of the relative influence of heredity and environment, announced the conclusion that "the influence of environmcnt is potent enough to annihilate all ethnic traits."

At the meeting of the German Anthropological Society in August of this year Professor Kollmann, of Basal, in an address on the same subject, stated the dictum of science to be that "the influence of heredity is far stronger than

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that of environment. The ethnic traits are immortal and and persist, though the peoples who bear them may disappear from history." (*Globus*, Aug. 27, 1898.)

These are two of the most eminent authorities among Europeoan anthropologists. As the traditional circus man said: "You pays your money and you takes your choice."

CLINICAL NEUROLOGY.

ETIOLOGICAL ROLE OF SYPHILIS IN TABES.—I take the following from *La Presse Medicale*, of Paris, July 16th, 1898. I have several times since my return from Japan, put on record my disbelief in the syphilitic origin of tabes. It has always surprised me that such eminent men as Gowers, of London, should believe and persist in believing that syphilis has something to do with tabes. My disbelief in this theory is founded in fact. There is no tabes in Japan and for 1300 years the nation has been syphilitic, even to a measure of immunity. In 40,000 examinations in Tokio, Japan, I found not one case of tabes and 10,000 of syphilis.—ALBERT S. ASHMEAD, M.D., New York.

From *La Presse Medicale*, of Paris, July 16th, 1898. Tabetic atrophy of the optic nerves. M. Stadelmann, who has used mercurial treatment with several tabetics presenting an atrophy of the optic nerves, never saw that treatment produce accidents or be ill-tolerated. This medication has even given him complete success in a tabetic of fifty-two years.

Mr. Virchow finds that if there is an affection in which the etiological role of syphilis is nought, it is tabes, an essentially local affection. In order to support the syphilitic origin of tabes, one uses the frequent existence of syphilis in the antecedents of the tabetics: but, according to M. Virchow, to show the reality of this hypothesis, the frequency of tabes among the syphilitics ought to have been shown. M. Virchow thinks that in the etiology of tabes no more than in that of general paralysis, and aneurism of the aorta, syphilis has nothing to do whatever.

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"As to the anti-syphilitic treatment of the tabetic atrophy of the optic nerves, M. Virchow does not think that it may be harmful in the tabetic ancient syphilitics.—*Societe de Medecine Berlinoise 6 Juillett, 1898.*

ONLY NERVOUSNESS.—A writer in the *St. Louis Medical Journal*, who signs C. R. B., calls attention to the wrong inflicted by the popular harsh estimate of "only nervously afflicted people."

Doubtless doctors know that a person who is nervous or inclined to hysteria, is in a serious condition; but they make a mistake when they imagine that every one understands the possibilities of such a state. The following true sketches are addressed to the doctors who do not wish to be cruel:

A woman working in a hotel had an attack that bordered upon pneumonia. The mistress and her husband, and all the household, felt sorry for the sick woman. She was moved into a room that could be warmed, and was well taken care of for a few days. The writer called about 11 o'clock on the third morning and found this sick woman cold and neglected—no fire in the stove, no breakfast. The first kind inquiry was answered by a smothered storm of tears. Inquiry as to the sudden change from kindness and care to coldness and neglect evoked the information that "the doctor says it is only nervousness."

Instead of pneumonia it was a case of nerves, and the patient was to be left cold and faint and unwashed till she gained strength by some miracle to go down three flights of stairs and dish up her own meal in a hot kitchen. The doctor, when questioned, said: "Yes; she is in a serious state; nervous system all run down; I told them so." This was not quite the same as the report of the doctor's opinion.

The next case was a school girl, away from home in a boarding school. At the beginning of her indisposition teachers and pupils were kind and attentive; but one day the writer on her way to the sick girl's room was waylaid by one of the teachers who said: "Miss So-and-So says

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Mary must be left to herself. The doctor says she is not sick, only hysterical. You need not bother to go to her any more." Not being under madam's control, the writer went to the girl's room, and arrived just in time to keep the child from crying herself into a fever. The sudden change from care and kindness to neglect filled the child's mind with fears of all sorts.

This doctor when questioned was surprised to find that madam had placed such a construction on his remark. He had said she was nervous. "It was no real illness."

Perhaps some day—thanks to public libraries, where every child may have access to books concerning all manner of medical subjects—every one will have a correct understanding of the medical meaning of "only nervousness" and "hysterical." In common parlance they mean selfishness, foolish fear about one's health, a vain wish to create a sensation and "make a fuss."—C. R. B.

TABETIC ATROPHY OF OPTIC NERVE.—Silex found forty-four syphilitics out of fifty-four cases of tabetic atrophy of the optic nerve. Twelve had undergone a thorough specific treatment; eight had been treated for years; fourteen with inunction cures and the rest with pills. He concludes that even the most thorough treatment is not always able to prevent the development of this affection. He found all treatment of the atrophy ineffectual; electric, potassium iodid, strychnin, argentum, etc., administered in all kinds of ways. The only possible means to retard the development of the affection is with strengthening therapeutics to tone up the organism, especially the nervous system.—*Vienna klin. Rund.*, Oct. 30th. *Jour. A. M. A.*

A NEW SYMPTOM IN PERIPHERAL FACIAL PARALYSIS.—Bordier and Frankel (*Medical Week*, Oct. 1, 1897; *Cleveland Medical Gazette*, Sept., 1898) relate their observations of a phenomenon in facial palsy, the original discovery of which they believe themselves to have made. Their observations lead them to ascribe to this new symptom both a diagnostic and a prognostic value.

If a patient with a severe facial paralysis is asked to

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shut his eyes, it will be found that while the eye on the normal side closes promptly and well, the one on the diseased side presents but a slight narrowing of the palpebral fissure. Now, if the closing effort be continued, the globe of the eye of the affected side will be seen to move first upward, then slightly outward, the eyelid in the meantime finishing its descent according to the degree of the paralysis of the orbicular muscle. Trial will demonstrate that the patient can not close the affected eye without this outward and upward movement of the globe; hence, if the patient is looking at some object, he is compelled to remove his gaze before he can close the eye.

The authors ascribe a triple value to the symptom. 1. It occurs only in peripheral disease. 2. The symptom is marked only when reaction of degeneration is complete; hence its presence stamps the paralysis as severe and serious, and in the cases observed, where the orbicularis is contracted without the deviation of the globe, the paralysis proved transient and curable. 3. It permits an accurate judgment of the progress of the recovery, since such result is invariably accompanied by a lessening deviation during orbicular contraction.—*N. Y. Med. Journal.*

TABETIC TALIPES VALGUS.—At a meeting of the Section in Orthopædic Surgery of the New York Academy of Medicine held on October 21st, reported in *New York Medical Journal* November 26th, the chairman, Dr. A. B. Judson, presented a photograph showing talipes valgus of the left foot in a man about thirty-five years of age affected with locomotor ataxia of several years' duration. It was an instance of Charcot's joint affection of the tarsus. The patient's right knee joint had been exsected for this condition, but stability had not been restored to the knee by the operation. Pathologically, there were pulpy and fluid degeneration of the bony and other tissues and disintegration of the structures of the joints. Equino-varus also, the speaker remarked, occurred in locomotor ataxia and in Friedreich's disease, but was the result, not of bony changes, but of abnormal muscular action. The primary disease was

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so serious and disabling that the question of treating these secondary affections was not often a practical one. Mechanical treatment might, however, be considered with three objects in view: 1. To give firmness to the foot and ankle and direct the sole to the ground. 2. To give lateral support to a Charcot knee. 3. To stiffen the knees by the use of automatic joints, in order to prolong the period for which locomotion was possible with the aid of crutches.

SOME OBSERVATIONS ON BRAIN ANATOMY AND BRAIN TUMORS.—Abstract.—Dr. William C. Krauss, of Buffalo, read a paper at the 92nd annual meeting of the Medical Society of the State of New York, Albany, Jan. 25th, 1898, with the above title.

He called attention (1) to the difficulty in remembering the gross anatomy of the brain, and (2) to the almost universal presence of optic neuritis in cases of brain tumor.

He attempted to overcome the difficulty in regard to the anatomy of the brain by formulating the following rules, which are somewhat unique and original, and at the same time easily remembered:

Rule of Two. 1. The nerve centers are divided into two great divisions, (1) encephalon, (2) myelon. 2. The encephalon is divided into two subdivisions, (1) cerebrum, (2) cerebellum. 3. The cerebrum, cerebellum and myelon are divided into two hemispheres each, (1) right, (2) left. 4. The encephalon is indented by two great fissures, (1) longitudinal, (2) transverse. 5. Into these two great fissures there dip two folds of the dura, (1) falx cerebri, (2) tentorium cerebelli. 6. There are two varieties of brain matter, (1) white, (2) gray.

Rule of Three. 1. There are three layers of membranes surrounding the brain, (1) dura, (2) arachnoid, (3) pia. 2. Each hemisphere is indented by three major fissures, (1) sylvian, (2) rolandic or central, (3) parieto-occipital. (3) Three lobes, frontal, temporal and occipital, on their convex surface are divided into three convolutions each, superior, middle and inferior, or 1st, 2nd and 3rd. 4. There are three pairs of basal ganglia, (1) striata, (2) thalami,

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(3) quadrigemina. 5. The hemispheres of the brain are connected by three commissures, (1) anterior, (2) medi, (3) post-commissure. 6. The cerebellum consists of three portions, (1) right, (2) left hemisphere, (3) vermes. 7. There are three pairs of cerebellar peduncles, (1) superior, (2) middle, (3) inferior. 8. The number of pairs of cranial nerves, in the classifications of Willis and Sommering, can be determined by adding three to the number of letters in each name: that of Willis making nine, and that of Sommering making 12, (or the name containing the more letters has the larger number of pairs of nerves, and vice versa) 9. The cortex of the cerebellum is divided into three layers of cells, (1) granular, (2) Purkinje's cells, (3) a molecular layer.

Rule of Five. 1. Each hemisphere is divided externally into five lobes of which four are visible, (1) frontal (2) parietal, (3) temporal, (4) occipital; and one invisible, (5) insula (Isle of Reil). Roughly speaking, the visible lobes correspond to the bones of the cranium: that is, the frontal lobe is underneath the frontal bone, the parietal lobe beneath the parietal bone, etc. 2. The brain contains five ventricles, of which four are visible—the right and left, or 1st and 2nd, the 3rd and the 4th; and one invisible, the 5th or pseudo-ventricle. 3. The cortex of the brain contains five distinct layers of ganglion cells.

Studying carefully 100 cases of brain tumor in which an ophthalmoscopic examination had been made for the presence or absence of choked disc (optic neuritis) Dr. Krauss announced the following conclusions:

1. Optic neuritis is present in about ninety per cent. of all cases of brain tumor.

2. It is more often present in cerebral than in cerebellar cases.

3. The location of the tumor exerts little influence over the appearance of the papillitis.

4. The size and nature of the tumor exerts but little influence over the production of the papillitis.

5. Tumors of slow growth are less inclined to be accepted with optic neuritis than those of rapid growth.

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6. It is probable that unilateral choked disc is indicative of disease in the hemisphere corresponding to the eye involved.

7. It is doubtful whether increased intracranial pressure is solely and alone responsible for the production of an optic neuritis in cases of brain tumor.

REGENERATION OF NERVE FIBRES IN THE CENTRAL NERVOUS SYSTEM.—This was a paper by Dr. W. L. Worchester, of Danvers. In an old case of necrosis of the right corpora quadrigemina he found in the degenerated portion several bundles of contorted fibres, entirely dissimilar to any normal structure in this region, and resembling an amputation neuroma. They seemed to originate from the tegmentum above the red nucleus. He believed them to be an outgrowth of newly-formed fibres from neurons that had been interrupted by the lesion.—Proceedings American Medical Society.

THE URINE AND BLOOD IN DIABETES AND GRAVES' DISEASE.—Badger (G. S. C.) Some observations on the urine and blood in diabetes in *Nat. Med. Review* throw new light on these subjects. Observations were made on three diabetic and, as control contrast, on twelve non-diabetic paients, to determine if, in the diabetic cases, the pancreas was diseased or not. The salol test was employed, fifteen grains being given every four hours until one drachm had been taken. The urine was examined four hours thereafter until salicylic acid had disappeared. It was found that this test, as a means of gaining information concerning the condition of the pancreas, was of little value in cases of diabetes. In a series of seven cases the reaction described by Bremer with Congo red or methyl blue was obtained in all, but with Biebrich scarlet the results were negative. Contrary to the assertion of Lepine and Lyonnet, the blood in splenic myelogenous leukemia was found to react with Congo red or methyl blue, not like diabetic, but like normal blood. *But it was found that the blood in exophthalmic goitre was affected by these stains exactly as is diabetic blood.* R. T. Williamson (*Brit. Med. Journal*, September, 1896) describes

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a method of diagnosticating diabetes by an examination of the blood. Take 40 cm. of water, 40 cm. of potassic hydrate of sp. gr. of 1.058 (a 6 per cent. solution), 20 cmm. of diabetic blood, and 1 ccm. of an aqueous solution of methylene blue, 1 to 6,000. Mix carefully and place in boiling water, without shaking. At the end of three or four minutes the blue solutions have been decolorized and become yellow in color. Shaking the tubes during boiling prevents the reaction, and if they are shaken after decoloration the original color reappears. This reaction was noted in diabetics and not in leukemia, Graves' disease, or in normal persons. When methyl blue was used (1 to 6,000) the color of the mixture, after the addition of the blood, was not blue, but clear reddish yellow, whether the blood was diabetic or non-diabetic. But on placing the tubes in boiling water the contents of that containing diabetic blood turned a dirty yellow color, while in the other tube the color remained clear reddish yellow. If methylene blue be used the reaction is much more striking. The color of the solution after the addition of the blood is a deep greenish blue, while after boiling for three or four minutes the solution containing diabetic blood turns a yellow color, the contents of the other tube remaining unchanged. One case of diabetes gave a reaction with methyl but not with methylene blue. Williamson gets the same results with the urine of diabetic patients, using 20 cmm. of urine instead of the same quantity of blood. It seems probable that the reaction in both blood and urine depends upon the presence of sugar. For, if the surgar is fermented out of a specimen of urine, decoloration will not occur, while watery solutions of grape sugar (1 per cent.) produce the same reactions as diabetic urine. The value of the reactions from a clinical standpoint seems slight. None of these tests are as simple as Fehling's; true diabetes cannot be differentiated from tempory glycasuria, and *by Bremer's method diabetes cannot be distinguished from Graves' disease.*

CRANIAL PERCUSSION.—Dr. James Tyson makes the following excerpts in *University Medical Magazine.* Paoli

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and Mori (*Il Policlinico*, February 15th; *British Medical Journal*, May 21, 1898) have made an extended series of observations on the value of percussing the cranial cavity as an aid to diagnosis in cases of intracranial disease. They begin by giving a careful account of the results obtained by percussing the normal skull. They point out the necessity of shaving the head in cases where the hair is thick, and they prefer to percuss with the finger directly on the surface. They recommend the division of the cranial surface into three symmetrical parts,—frontal, parietal and occipital,—and in each of these regions there are constant points, so that the note of one side may be gradually compared with the corresponding note of the other. In the case of the frontal and occipital regions there are median points as well. By their investigations they find that a dull note is found in a very limited extent, the rule being a high degree of resonance, with well-marked differences according to the portion percussed. They also find that the results vary with age and sex and, to a certain extent, with the density of the skull-cap. They also find that the sense of resistance varies in different instances. Thus in boys, in the first decennium, there is a very notable resonance in the note, more particularly in the temporal and parietal regions, while in some portions of the frontal (more particularly over the sinuses) and in the occipital, the note is fairly dull. In boys subject to rickets the note is still more resonant, and sometimes a crack-pot element is perceived. In adults the note varies to a certain extent; in women there is more resonance, the note resembling rather that obtained in childhood, and a crack-pot sound is not uncommon. In the adult man the resonance is much less than that obtained in women and children, and the areas over which the dull note is heard are much more extensive. In advanced age the opposite obtains, for in old women the resonance is considerably diminished, while in old men of the same age it is much more marked than earlier in life. The authors therefore draw attention to the fact that want of symmetry in the cranial development must be looked for. The areas which generally give dull note are the parts over the frontal

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sinuses and mastoid processes, especially in young children, which the writers regard as curious, in view of the facts that there are air-spaces in both these situations. After ascertaining these facts the authors proceeded to examine patients with different forms of intracranial disease. Their first case was a boy suffering from epilepsy, who had fractured his frontal bone by falling. Percussion showed marked dullness all over the portion corresponding to the fracture. The patient was subsequently trephined, and considerable thickening of the dura was then discovered, with large layers of hemorrhagic infiltration in the form of hematoma and exactly corresponding with the area of dullness. Several other cases of fracture were similarly examined, and the writers were enabled to note marked degrees in the amount of resonance. Another case is quoted in which, as the result of a fall, a patient lost the use of his right hand and arm and speech. On examination a wound was found over the right half of the occipital bone, and careful percussion showed a marked decrease in resonance on the left side of the head over the parietal. The patient improved considerably, and subsequently regained the use of the right hand and arm, and at the same time percussion showed a return of resonance over the left motor area. The authors consider that this method of examination is likely to prove of considerable service in certain cases of injury to the head.

ESSENTIAL PAROXYSMAL TACHYCARDIA.—Caceianiga (*Rivista veneta de scienze medicle*, p. 261; *Munchener medicinische Wochenschrift*, No. 29, 1898) states that essential paroxysmal tachycardia is not due to paralysis of the vagus or to irritation of the sympathetic, but that it results from fundamental disturbance of the nervous centres of the heart, a diminished resistance of the cardiac ganglia, associated with diminished or absent activity of the inhibitory centers. —*Tyson in University Medical Magazine.*

PSYCHIATRY.

EROTIC HALLUCINATIONS AFTER MENOPAUSE.—The

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American Medico-Surgical Bulletin mentions a case lately under the notice of Charpentier. A woman of fifty-five told the Doctor that, though she had passed the climacteric, she had had connection with a man, and now had unmistakable symptoms of pregnancy. She confessed also to her son. The Doctor, after examination, assured her nothing was the matter with her, and later discovered the connection was also a delusion. In a few months she returned expressing the same fear. Another woman of sixty-five had such strong erotic desires that she secluded herself completely for fear of yielding to her passion. While her husband was alive she said she was of a very cold temperament. Charpentier thinks that eroticism is rare during or after the menopause, but Vallan asserts that there is no period in woman's life in which erotic desires and hallucinations are more frequent.

INVENTOR'S-MANIA may one day become a distinct type of mental disease. A year ago Mr. Tesla wrote as follows:

> "I have made extensive study and experiment, to the end of finding some means of clearing the human skin of these deadly microbes and I have succeeded in inventing a means by which it can be kept free from their ravages." Part of Mr. Telsa's plan was the use of "a battery I have myself invented. With this battery I have charged human bodies so successfully that microbes have been thrown off in a perfect shower, some of them being thrown as far away as four and five feet."

Since then "discoveries" have been announced by the same authority for doing more impossible things than were ever dreamed of by Kelvin or Edison. One after another the wonders slip into oblivion like the great healers, the miraculous specifics, and the marvellous nostrums. But there is one invariable constant—the public avidity for the same thing with a mere change of names—*Phil. Med. Jour.*

THE INFLUENCE OF AUTOINTOXICATION IN THE PRODUCTION OF EPILEPSY.—Weber (*Munchener medicinische Wochenschrift*, No. 26, 1898). The views regarding the occurrence of epilepsy may be arranged as follows: The symptom-complex of this affection results from some disease of the cerebral cortex, in the production of which three elements are operative: (1) Hereditary taint; (2)

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personal predisposition, the result of injurious influences which may affect the nervous system at any time after birth; (3) a periodically recurring exciting cause, which, through irritation of the predisposed cortex, results in the occurrence of the epileptic seizures. Clinical observations, the results of investigations into metabolism, and pathologic anatomic findings, show that the poisonous products of disturbed metabolism have considerable bearing upon the second and third of these elements. Little is known as to the nature of these poisonous products; in some cases the offending agent is supposed to be carbamate of ammonium, resulting from urea. In the therapeutics, therefore, attention should be directed to dietetic regulations, which would influence metabolism and permit of the ready discharge from the body of these poisons. In addition, however, the administration of the bromides is of the utmost value.—*Tyson in University Medical Magazine.*

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EDITORIAL.

[*All Unsigned Editorials are written by the Editor*].

Why was Experience Ignored in the Commissioning of Volunteer Army Surgeons in the Late War with Spain? is a question the veteran surgeons of the civil war and the medical profession would be pleased to have the investigating commission answer. There were as competent medical men available for the army medical staff as there were among veterans to serve as field officers, able bodied medical men, not superannuated, who would have enriched the army medical department with experienced suggestion and adorned it with competent life saving service, where death reigned from inexperienced incompetency instead.

The Chief Function of the Army Surgeon is preventive sanitation. Army sanitary knowledge is an evolution of experience in military and civil life in sanitation which does not culminate at the age of twenty-eight years, but ripens with age and vigorous medical life and observation in the army.

The Age Limit for admission to the army medical staff should be extended to secure a maturer medical experience in our military hospitals and in field duty.

Mature Medical Judgment is Needed for the Army as well as in civil life. The maturity of medical judgment is not complete at twenty-eight years, the maximum age limit for admission to the army and navy medical corps, nor at thirty-eight. That country which will secure for its army and navy medical staff from twenty to forty or even fifty years of a medical man's ripe experience is the most fortunate and the best years of a medical man's service in the army for the good of the service in ripe and fruitful experience should be the thirty or thirty-five years preceding his retirement. Medical men are still young in knowledge of the resources of their profession at fifty and sixty and even up to the time of their retirement from service.

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The present maximum age limit is a mistake. A liberal proportion of surgeons and sanitarians should be eligible to commission in the regular service far beyond it. Young men for action, older men for wisdom in the medical staff. The younger men for the moving duties of the field, the older men for the permanent camp and general hospital service.

The Surgeon General, U. S. A., has the sympathy of this journal in the many trials of his department in the late Spanish-American war and our commendation, in the main, for the satisfactory manner, considering all the embarassments of the rush campaign, in which he has responded to the unusual and exceptionally exacting demands on the medical department with Governmental medical provision for not over twenty-five thousand men and suddenly called upon to arrange for the sanitation, treatment and medical supply of a quarter of a million of men. He was handicapped by inadequate rank, a too narrowly restricted age maximum for medical enlistment, subordinate authority for securing transportation and a precipitate service, in a season and climate not contemplated, when laws and appropriations were made for caring for the regular army. He discharged the onerous duties of his position with credit to the medical department and with honor to the medical profession. The Surgeon General did not order the prophylactic use of quinine in Cuba as we would have done, from our army experience in the South, nor get as many ex-military surgeons experienced in army sanitation, especially with regard to malaria in southern camps and fields, as might have been secured with more time at Santiago, but the Surgeon General is entitled to individuality of opinion and is not censurable therefor, as some of his critics seem to think.

General Sternberg appears through all the trial put upon him, to have been energetic, patriotic, well informed, provident in his recommendations and as swift to execute in his department as all the harassing circumstances permitted him and we sustain him. If commissary and quarter master had done as well at Santiago as the medical department it had been better for the sanitary welfare of the the army.

The Wonders of Opthtalmic Neurology and Nasopharyngology.—In the discussion of Dr. Hughes' paper on the management of epilepsy before the St. Louis Medical Society, Dr. John R. Keiffer related how a patient suffering from petit mal and intestinal atony, with enormous

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tympanites, had bowel symptoms relieved and the petit mal converted later into grand mal by an operation for strabismus. Next comes M. Thomas who, in *La Presse Medicale*, Oct. 29th, reports to the Congress of Gynæcology, Obstetrics, and Pædiatry the case of a child ten years of age with divergent strabismus, consequent on an attack of meningitis which he had undergone at the age of twenty-two months, and which left him in a semi-idiotic condition. After curettage of the nasopharynx for adenoids the strabismus entirely disappeared. Of course, the curettment cured the strabismus!

A few more of such remarkable results and the occupation of the eye neurologist will be gone. The nasopharyngologists will be spurred on to claim the field of neurotherapy and the brain will be useless as a source of disease. It is unfortunate that this last case fell into the hands of M. Thomas instead of those of M. Stephens, for in the latter's hands even the idiocy would have disappeared. It would be a good idea, however, to continue tracing up these remarkable results, as the New York Academy of Medicine did and run them down to the final truth. There would generally be found something for the neurologist to do even after these ophthalmologic cures; and even after a deflected septum may have been straightened or a spur of bone removed by the nasologist. It is wonderful, however, how neurotherapy is simplified when we see no further than the eye, the nose or pharynx. The vis medicatrix naturae is no where in comparison.

The American Microscopical Society, at its recent annual session, elected the following officers for the ensuing year: President, Dr. William C. Krauss, of Buffalo; First Vice-President, Professor A. M. Bleile, of Columbus, O.; Second Vice-President, Dr. G. C. Huber, of Ann Arbor, Mich.; Secretary, Professor Henry D. Ward, of Lincoln, Neb.; Treasurer, Magnus Pflaum, of Pittsburg; Executive Committee Professor S. H. Gage, of Ithaca; Dr. A. Clifford Mercer, of Syracuse, and Dr. V. A. Moore, of Ithaca.

Postponement of the Third Pan-American Medical Congress to December, 1900 is announced. The meeting is to be held at Caracas, Venezuela.

The Bedborough Trial.—A very interesting and important subject has lately come up in England through the Bedborough trial in which Havelock Ellis's great book "Sexual Inversion" was arraigned as an obscene offence

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against public morals through the indictment of the book-seller, Mr. Bedborough.

The case excited much interest in medico-scientific and philanthropic circles in England. There exists better reason for arraignment of the newspapers for publishing the court proceedings in which sexual perverts figure, especially such cases as Oscar Wilde, than the seller of such a book as "Sexual Inversion."

It is time that the law should provide for a commissio de inversio sexualis inquirendo" or an "inquirendo degeneratio morbosi" as well as a "commissio de lunatico inquirendo" in certain cases, for neuropsychic degeneracy displays itself as plainly in the perverted sexual phases of the morals as in the distorted features of the intellectual life alone, perverting both mind and emotions, as Havelock Ellis, Kraft-Ebing and others have so clearly shown. But as the prophets and reformers were stoned for telling unwelcome and unflattering truth and scientists have been likewise persecuted for example, Galileo and Jenner, so the revelations of truth in a book like that of Havelock Ellis, imperil those who have to do with them. Thus the history of human persecution repeats itself in the enlightened "fin de siecle" of the nineteenth century. But the blood of the martyrs of science is the seed of progress for humanity.

Insane Hospital Trained Nurses.—As "the care of the human mind," as Grotius wrote, "is the noblest branch of medicine," so the care of the insane is the noblest department of nursing and the thoroughly trained attendant upon the acute and chronic insane must possess all the knowledge, tact and skill of the ordinary hospital nurse, when his patient is critically ill and the special ability "to minister to the mind diseased" besides. Candor, caution, courage, patience, sympathy, tact and capacity which includes correct deportment, moral and physical, are the cardinal virtues of the good attendant. The good insane hospital nurse must approach, in his attributes, a paragon of perfection and not expect, in the majority of state institutions, over forty dollars a month. We are for highly trained hospital nurses and for gradation of service and higher pay for the best.

The Society of Medical Jurisprudence.—The 13th regular meeting will be held on Monday evening, April 11th, 1898, at 8 p.m., at 17 West 43d Street (Academy of Medicine). The paper of the evening will be "The Legal Disabilities of Natural Children Justified Biologically and Historically," by E. C. Spitzka, M.D.

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The Medical Dial, a monthly record of medicine and surgery began its career in the journalistic world at Minneapolis, Minnesota, in December. It will be issued on the first of every month at Minneapolis, Minn. Its Editor is J. W. MacDonald, M.D., F.R.C.S.E.; Associate Editor, C. K. Bartlett, M. D.; Business Manager, E. E. Griswold. Its collaborators are A. W. Abbott, M.D., R. O. Beard, M. D., J. W. Bell, M.D., J. Frank Corbett, M.D., J. W. Dudley, A. M., M. D., J. H. Dunn, M. D., F. A. Dunsmoor, M. D., W. A. Hall, M.D., G. D. Head, B.S., M. D., Knut Hoegh, M.D., C. H. Hunter, A. M., M. D., W. A. Jones, M. D., J. D. Simpson, M.D., J. H. Stuart, A.M.,M.D., H. B. Sweetser, M.D., David Owen Thomas, B.A., M.D., M.R.S.C.S.

The first number offers the following scientific and intellectual menu: Original articles, "Chronic Valvular Lesions".—A clinical lecture delivered at the Minneapolis City Hospital, by John W. Bell, M.D., illustrated; "Modern Ideas of Inflammation", by Knut Hoegh, M. D.; "What are the Proper Limitations in Alexander's Operation?" Editorials, "Salutatory", "The Sub-Conscious Mind—Subliminal Consciousness", "The Therapeutic Uses of the Suprarenal Gland", "The True Aims of a Medical Journal", "Etherion, the New Atmospheric Gas", besides reprints on the "Progress of Medicine". Its goes "forth among men, not mailed in scorn, but clothed in the armor of a pure intent" as we glean from the following editorial statement of its aims:

The True Aims of a Medical Journal.—It should have a high standard of excellence in all matters pertaining to medicine and surgery. It should not be only a gleaner in the fields of literature on the subjects discussed, but seek original theses of practical importance from the best authorities on diseases with which each is most familiar. It should criticise with knowledge and judgment, giving credit or blame justly with the reasons for the opinions expressed. In every respect it should have the six qualities of the ideal physician, viz: "Bold when sure; cautious in danger; kind to the sick; friendly with fellow-workers; constant in duty; not greedy of gain."

We trust its purity of purpose and nobility of aim, may remain with it, after it shall have gone through with the usual journalistic tussle for its honor with the ravishing medical advertiser.

We welcome the virgin *Dial* to our virtuous fold.

Sigmund Freund's Foolish Conclusion that "every case of neurasthenia has some abnormal occurrance or occurrances in the sexual life of the patient at the present

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time or since puberty," got into our selection department as a curiosity of the absurd lengths to which medical men will go in their conclusions, either when seeking medical notoriety or when they take leave of their season. The young and the aged, male and female, become neurasthenic. Any cause developing neuratropia may produce neuratonia or neurasthenia. Any cause capable of breaking down the nervous system before the development of distinctive disease of organs may give rise to neurasthenia in the neuropathically predisposed. It is simply absurd to assume, as he enjoins, an abnormal sexual life—masturbation for instance—in every case. It is not much more than a generation ago since nearly all insanity was absurdly assumed, by certain writers to be caused in the same manner, in the very face of overwhelming adverse clinical facts, until better observation forced the truth upon all, that insanity, as a type of nervous breakdown, destroying or impairing the normal higher inhibitions, led to excessive masturbation, etc., as to other excessive degrading acts and impulses. A spice of logic sprinkled with clinical observation would clarify the conclusions of many medical observers who are just now claiming medical attention to their vagaries in the *Mundus Medicinae*.

Dr. C. R. Greenlief has been appointed by Surgeon-General Sternberg Sanitary Inspector of the Army, having full charge of the Sanitation of Camps, and Inspector of Military Hospitals.

Thyroidectomy in Graves' Disease—A Correct Criticism.—The new periodical, the *Medical Dial*, in its initial number correctly criticises the new proposal to cut out a neuropathy. The results do not justify further resort to this unscientific surgical suggestion. The rest, new psychical impression and hope inspired, may help some to recover of Graves' disease after extirpation of thyroid, but such as would recover under such circumstances would recover better without the knife. The thyroid is not an organ to dispense with in the human economy any more than the badly treated ovary is. Six months of rest aided by a reconstructive or tranquilizing neurotherapy and changed environment will result in cure in most cases without the surgeon.

In the *Medical Record* of August 2nd, Dr. Arthur Booth reports his results obtained by thyroidectomy in eight cases of Graves' disease. The operation was followed by cure in

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five of the eight cases, one death, one improved and one not improved.

There seems to be considerable surgical testimony in favor of, and an increasing tendency to resort to partial thyroidectomy in this disease, especially in those cases in which the thyroid enlargement is marked and precedes the tachycardia. It is worthy of notice that Booth says "One has been improved", and in this case it is worthy of notice that the operation was performed only six months ago, so that we may expect further improvement and perhaps a cure, for the longer the period after the operation, the better appear to be the results. As profound a clinician as Hilton Fagge, after summing up the prognosis in Graves' disease, long ago, said: "The only possible inference seems to be, that most cases end in recovery."

The reviewer has observed several very troublesome cases which recovered in from eight months to two and a half years, upon hygenic and various modes of treatment. Hence until the results of surgical treatment of this affection are more decided than they yet appear, some suspicion must be entertained tnat the results are coincidents.

The Automatism of Epilepsis and Epileptoid States is well illustrated in an important possible medico-legal light in the following statement made in the letter of a distant patient of Dr. Hughes':

"One day in the bank just as I was going home to dinner, I leaned over to a friend of mine sitting in the bank and asked him to go along home. He declined, and I could not remember anything else until I came back to the bank, when I attended to the business of cashier as before. I did not, however, eat any dinner, at that time I had gone longer without medicine than I had ever since you had begun to prescribe for me."

Here is an apparently normal, automatic action of the brain and mind from pathological cause, the patient being under treatment for recurrent paroxysm of grande mal, kept in abeyance by treatment. The customary meal was omitted, but he might have eaten and yet have been in the same abnormal though apparently normal mental state. The essential epileptic lapse of memory is apparent in the patients confession, but how could it be proven? The fact in this case is undoubted, because we know the history and the cause. But suppose the law had been violated by this patient; a crime committed during this temporary psychical interregnum in the normal mental reign of this patient?

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How generous would the law be? How many pseudo experts, might be found, who, not having the expertness of clinical experience in the domain of alienism to properly judge of aberrant mental states, would decide this question boldly from their own inner conscience and say "he knows what he was doing." "Do not his actions show it?" "He acted as he always did save that he forgot his dinner."

There be more things in the heaven and earth of real alienism than are dreamt of in the pseudo philosophy of the dilettante psychological expert who imagines that insane mental states are matters of ratiocination rather than of clinical observation, as other diseases are.

American Medico-Psychological Association.—The annual meeting of the American Medico-Psychological Association will be held in the city of New York on Tuesday, Wednesday, Thursday and Friday, May 23d to 26th, 1899. Henry M. Hurd, M. D., President, Baltimore, Md.; C. B. Burr, Secretary, Flint, Mich.

Caution About Antipyrin.—*Wiener medizinische Blatter* says one should not prescribe antipyrin in combination with substances containing nitric acid amyl nitrite, spiritus ætheris nitrosi) since they form a light green isonitroso-antipyrin; calomel and antipyrin form a poisonous organic compound. Antipyrin and salicylate of sodium, if mixed together in powder form a paste, though in solution, they are not incompatible. Antipyrin and chloral form an oily solution. With *B*-naphthol, antipyrin forms a moist mixture.

With all these serious risks of incompatibility and death to our patients, is it worth while attempting to greatly extend the use of so dangerous a drug for internal administration? especially since we have accessible other equally efficient and really less depressing antithermics. Some medicines like some words might well become obsolete even though "made in Germany," "the home of the brave and the free" therapeutic innovator.

Proprietary Push.—The American Proprietary Pharmacist, besides being the acknowledged help to the medical profession that he has proven himself to be to the world, has established a reputation for push and confidence in himself and his specialties, that would have beaten Shafter in the taking of Santiago. He is a taking fellow and takes his name to every market in *terra firma* and one firm has lately stormed the battlements of Heaven. Read:

"When physicians are so situated that they cannot obtain the medicine through the drug stores, we will forward the

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same by mail, postpaid, in two ounce packages on receipt of the price, $2.00."

"God be glorified! Spread the news and save the tens-of-thousands that are yearly dying * * *"

National Board of Health.—A wide awake St. Louis daily newspaper thus wisely comments: "The plan which Dr. C. H. Hughes broached in his capacity as member of the St. Louis Board of Health, for the prevention of the pollution of the rivers of the Mississippi Valley by Chicago's sewage, deserves great consideration.

There is every reason to believe that Chicago will not give the plan the consideration it merits, and it is certain that as matters now stand, St. Louis has no power or influence to obtain such consideration for it.

The incident shows that some higher authority than State or city should take charge of the interstate problem of the pollution of rivers. A National Board of Health, with power to regulate such things, is one of the crying Federal needs. Such a department, with the proper Cabinet member to represent it, or such a subdepartment under, say the Department of the Interior, would materially assist the progress and development of the United States. Such a board has special reason for existing now that intercourse is more free between Cuba and the United States, and the consequent necessity greater for sanitary precautions to prevent the spread of yellow fever.

The influence of the entire country should be thrown toward securing it."

We are gratified to see the daily press of this nation taking hold of the project for a National Board of Health or Bureau of Sanitation and a physician in the Cabinet. They are needed.

Shakespeare's Last Illness.—A victim of a "merry meeting" with Jonson and Drayton.

The work of the one hundred and twenty-sixth session of the Medical Society of London was begun on Monday evening at the rooms of the society, in Chandos street, by a short introductory address from the president, Edmund Owen, surgeon to St. Mary's Hospital, who remarked that among the many treasures of their library were fifteen volumes of transcript, which formed the diary or common-place book of the Rev. John Ward, M.A., Oxon, who was vicar of Stratford-on-Avon from 1662 to 1681. Having taken his M.A. degree in 1652, Ward left Oxford for London to study anatomy at the Barber-Chyrurgeon's Hall, in Monkwell

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Street (where Dr. Scarborough, the friend of Harvey, was giving demonstrations), and to acquire a general knowledge of the healing art.

Not very many years ago it was quite usual for the professions of divinity and medicine to be combined in the one individual, and it was to be admitted that the custom still lingered in the persons of certain vicars and vicaresses, who were unable to keep themselves from dabbling in parochial medicine and quack remedies. Not a few country villages still contained such unorthodox practitioners, who dispensed medical advice to the peril of their too-confiding parishioners, and often to the annoyance of the local doctor. But the Rev. John Ward was not an empiric of this sort. He had worked diligently to acquire a knowledge of the medical profession, and was doubtless well fitted to practice it under the license which he probably received from his bishop at the time that he entered upon his clerical duties. In his diary, Ward asked himself specially to remember that he must "studie such diseases as are peculiar to women, and also to children, so as to be ready at them when I come into the country." He evidently meant to be a good, all-round man.

But the point to which Mr. Owen specially referred was that on taking up his work in Stratford-on-Avon, in the forty-sixth year after Shakespeare's death, Ward must, both as vicar and doctor, have been told of many facts concerning the bard by those who had been intimately acquainted with him. Unfortunately, he did not record much about him in those memorandum books; what he did say had been seized upon by the industrious Halliwell-Phillips, and duly recorded in his "Life of Shakespeare."

This was one of the extracts, and, coming as it did from a highly educated man, who had lived in the village of the Shakespeares, it was of undoubted biographical value. "I have heard that Mr. Shakespeare was a natural wit, without any art at all; he frequented plays all his younger time, but in his older days lived at Stratford; and supplied the stage with two plays every year, and for that had an allowance so large that he spent at the rate of £1,000 a year"—which in those times was a very considerable amount, corresponding, perhaps, to £3,000 or £4,000 of to-day. Another extract ran as follows: "Shakespeare, Drayton and Ben Jonson had a merry meeting, and, its seems, drank too hard, for Shakespeare died of a feavour there contracted." In those times, said Mr. Owen, it was customary to call obscure diseases "feavours," just as they

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are now called "influenzas" or "neuroses," but whatever the actual cause of Shakespeare's death might have been, it was evident that local tradition ascribed it, rightly or wrongly, to the effects of that "merry meeting." One had only to think of these three cheery friends together—Shakespeare, Ben Johnson and Drayton—to be assured that it was. A pity, however, that Ward, unperceived, could not have been there with his note book.—*London Telegram.*

Medical Expert Testimony.—A Suggestion.—The *Albany Medical Annals* for October contains an article on "Medical and Other Experts," by St. Clair McKelway, LL. D., regent of the University of the State of New York, in which the author thus indulges in the customary adverse reflections on the medical expert witness: "That the partisanship of the employment of experts should cease; the expert should be summoned by the court alone, and not by the attorney of either side under color of the court's authority; as many experts should be judicially summoned as the judge thinks the rights of all interests in the case will require; that, if necessary, a list of experts should be nominated to the judge by each side of the case, from which list the judge should select those whom he thinks could best be chosen; that the propositions submitted to these experts and their replies should be in writing; that the investigation of the questions upon which the views of the experts are required should be conducted by commission, not in open court; that the judge himself should be the final authority to place the net truth, gathered from all the expert testimony, before the jury with the same precision, authority and impartiality as he expounds to them the law; that the source of remuneration should be the public treasury, and that the measurer of the value of the time, labor, knowledge and reputation of the expert witness should be the judge."

Why are judges so much more trustworthy than doctors? And why these continually recurring reflections on the character of medical men before the courts? Medical men as experts are as honest and competent as the men of other professions. Intelligent cross examinations usually discomfit the pseudo expert and the evil is working out its own remedy. Pretenders will soon cease to pretend. Besides, there are constitutional rights, securing to every one on trial, all the witnesses, expert or otherwise, essential for his defence, which can not be legislated away. This crusade against the medical expert is unseemly and unjust. He is as good and as trustworthy as other experts and as knowledge as

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to what is necessary to expertness in medical testimony becomes more diffused with the profession and public, the egotistic false expert will cease to be.

A Valuable and Opportune Remedy.—This is the time of the year when grippe, neuralgia, dengue and "bad colds" abound—in fact, are all but universal, and the physician is kept busy prescribing for them. Among the favorite remedies in such cases is Laxiquinin, which, while of comparatively recent introduction, has already acquired an enviable reputation as a remedy in grippe, neuralgia and dengue and allied ailments. Laxiquinin, if given in the beginning of a cold, will abort it, while it is invaluable in the treatment of grippe, dengue and other catarrhal and malarial diseases, from which it takes away the chief terror —the "back-bone" characteristics. Laxiquinin, Toniquinin and Iquinin are manufactured by the Iquinin Chemical Co., of St. Louis.—*National Druggist, Dec. '98.*

Dr. F. A. Todd died of rabies at the Presbyterian Hospital from the effects of hydrophobia, Chicago, Sept. 30th. His death was the outcome of being attacked by a rabid dog on the lawn of the Ohio State Hospital for the Insane, at Toledo, Ohio, of which Dr. Todd was assistant superintendent.

Resolution on Vivisection.—At a recent meeting of the Joint Committee of Scientific Societies of Washington, D.C., on vivisection, the following resolution was adopted: "Resolved, that the Secretary be authorized to call the attention of the prominent medical and scientific journals of the country to the importance of the meeting of the American Humane Society to be held in this city December, 15th, and to request that editorial notice be taken of the danger that the influence likely to be exerted at that meeting may cause the vivisection bill now pending in the Senate to be called up and passed."

Readers of this journal are requested to ask their respective Senators and Representatives on this subject.

Why and How the Brain Works.—The power of the brain to endure and its propensity to break under pressure is a matter of hereditary aptitude. Some brains, like mules, refuse to go beyond a certain pace or point, and no goading or coaxing can induce them to overwork. Other brains are like mettled horses. They can be spurred to complete exhaustion and profound collapse, falling dead under the

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whip or spur. Other brains are like oxen, slow, limited, steady, but sure in action.

The mule-like brain can, but won't; the ox-like brain can't and therefore will not be overworked, while the spirited and willing horse brain, like the disposition of the horse, can be worked to death.

In modern life there are many willing spirits among ambitious mental toilers, who, seeking fame and realizing that labor only brings success, are unremitting workers, till nature succumbs and the struggling brain breaks down in insanity under great pressure. The individual is fortunate if he have no more vicious inherent aptitude than to take on nervous depression, or neurasthenia, under pressure, and if he have added none of the usual vices of public life, of alcoholic stimulants, late suppers, to hasten collapse of nervous energy under high professional pressure. For to be dowered with a bad brain heritage—heritage of tendency to instability, and to add to that vicious brain-breaking indulgences, is to doom one's intellect to destruction. Recuperation is often possible after the first breakdown, if vices have not added to the breaking pressure and inherent weakness.

Poor McCullough and J. K. Emmett, in the dramatic profession, are conspicuous and warning illustrations, while bright, brilliant, beautiful, little Victory Bateman is an example of pure and simple brain-break under crushing overwork and brain strain that ought to have been spared her. The sordid avarice of the box office killed her, innocent perhaps of the certainty of collapse, but all the same it killed—

"For evil is wrought by want of thought,
As well as want of heart."

But the box office is not the only cause of actors' and actresses' breakdown. They drop out under the dissipating pace that kills. Long hours of social dissipation after the play, stimulant drug habit from self-medication to postpone the headaches and tired feeling and overcome the exhaustion temporarily of their strained lives. In this category fell Courtney Barnes, whose last act, like McCullough's was in asylum for the insane, and hosts of others equally unfortunate, who lived, if they did not love, not wisely, but too fast.

The willing horse was worked to death, or, what is near the same, to perilous brain-break, with a possibility of mental aberration and probable finale of dementia or total obliteration of mind.

It is a pity to see American histrionic talents thus destroyed through the greed of the box office.

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The professions are full of such victims. A restless, towering ambition, with often an insatiable brain organism, bequeathed by an overworked, and, maybe, overstimulated ancestry, projected into an environment of competition and struggle for existence, often prematurely begun and sometimes too long maintained before success appears, prepares many of our public people for tragic breakdown at the threshold of ambition's fruition.

It is unfortunate to come into the world and have to go through it in any of the great professions, like medicine, law or the stage, handicapped by a bad mental organism; that is by a brain which has inherently unstable tendencies, predisposing to prematurely break under the ordinary strain of life's burdens, cares and duties or even of its pleasures. But it is especially pitiable to see one break down because of extraordinary burden who might have escaped under ordinary strain.

Whether Victory Bateman will recover is a question for her physician to answer. To answer it intelligently, I should have to confer with him and to have knowledge of factors essential to correct diagnosis other than those made public—her antecedents, life history and ancestral make-up; her present physical condition and the mental phases of her malady, together with her progress to date, as to brain rest and proper environment.

The preceding editorial was suggested by the feat of a slender, delicately framed, diminutive actress, having strong hereditary memory, aptitude and marked inherent stage proclivity, both of her parents having been players of ability and repute. She may be said to have been born and reared and daily fed upon theatre environment. This girl was what the management of theatres would call one of the cleverest and most versatile of her profession. Impressionable without limit and capricious, volatile, excitable in her nervous system as a consequence of the enormous mental tasks imposed and never refused, because they were simply new impressions and not conscious burdens to her intensely receptive brain, which can receive until it breaks with the pressure of the strain, she is surely on her way to the asylum where such overworked prodigies always land unless they fall victims to intercurrent disease.

In twenty weeks this actress is said to have memorized and properly placed in different plays one hundred and forty thousand words. Here is the record computed by the daily press of this girl's marvelous feat of verbal memory to which must be added the many details of various stage attitudes

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and costumes and incidents to be mastered and remembered by this delicate girl asked to carry more than a mental giant's burden.

VICTORY BATEMAN'S MENTAL FEAT.

	Words.
Mrs. Winthrop, in "Young Mrs. Winthrop"	7,000
Flordilisa, in "A Fool's Revenge"	6,750
Louise, in "The Two Orphans"	7,250
Cecile, in "David Laroque"	6,500
Adrienne, in "A Celebrated Case"	7,000
Camille, in "Camille"	7,300
Carmen, in "Carmen"	7,200
Portia, in "Julius Caesar"	6,500
Eliza, in "Uncle Tom's Cabin"	7,500
Ruth, in "The Wages of Sin"	6,000
Juliet, in "Romeo and Juliet"	7,500
Dora, in "Diplomacy"	6,900
Portia, in "The Merchant of Venice"	6,600
Ophelia, in "Hamlet"	7,000
Mrs. Gregory Graysin, in "The Tragedy"	6,500
Desdemona, in "Othello"	7,000
Alice, in "In Spite of All"	7,500
Frou Frou, in "Frou Frou"	7,000
Vera, in "Moths"	6,000
Roxane, in "Cyrana"	8,000

Some of the papers, notably the *St. Louis Post-Dispatch* and the *New York Sun-Journal*, seem to think it remarkable that the end of this unfortunate girl should have been predicted by the editor of this journal. But such prognostic is founded in the principles of neuroprognosis, in the limits which neurophysiology imposes on the capacity of the psychic neurosis.

The brain can not transcend its physiological limits even though the soul be willing to impose the burden. It will first protest in morbid excitability, insomnia, unrest, pain and in changes of display readily discernible to the skilled psychiater, and the records of psychiatry warn us plainly of the limit in the brain wrecks gone out before to ruin on the sea of reckless, unwise, unlimited mental effort. It is a little remarkable to the alienist and the neurologist, in view of the universal dread of death and the lunatic asylum, to see the eagerness with which professional and business men and women strive and strain their brains to the verge of union between mind and brain, soul and organism.

In the race of modern life there seems a constant striving, by violation of healthy brain life, to effect a severance of normal mind from brain.

For twenty weeks she has played "leading business" for six nights and two matinees, and played a new part

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every single Monday night. She played "Young Mrs. Winthrop" eight times the first week of the season, and she rehearsed Flordilisa, in "The Fool's Revenge" every day during the week.

It would take a person of average intelligence at least two weeks of almost constant study to memorize that part. Miss Bateman learned it perfectly in a few hours snatched from her sleep.

Last week she undertook the part of Roxine, in "Cyrano de Bergerac", in Chicago, and her brain gave out. New plays mean new dresses and new "effects".

While Miss Bateman was playing Flordilisa she studied and rehearsed Louise in the "Two Orphans". While she played Camille she studied Carmen. While she played Carmen she studied Portia, and so on through the list of "brilliant performances" advertised by the manager of the theatre where Miss Bateman was playing. There was not one day of rest between these days of frightful work.

There was not one hour of relief from the anxiety which hovers over a conscientious actress like a pall all the time she's trying to "work up" a new part.

New dramas were rehearsed and re-rehearsed. New dresses were planned and fitted and rushed through the dressmakers' hands—any way and every way—to be ready for the next part. New ideas, new characters, new methods to consider, worry over and debate; not one minute of healthy, rational, real life.

One hundred and forty thousand words learned and interpreted in twenty weeks! Twenty separate and distinct impersonations in as many weeks.

The nervous strain of the acting left out, the constant bodily fatigue unconsidered, the stimulation of the emotions, entirely uncounted, the lack of sleep, the lack of exercise, the lack of any one of the simple balances that hold the wheel of reason in its place—all these things left out of the reckoning, still there remains an appalling task for any human brain to master. The wonder is not that Miss Bateman is tired, but that she has held out under the strain so long.—This news writer talks like a neurologist.

A Singular Phobia omitted from the preceding paper on certain phobiaes of psychic neuratony came to our notice in a mild form of erotopathic perversion.

The party is a young man of twenty years attached to a man somewhat older but not over twenty-five years, I should judge, though I omitted asking the precise age when

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l was consulted. This couple have lived together—slept together—from early youth and are close, warm friends.

Nothing immoral has been confessed between them, but absence for any length of time causes intense longing on the part of the younger for the older, and the fear of being parted from him causes him much mental disquiet. He is troubled with a fear of becoming a pervert and of failing mentally.

Both are manly men with common manly tastes for many sports, though tenderly regardful of each other—much as Rienzi loved his brother or as Damon and Pythias loved. These young men have also artistic and musical talents, are fond of boxing and fencing and are robust and manly.

The older being a bibliophile, has read Kraff-Ebing and through much study of the subject and over-mental work, became somewhat neuropathic and morbidly alarmed. A sort of hypochondriacal melancholia with erotopathic insanity as an ultimate fear came on with the failure of nerve tone but disappeared under rest, tonics and sedation.

The Didactic Lecture.—Among the editorial notes in the *Medical Age* occurs the following quotation and comment which we approve: An editorial writer in the *American Medico-Surgical Bulletin* regrets the decadence of the didactic lecture, and even goes so far as to ask if we are not getting too much clinical teaching. He quotes a recent address of Prof. Von Ziemssen, of Munich, who says: "The idea that the clinic can replace systematic lectures is absolutely foolish, but unfortunately it is very common among the student youth; and on the other hand the studies at home can never replace the spoken words, all the less if the latter are illustrated by demonstrations with figures, systematic drawing, models, etc." There is little doubt that the student who comes to the clinical lecture without knowledge of pathology, or destitute of any definite perceptions regarding the general scientific outlines of disease, can derive nothing from the clinic, save a few empirical impressions. There is undoubtedly good ground for the warning that error is now being made in an opposite direction, and while students may not be getting too many clinics, they are often getting too few lectures upon the fundamental principles of medicine or the scientific aspects of disease.

The Popular Mariani Wine Company sends us the following letter, from Mavrogeny Pacha, Physician-in-Chief to His Majesty the Sultan, showing the esteem in

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which distinguished physicians hold the well-known wine "Vin Mariani", which our readers will be pleased to read:

"Yildiz Palace, Constantinople, July 2d, 1895.

"Sworn enemy of the proprietary medicines which have of late years inundated all countries, and whose only object is the acquisition of gain for the proprietors, without the least benefit to science nor to humanity, I make a single exception in favor of one preparation as meritorious, and which is thoroughly praiseworthy. I refer to 'Vin Mariani', which, without guise of deceit and mysticism, is valuable in its fortifying qualities, and has conferred high benefits upon weak and suffering humanity.

"[Signed] MAVROGENY Pacha,
"Physician-in-Chief to His Majesty the Sultan."

M. Mariani has gathered the written opinion, clinical notes, etc., of many thousand physicians from all parts of the word, showing the universal high opinion of practitioners who have subjected "Vin Mariani" to thorough test.

Bovinine in Hospital Practice.—Through the courtesy of Dr. T. J. Biggs, of Sound View Hospital, of Stamford, Conn., we are placed in possession of some records of medico-surgical practice with auxiliary blood supply—hæmatherapy—at this institution.

These records make an excellent clinical showing of the auxiliary therapeutic value of Bovinine in medical and surgical practice, in fact, a remarkably satisfactory exhibit of curative results both from external employment and internal administration of this hæmatic reconstructive.

Tilden's Hydrocyanate of Iron, and Compounds, supplies in convenient form, this recently revised and appreciated remedy for epilepsy and other atonic spasmodic states.

Forty years ago a favorite prescription for epilepsy of Prof. Magagin, of the Keokuk Medical College, was a pill of ferocyanaret of iron and valerian. Tilden & Co. have sought to meet the increasing want of the profession in offering several compounds of this remedy in reliable form. See advertisement.

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IN MEMORIAM.

JOHN B. HAMILTON IS DEAD.—In the death of the distinguished editor of the *Journal of the American Medical Association*, the sad event occurring from typhoid intestinal haemorrhage December 24th, 1898, the profession of America, the American Medical Association and the faculty of Rush Medical College have sustained an inestimable loss.

Dr. Hamilton fell in the thickest of life's battle and too early in the conflict for so valuable a man to die. He was but fifty-one years old. Yet he had done much and was doing too much for the strength of any man when he fell ill. Besides being the editor of the great journal of the association which he edited well, he was the superintendent and physician in chief of the Elgin Illinois State Hospital for the Insane and he filled a surgical chair in a great medical college. Dr. Hamilton served his country in the latter part of the civil war and later in the regular army of the United States as a military surgeon. Entering the Marine Hospital Service in 1876, he soon advanced to the Surgeon Generalcy of that service which, in 1892, he resigned for the position he filled as head of the American Journal to the day of his untimely death.

While Surgeon General of the Marine Hospital Service, Hamilton also filled the chair of surgery in the University of Georgetown.

Dr. Hamilton was a man of energy on which, unfortunately for him, he placed no bounds. Ambitious, zealous, steady of purpose he accepted every responsibility which fell in his way. He was even President of the Board of Trustees of the Chicago Public Library, a trust which he discharged—as he did all other responsibilities—with fidelity and honor. To all this work was added exacting hospital work and the labors of a large private practice.

Conscientious, ambitious, indefatigable, discharging every duty with a sacred sense of honorable obligation to duty and to every environment, he lifted the great journal of the American Medical Association into prominence and high appreciation, but under it and other burdens he fell a victim and a martyr to overmuch responsibility. He was a good physician to others but not to himself. His precepts for longevity never found personal application. His life was too ambitious and too unselfish. The profession needed him. He loved the profession and he followed the beck of duty to his doom.

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The Superintendent and Trustees of Northampton Lunatic Hospital pay the following tribute to First Assistant Physician Holmes, lately deceased in that institution:

DR. CHARLES M. HOLMES, our first assistant, died October 7th, 1898. It seems fitting to add here a tribute to his faithful services to the hospital.

In the nine years of his residence here he had, by his devotion to the interests of the hospital and to the welfare of the patients, won the esteem of all who were associated with him.

He was an earnest student in the specialty which he had chosen for his life work and which he liked well, and was looking forward to the coming year with pleasure because of the better facilities for his work which he hoped to enjoy.

At the time of his death he was well equipped by study and experience to fill the position he occupied with credit, and to the advantage of the hospital.

Of a genial nature, he possessed many qualities which endeared him to the patients, and which engendered in the friends of patients a feeling of confidence in the institution.

By his death the hospital has lost a faithful officer; the officers, a loved associate; the patients, a friend.

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REVIEWS, BOOK NOTICES, ETC.

AMERICAN PHARMACEUTICAL ASSOCIATION. At the forty-sixth annual meeting of the American Pharmaceutical Association, held in Baltimore, August 29th to September 3rd of the present year, the following report was unanimously adopted:

During the past year no action has been taken by Congress on the subject of Metric System of Weights and Measures. The bill making this system the legal system in the various departments of the Government remains in the hands of the Committee on Coinage, Weights and Measures, where it was sent more than a year ago. This lack of action, as you are all aware, was caused by the attention of Congress being given to measures made necessary by the war with Spain, and to secure a successful termination of the same. Your Committee, however, are pleased to report substantial progress in the adoption and use of the Metric System by the world at large. The most important advance in its recognition is the use of the Metric System of Weights and Measures in the recently issued British Pharmacopoeia; and, although the old Imperial System has also been given in this work, it is probable that the action taken is the stepping-stone to the exclusive adoption of the Metric System in future editions of this authority. In addition to this, a bill has passed both Houses of Parliament legalizing the system in Great Britain, and probably before this date has received royal assent. Russia has also made the adoption of the Metric System a certainty after a stipulated date.

It is to be regretted that our own physicians do not more generally use the Metric System in their every-day prescription writing, as was shown by a paper read by Prof. Whelpley at our last meeting; our American physicians do not take up its use as rapidly as we would expect from members of a profession so progressive in science and in investigation.

This is no doubt largely due to the fact that medical students are still taught mainly in the old system of Weights and Measures, and the difficulty they experience in adapting new terms and calculations to the dosage which they have been taught, prevents their serious consideration of the subject.

We can hope for no rapid progress in the Metric System in medicine until our medical schools and colleges teach this system alone, and medical authors at least give it the preference rather than stating the equivalent in Metric terms. In view of this fact your Chairman would suggest that a resolution be passed by this Association to be presented to the American Medical Association at its next meeting to be held at Columbus, Ohio, requesting the American Medical Association to use its influence in bringing

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about the exclusive use of the Metric System of Weights and Measures by all colleges and schools of medicine recognized by them in the United States.

This would require only such men as are engaged in scientific instruction in teaching medicine to change their old established methods of dosage and calculations, and all students coming under their instruction would from their entrance into the college know no other system of weights and measures.

In accordance with this suggestion, a resolution covering the proposition is herewith presented:

WHEREAS, The Metric System of Weights and Measures is used exclusively in the United States Pharmacopoeia, and is official in the Pharmacopoeias of nearly all other nations, and

Whereas, It has become the almost universal system of Weights and Measures in scientific calculations; be it

Resolved, That the members of the American Pharmaceutical Association request the American Medical Association to use its influence with all colleges and schools of medicine recognized by them in the United States, to use exclusively the Metric System of Weights and Measures in the instruction of students, beginning with the classes entering said colleges and schools in the college year of 1900.

DR. JOHN HUNTER'S GRUFF AND TENDER SIDES. John Hunter, the great surgeon whose work in dissection and practical experiment gave the medical practice of the last century an incalculable impetus, was rough or smooth in his dealing with new pupils, according as he found them pretentious or humble. He was not unwilling to "answer a fool according to his folly." One morning a very young man mentioned quite casually that he had some thought of giving a course of lectures on comparative anatomy.

"Sir," said Hunter, dryly, "that is a bold undertaking. I once had thoughts of doing the same thing, but the difficulties and necessary qualifications were so great that I did not think myself competent. You, I dare say, may feel yourself quite equal to it."

Another youth came to town and sought him out with the hope of receiving lessons from him.

"Well, young gentleman," said Hunter, when the ceremony of introduction was over, "so you are come to town to be a surgeon? And how long do you intend to stay?

"One year," was the reply.

"Then," said Hunter, "I can tell you that won't do. I've been here a great many years, and worked hard, and I don't know the principles of the art."

After some further talk the surgeon decided to give the lad a trial, and made an appointment with him for the next day; but it was at no easy hour.

"Come to me to-morrow morning, young gentleman," he said, "and I will put you in the way of things. Come as soon after four as you can."

The youth kept the appointment, but early as it was Hunter was already busy in dissecting beetles.

But not all young men were snubbed or lectured at the start. To one who showed the proper spirit of energy and humility Hunter was gentleness itself.

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A pupil at one of the hospitals one day called and requested the great man's acceptance of a very delicate and well-executed preparation of the internal ear. Hunter was delighted with it, insisted on his staying to breakfast, and in the course of the meal said to him:

"Any man who will set about a business and do it as you have done that ear may do anything he pleases in London."

Then, finding that the young man had not been attending his lectures, he asked the reason.

"Because," said the youth honestly, "I'm not advanced enough to profit by them."

"That, sir," said Dr. Hunter, "is very complimentary, "but you must allow me to give you a perpetual ticket, so that you may come when you will."—*Youth's Companion.*

HEALTH COMMISSIONER Max C. Starkloff's Annual Report, the twenty-ninth, of the Health Department of St. Louis, is a handsome, readable and instructive production, setting forth a record of zealous work and good sanitary recommendations for the welfare of St. Louis. The sanitary work done by the Board of Health of St. Louis during the past year has been large but it would have been greater had the recommendations of the Board of Health always zealously urged and advocated by the Health Commissioner been all fully carried out by adequate appropriation by the city legislative assembly.

A singularly unwise notion prevails in the departments of the city which hold and vote the funds, that sanitary matters, like funerals, can be provided for last, and this foolish notion leads to a good many needless funerals. A dead citizen, it is true, is no further trouble, but live citizens pay taxes and dead paupers have to be buried at the city's expense, when some of them might be cured and sent to work again.

But neglect of sanitary legislation in a large city affects not only the poor, it causes contamination and disaster to the rich. The financially strong and guilty who could remove unsanitary ruts do not go unpunished.

Epidemics and germ propogated disease may get into an alderman's family as readily as in a tramp's kitchen, if quarantine measures are officially neglected. Consumption germs in milk may lodge in councilman's lungs or kill the king of Kerry Patch as readily as a suckling infant in Clabber Alley.

The dignity of the city assembly is no exemption from the incesissions of the deadly microbe and neither beer nor boodle will act as antidotes.

It is a lamentable shame that city Health Boards have to fight so hard to induce the people and the City Fathers to protect their health from the insidious foes of life, in the milk, water, food and air of cities.

WE HAVE LOOKED OVER WITH PLEASURE a copy of the new edition of *Gould's Pocket Pronouncing Medical Dictionary*. This little book has been very much improved in every respect. The number of words has been almost doubled and the vast experience of the author in dictionary work has enabled him to perfect its details, to add many words new to the science and to omit un-

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necessary and obsolete terms. Meriting special mention are: The simple and practical system of pronunciation, the large percentage (about 75%) of words specially pronounced, the concise definitions, the many valuable tables especially that of Clinical Eponymic terms is a novelty that in itself is worth the one dollar asked for it; the style in which the book is made, the type, shape, printing and binding; the convenient size of the book. By the use of specially made thin paper, narrow margins, the exclusion of rare and obsolete words, etc., the bulk has been so reduced as to be properly called a *pocket* dictionary,—"infinite riches in little room".

3500 copies of this book have been sold in advance of publication. The publishers have received orders aggregating several thousands from England, Australia, New Zealand and Canada, and no less an authority than the *London Lancet* in its issue of September 3d, the students' number for 1898, recommends Gould's Dictionaries only, all others, English and American, being ignored. P. Blackiston's Son & Co., Philadelphia, are the publishers.

THE BERLINER KLINISCHE WOCHENSCHRIFT comes to us irregularly. A late number contains the following, with an otherwise interesting table of contents:

INCOMPATIBILITIES.—The *Berliner klinische Wochenschrift*, "Ueber einige Receptsunden und ihre Folgen," Professor Binz, of Bonn, calls attention to the following incompatibilities: Preparations of iron with tannic acid produce ink; chloroform in glycerin or tincture of iodine in water will not mix; sulphonal is very slightly soluble in water; calomel with potassium iodide results in the formation of the irritant mercuric iodide; tincture of iodine and mercurial ointment applied locally and together produce intense irritation; permanganate of potassium added to syrups causes a brown coloration, due to the abstraction of oxygen. Combinations of potassium chlorate with sulphur or tannic acid, and of permanganate of potassium, sulphur and carbon, should not be prescribed.

HAY FEVER. Its Successful Treatment by Hollopeter. W. C. Hollopeter, A. M., M.D., Clinical Professor of Pedriatrics in the Medico-Chirurgical College, of Philadelphia, etc. P. Blakiston Son & Co., publishers, 1012 Walnut street, Philadelphia.

The soundness of the author's views upon the theme of his book may be gleaned from his opening remarks therein, all we have space to give and quite sufficient to commend the little treatise to discriminating clinicians. The idea of an external irritant in hay-fever pervades most views of it. There can be no doubt, however, that there is usually an underlying systemic condition which renders individuals susceptible to the disease. It may, in addition, be accepted as conclusive that the nasal abnormalities found in hay-fever subjects are as often incidental as causative. "The condition is always one of lowered resistance general or local."

THE DECEMBER NUMBER of the *Tri-State Medical Journal and Practitioner* comes to us in a handsome new dress and under new auspices and with an attractive table of contents. Dr. James Moores Ball retiring with a graceful and

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meritorious poem entitled, "Poor Doc Jones" and Dr. Warren B. Outten succeeding to the editorial pen. The new editor who makes his editorial mark on "Man's Inherited Martyrdom" and "Dr. Jim's Atlantean Tumor" two meritorious productions befitting the well-known ability of the new new editor. The "Battle Hymn of the Republic," a poem of decided merit written by Major Thos. O. Summers, M.D., on board the Resolute after the destruction of Cervera's fleet and Frank Lydston's "Faithful Unto Death" add to the decided literary merit of the volume before us, while by Ohman Dumesnil, Edward Parrish, Weber Jay, H. S. P. Lare, J. J. Connor and an entertaining lot of editorials are the attractive features of the Christmas edition. Merit and talent and science, sparkle in the number before us.

THE NEW VOLUME OF THE SURGEON GENERALS INDEX-CATALOGUE. The third volume of the second series of the *Index-Catalogue of the Library of the Surgeon-General's Office, United States Army*, has been received at this office.

The *New York Medical Journal* gives the following analysis of its contents: It consists of 1,100 pages of text, and carries the vocabulary through the letter C. The librarian, Surgeon James C. Merrill, states that it gives 11,112 author titles, 10,636 book titles, the titles of 34,314 journal articles, and those of 677 portraits. Like all the preceding volumes, it is most creditable to the surgeon-general's office.

CLEVENGER'S MEDICAL JURISPRUDENCE OF INSANITY OR FORENSIC PSYCHIATRY is accompanied by an exhaustive presentation of all the decisions of all the courts upon the questions involved.

The author, Dr. S. V. Clevenger, of Chicago, is a well-known alienist, the Consulting Physician for Mental and Nervous Diseases to The Alexian and Reese Hospitals, author of "Comparative Physiology and Psychology," and "Spinal Concussion." He was formerly Medical Superintendent of the Illinois Eastern Hospital for the Insane, and Pathologist of the Cook County Insane Asylum, Chicago. Lawyers Cooperative Pub. Co. Rochester, N. Y.

ANNOUNCEMENT OF IMPORTANCE TO EVERY PHYSICIAN. Messrs. Lea Brothers & Co. announce for publication in March, 1899, the first volume of *Progressive Medicine*, a new annual which will be issued in four handsome octavo, cloth bound and richly illustrated volumes of about 400 pages each.

With the appreciation of the self-evident utility of such a work to all practitioners, the publishers are enabled to ask the very moderate subscription price of ten dollars for the four volumes.

THE PHONENDOSCOPE and its Practical Application, with thirty-seven illustrations. By Prof. Aurelio Bianchi, American Edition.

This book is an interesting little work on Phonendoscopy illustrating the uses of the Bazzi-Bianchi Phonendoscope and is a valuable aid to diagnostic resource. It is beautifully illustrated and bound in cloth. Price 55 cents, including postage, 5 cents. George P. Pilling & Son, sole agents for U.S.A., 1225-27-29 Callowhill Street, Philadelphia.

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DISEASES OF THE NERVOUS SYSTEM. By Charles E. Beevor, M.D., Lond., F.R.C.P., 12mo., pp. xvi, 432. With twenty-eight illustrations and thirteen plates. Philadelphia; P. Blackiston, Son & Co., 1898.

The *Medical News Pocket Formulary*, edited by E. Quin. Thornton and published by Lea Brothers & Co., of Philadelphia, is a valuable *vade mecum* of ready reference prescriptions, not likely to be dispensed with when once you have possessed this valuable little book for your buggy seat or inside pocket.

P. Blakiston Son & Co. continue the publication of their well-known visiting lists. These little books are indispensable and conveniently portable time-savers in the way of memoranda record pages of work done. They should be in every doctor's inside pocket.

The Medical Jurisprudence of Insanity; Hospitals for the Insane and their Treatment. By Clark Bell, Esq., Honorary member Belgium Society of Mental Medicine, Honorary member of the Medico-Legal Society of France.

THE PSYCHIATER. A new publication. Volume one, number one, is a journal containing a report of the scientific work at the Illinois Eastern Hospital for the Insane, and published by the Medical Staff.

Some Results of the Administration of Thyroid Extract on the Red and White Corpuscles and Hemoglobin in Cases of Anaemia Associated with Melancholia. By Sam'l Bell, M.D., Newberry, Mich.

Primary Focal Haematomyelia from Traumatism; a frequent but often unrecognized form of Spinal Cord Injury. By Pierce Bailey, M.D., consulting Neurologist to St. Luke's Hospital, New York.

Professor Behring's Patent on Diphtheria Antitoxine. By B. T. Whitmore, A.M., M.D., LL.D., Member of the American Medical Association, of the Chicago Medical Society, etc.

Railway Spine and Litigation Symptoms. By W. W. Grant, M.D., Denver; Reprinted from *The Medical Age*, published also in *Journal of the American Medical Association.*

A Review of some of the Cases in which Insane People have been Released from Custody by the Courts within the Past Six Years. By Chas. E. Atwood, M.D.

Vocal Hygiene. By Thos. F. Rumbold, M. D., member of the St. Louis Medical Society; permanent member of the American Medical Association, etc., etc.

Advances in the Domain of Preventive Medicine, read before Illinois State Medical Society. By F. M. Carter, M.D., Waukegan, Ill.

The Normal Histology and Pathology of the Neuroglia, (In relation especially to Mental Diseases). By W. F. Robertson, M.D.

Wie ist die Fursorge fur Gemuthskranke. By Prof. C. Furstner, Director der Psychiatrishen Klinik der Universitat Strassburg.

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Lehrbuch der Nervenkrankheiten, für Arzte und Studirende von Prof. Dr. H. Oppenheim, in Berlin, Mit 287 Abbildungen.

Jahresbericht uber Leistungen und Fortschrittee auf dem gebiette der Neurologie und Psychiatrie. By I. Jahrgang.

What is the Morphologic Status of the Olfactory Portion of the Brain. Prof. Burt G. Wilder, Cornell University.

The Effect of Uterine Curettage and Drainage on Diseases of the Tubes. By W. W. Grant, M.D., Denver.

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THE

ALIENIST AND NEUROLOGIST.

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ORIGINAL CONTRIBUTIONS.

OUTLINE OF PSYCHIATRY IN CLINICAL LECTURES.*

PSYCHO-PHYSIOLOGICAL INTRODUCTION.

By DR. C. WERNICKE,

Professor in Breslau.

I.

MENTAL DISEASES ARE BRAIN DISEASES, BUT YET DIFFER FROM THEM PRACTICALLY. PROJECTION SYSTEM AND CENTRAL PROJECTION FIELDS. ORGAN OF ASSOCIATION. BRAIN DISEASES TO BE DEFINED AS: DISEASES OF THE PROJECTION SYSTEM, MENTAL DISEASES AS DIFFUSED DISEASES OF THE ORGAN OF ASSOCIATION. CONTRAST OF PRIMARY AND SECONDARY IDENTIFICATION IN THE MATTER OF SPEECH.

THE subject for our consideration, the science of mental diseases, is, in reality, a part of internal medicine, but owing to its practical importance and for other reasons of a more extrinsic sort, it has at all times demanded and received

*Translated by Dr. W. Alfred McCorn.

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special treatment. Unfortunately it is this part, which has been backward in its development and is now in the position occupied by general medicine a century ago. You know that then a developed pathology in our modern sense, *i.e.*, one based on the morbid derangements of function of individual organs, did not exist, and that therefore certain symptoms, which recurred with special frequency, if also in the most diverse groupings, were given the importance of disease types. At this stage the medical knowledge of diseases did not far exceed that now prevailing among the laity, when cough, palpitation, fever, jaundice, chlorosis and emaciation were considered true diseases. This is exactly the present state of psychiatry, at least among the majority of alienists, its representatives. Certain symptoms of special pregnancy form for them the real nature of the disease, so a depressed state of the emotions in the broadest sense the condition of melancholia, the exalted mood with an excess of movements that of mania, and the like. Now a whole multitude of these supposed diseases are differentiated. But as naturally the combination of symptoms is by far more varied and complex, so the necessity arises of making the artificial boundaries, first broader, then narrower, which has been done by different observers in very different ways; in spite of all efforts to bring the cases of disease artificially into a form, so that they fit into the scheme, there still remains a large number which cannot be adjusted and no way be made to fit. Indeed, he who judges impartially and possesses the requisite experience, finds that *the great majority* of cases will not conform to the usual mode of consideration. Therein I am pleased to admit that psychiatry has recently made a material advancement. The work of men like Griesinger, H. Neumann, Kahlbaum, Meynert, Emminghaus and others has not been in vain. But even these prominent investigators have succumbed to the temptation of confounding individual symptoms with the nature of disease, and how debased the average position of psychiatry is to-day can be estimated by the fact that the prevailing theory of insanity, whose merit consists of an easy nomenclature, now enjoys general recognition and

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could be regarded, by a thinker like Meynert, *e. g.*, as an advancement.

Under these circumstances the teacher of psychiatry is apt to tarry too long with the symptomatology, if the standard of another discipline will be applied. But his task will be clearly defined, he will proceed as in the other disciplines of medicine and must deduct the symptomatology from the known attributes of the organ, of whose disease it is a question, *i.e.*, in our case from the attributes of the brain. Only in this way is the prospect offered us of gaining a natural, *i.e.*, based on its nature, and likewise exhaustive classification and comprehension of the symptoms.

The hypothesis that mental diseases are brain diseases, is now disputed by no one.* If we accept this, we must soon add: diseases of the brain of a special kind and special location; for they are in no way identical with the so-called organic brain diseases, which are far better known to us. If we bear in mind the classification of brain diseases into focal and general, mental diseases certainly cannot be included among the first, but perhaps among the latter. There are two general diseases which are included among the organic brain diseases: meningitis and progressive paresis. Nothing would hinder us from adding to them the mental diseases as a third category. But now the question arises: what are the fundamental signs by which this third category is differentiated from the other two so-called organic?

To get more into this question, we must occupy ourselves a moment with the symptomatology of brain diseases. All symptoms of brain disease are, as you know, either focal or general. The two general diseases of the brain designated, which belong to the organic brain diseases, are examples of those with prominent general symptoms in the clinical picture. But on the other hand they are characterized by the fact that focal symptoms also occur in them, indeed, it may be said they are never entirely absent; whereas mental diseases do not present these focal symptoms, consequently mental diseases represent general diseases of the brain

*Only a difference of opinion prevails as to how far they are of a functional nature or due to palpable changes.

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of a special kind, as they are never accompanied by focal symptoms.

The importance, which the focal symptoms attain according to this definition in our subject, makes it seem advisable to keep their nature fully in mind. Through Meynert we have learned that the voluntary muscles and sense organs are connected with the cortex of the cerebrum by conduction paths, which extend in physiological continuity through the brain, spinal cord and peripheral nervous system. The sum of these paths, in which the law of isolated conduction prevails, he calls the projection system, and thus clearly and unmistakably expresses the fact of physiological continuity in contradistinction to anatomical continuity—a fact which by recent research is proven to be perfectly true. Corresponding to the division of the cerebrum into two hemispheres, the projection system is also divided into two halves, as is known, with the arrangement that motion and sensation of each half of the body is associated with the opposite cerebral hemisphere.* The expression "projection" is evidently borrowed from optics; as here the course of the rays through a system of lenses is to be followed exactly, so, in spite of all interpolation of ganglion elements in the paths of the projection system, the physiological continuity and isolated conduction are universally preserved. The majority of the focal symptoms may be readily traced to local interruption or stimulation of the conduction paths in the projection system.

A second series of focal symptoms may be traced to the fact that the terminal, respectively stations of origin, of the paths contained in the projection system are located in different parts of the cerebral cortex. The law of isolated conduction prevailing in them is thus extended to their anastomoses in definite cortical areas of the cerebrum. Such terminal stations of the projection system,—we will call them *projection fields*—are for example known for the optical tract in the occipital lobes, for the acustic in the temporal lobes, for motion and sensation of the leg, arm, facio-lingual region in the so-called upper, middle and lower thirds of the two central convolutions, for the motor speech tract in

*On the whole that applies at least.

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Broca's convolution. Of course this does not imply that the mode of projection within this region causes nearly the same arrangement as is found in the fibres of a peripheral nerve. On the contrary we know that in the projection fields of the cortex, nerves lying far apart in the periphery unite in a common junction and cite, as the best known example, the projection field of speech in Broca's convolution. As we will see later, the matter of function must therefore be decisive as to the manner of their projection in the brain cortex, because only the functionating nervous system is connected with the cortex. Here is involved a second attribute of the projection fields: the projection fields of the cortex are likewise the places where the memorial images of the various functions of the nervous system are located. The localization of memorial images then follows the same principle, so that the occipital lobes are the places of the optic, the temporal lobes those of the acustic memorial images, the so-called middle third of the central convolution—the arm region—likewise contains the memorial images of the tactile impressions gotten by the hand. The fading of these definite categories of memorial images belongs to the focal symptoms of brain disease.

Therefore the focal symptoms prove to be characteristic throughout by the fact that they show the disordered function of the projection system, be it in its paths, be it in the projection fields of the cortex. Then the focal symptoms of the brain are all to be traced to functional disorders of the projection system, and its terminals in the different projection fields of the cerebral cortex, so mental diseases are distinguished from the two other so-called general organic diseases of the brain by the fact that the projection system and the projection fields are not thus affected sympathetically.

We are not as yet fully informed as to the extension of the projection fields in the cortex and their exact location. But it could be readily conceived that the advancement of our knowledge in this matter will show, that the entire cortex of the cerebrum is occupied by these projection fields. In our search for a locality, which is the site of the disease,

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have we not then made an end to the brain and resorted to transcendentalism? Well, this is not the case, there is rather at our command, besides the projection fields, an anatomical basis of large extent, which we may claim, with good right, to be the site of mental diseases, namely the system of association fibres serving for the union of the projection fields. If this is so, mental disorders then are the special diseases of this organ of association.

We are forced to assume the destruction of these association paths in certain focal diseases of the brain; they form, in fact, the natural transition to mental diseases. A case of the sort occurs in certain rare examples of so-called transcortical aphasia.

For ages the hope has existed that in aphasia the starting-point would be found, which would pave the way to the comprehension of mental diseases. That this hope has not deceived us, that there are true cases of aphasia, which are the most intimately connected with known mental diseases, the patient, whose condition will now engage our attention, may prove to you.

This patient* now presents very plainly the traces of a severe mental disorder, which he had from 1885 to 1889. He stands and walks in a definitely fixed posture, but which has not hindered him from working at his trade as a cabinet-maker and comfortably supporting himself and his family. All the questions we ask him remain unanswered, or answered only by gestures. In fact he is entirely speechless and for five years has not been able to utter a sound. Still he understands nearly all that I say to him, as you can plainly see by his gestures and the execution of requests made of him. Still if I ask him certain other questions or make certain other remarks, he plainly shows that he does not understand them. Consequently he does not possess perfect comprehension of language, but only to a certain extent—always the same,—while he has entirely lost the motor function of speech.

This state of complete motor and partial sensory aphasia has developed from a definite mental disease, which for the

*Verhandlungen des Congresses für Innere Medicin. Wiesbaden 1890, p. 272.

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present I will call a motor psychosis and has then continued as a permanent defect. In the course of this disease mutism and verbigeration occurred temporarily, two psychotic symptoms, which also affect the domain of speech.*

If we try to get a better comprehension of this connection, we must keep in mind the different forms of aphasia, which are established by clinical observation. For this purpose follow me for a moment to the neighboring province of the so-called organic brain diseases.

Two projection fields of speech are known, a motor and a sensory. The motor (*m*) is the place of origin of the motor speech path (*mp*), a part of the projection system, which leads to the nerve nuclei of the medulla oblongata participating in speech. It is also the seat of memorial images of movements occurring in the act of speaking or motor speech ideas. The sensory speech field (*s*) contains the central termination of the sensory speech path (*sp*) and also of the acustic nerves, but it is likewise the site of the memorial images of speech clang or, as they are called by Helmholz, the clang images of the words. The clinical picture of motor or sensory aphasia occurs accordingly as the motor or sensory projection field is destroyed.

But we will now waive consideration of our patient for a moment, who is in fact an anomaly, for the insane are not aphasic as a rule. The sensory speech path and the sensory speech field are usually intact in the insane, they can understand all that is said to them. They are also in full possession of their motor speech function, in so far as it depends on the integrity of the motor speech path and the motor projection field. Nevertheless we find the striking phenomenon, that the answers of the insane are often irrational and irrelevant, or seem to have no relation to the question asked. How is this phenomenon to be explained, must we still hold to the presumption that the correct answer is the expression of normal brain function? Here there is only the one explanation, that the function of those nerve paths, which pass between the two projection fields,

*The temporary speechlessness of the insane we call mutism; verbigeration the monotonous, usually rhythmical repetition of one or some few words.

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must be disordered. Hence insanity appears to us to be a disease of the association organ. But remember that in the current scheme of aphasia, those association paths are made use of, in that the sensory speech path *sp* and likewise the motor *mp* are regarded as continued through the cortical regions (projection fields), *s* and *m* to a supposed concept centre *C*. The transcortical paths *sC* and *Cm* are simply association paths, and in their province the functional disorder must be located, which is manifested in the improper answers of the insane. But every mental disease, in so far as it is manifested in the patient's perverse assertions, is for us an example of transcortical aphasia. The curious case of aphasia, in consequence of a mental disease, from which I started, suggests the assumption that under certain conditions all the parts *Cm* and a great part of the paths *sC* may be interrupted in the course of the disease. Then a real aphasia, of the same sort as in our patient, will probably occur.

The assertion of a concept centre *C* in the scheme of aphasia has often been misunderstood. But that it was not to be avoided and therefore requisite is shown by the following consideration. Sensory aphasia from destruction of the projection field *s*—cortical sensory aphasia, as I have called it, is characterized by the patients losing the memorial images of the speech clang and consequently the words are not recognized when heard again. But for the comprehension of language evidently more is demanded than for the recognition of the word clang: the proper sense must be united with it. If we maintain the antithesis of word and concept, we can only mean that some of these paths pass through the cortical centre *s* to other cortical regions, which represent the related concept. In reality this supposed concept centre is distributed to places in the cortex widely separated. But it shows the necessity of differentiating two entirely different processes with respect to the comprehension of language. The one, the recognition of the word clang images, depends on the retained function of the projection field *s*, which we will call ***primary identification***. The other process, the rise of the concept joined to the

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word, depends on the function of association paths with this supposed concept centre. We call it *secondary identification*. If we compare the whole process with that of sending a despatch, as others have done, then *s* is the station where the telegram is received, but the real recipient is represented by *C*. The relation of *C* to the motor projection field of speech in *m* is very similar: here *C* is the real sender, but *m* the telegraph station from which the despatch is sent. In other words: the sense, the concept of the word rises, and it needs to be conducted by anatomical paths to the motor projection field of speech *m*, for the word to be spoken.

If we call the mutual relations of *C* to *m* secondary identification, as we have a right to do in reasoning from analogy, so as the result of our consideration, the proposition follows: The peculiar utterances of the insane are signs of disordered secondary identification.

Progressive paresis must be assigned a very exceptional position among mental diseases; it can, as has happened, as well be included among the organic brain diseases. But still without doubt it is a mental disease. In the very frequent cases where it presents marked focal symptoms, foci are actually demonstrable, in which the otherwise diffuse disease process affects the projection system and the projection fields. But exceptionally there are cases of progressive paresis, where such focal symptoms are only intimated, for these then show the paramount transcortical character of the disease.

The comparison of aphasia with the speech symptoms of the insane has taught us that a disorder of secondary identification may be the common basis of mental disease and certain cases of aphasia. The harmony of the two diseases is explained by their like location in transcortical or association paths. We will discover their difference in that the mental disease affects, with individual choice, these paths separately, whereas the focal disease destroys compact masses. Exceptionally the general result of individually diseased paths is the same as that of a focal disease, and then a transcortical aphasia may follow a mental disease.

Thus from the special location we postulate a special

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kind of disease: this is characterized by the fact that it differentiates, in a certain measure similarly to degenerative neuritis, the individuals among the association elements, and, as we presume for the present, according to the analogy to degenerative neuritis, according to the form of the different function.

II.

CONCEPT CENTRE TO BE REPLACED BY SOME LOCALIZED IDEAS. INITIAL IDEA AND TERMINAL IDEA IN THE SPEECH SCHEME. GENERALIZATION OF THE SPEECH SCHEME. KINDS OF MOVEMENTS: EXPRESSIVE, RELATIVE, INITIATIVE. DISORDERS OF SECONDARY IDENTIFICATION ARE PSYCHOSENSORY, PSYCHOMOTOR OR INTRAPSYCHICAL.

Our previous speculation has demonstrated to you the contrast which exists between brain diseases and mental diseases, as soon as we observe the province of speech. In fact the pathology of speech forms one of the most familiar chapters in the province of brain diseases. The utterances of the insane again comprise such a large part of the symptomatology of insanity, that from this alone the right can be deduced to consider the insane at present from this single point of view. I hope that your understanding will be facilitated for the following exhaustive discussion by the fact that we hold to the simplified conditions of our example.

We have to occupy ourselves still further with the (voluntary) fiction of a concept centre *C*. The advancement, which our clinical knowledge has gained from aphasia, shows most plainly that this present assertion was indispensable for the extension of our knowledge. To trace it to its true value I have only hinted at heretofore. Permit me to carry this suggestion somewhat further.

As I have said above in speaking of the central projection fields, we can consider it an assured fact that memorial images and ideas* are localized, *i.e.*, joined according to the content to different anatomical regions of the cerebral cortex. This localization could be disregarded in the scheme of

*See below for the different use of these two terms.

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aphasia, and with some propriety the standpoint could be taken, that the receiver and sender of any dispatch in the imaginary concept centre *C* would be identical with all the rest of the brain cortex and, as we must again say, the association system belonging thereto, so that the two projection fields *s* and *m* are brought into an artificial opposition to all the other projection fields. On this oppositional position depends then the differentiation of the terms cortical, which relates to the two projection fields *s* and *m*, and subcortical or transcortical, according as it is a matter of paths, which lay on this or that side of these definite projection fields. By this view the anatomical idea was implicitly given that the sum of the transcortical paths *sC* and *mC* could form a compound column, accessible to destruction by focal diseases, in the immediate vicinity of the two projection fields *s* and *m*, while they must be regarded as radiating to the most diverse regions of the cortex. The clinical picture of transcortical motor and sensory aphasia seems to have been due to the rare accident that disease foci exactly invade the postulated site. That these rare cases are included among the focal diseases of the brain, will be entirely comprehensible. On the other hand the observation of a patient, whom I have presented to you, proves that such disease types can occur in the course of a typical mental disease, and so form a natural transition to mental diseases.

It is essential to our purpose to really refrain from such rare occurrences. But if we stick to the chosen example and hold only to the principle of localized ideas, so we appropriately divide the centre *C* into two localized ideas joined by an association path, which we will term *A* and *Z*. *A*, the *initial idea* is united by an association path *sA* with the sensory speech field. *Z*, the *terminal idea*, is united by a similar path *Zm* with the motor projection field of speech. *AZ* is the association path. The scheme thus changed corresponds somewhat to the process occurring when an arithmetical problem is given the patient. Its comprehension occurs in the initial idea *A*, its solution corresponds to the terminal idea *Z*, and when this is spoken, the

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innervation from *m* occurs. Between problem and solution complicated trains of thought may occur, thus showing that the association path *AZ* may be conceived as divided many times. No special proof is needed that normally the whole process conforms to law, in a certain measure by previously formed paths, so that the result can be foretold. We can for the present assume that it is just the same with any question: the comprehension of the question is represented by *A*, the sense of the answer by *Z*, and the path inserted between embodies the fact that the answer arises from a more or less simple reflection. If we do not suppose the intention of being led astray, so must we recognize in this case in normal persons, the answers will occur in a very definite sense, which accordingly may be known before with approximate accuracy. The conformity to law, which may be here observed, depends, as we shall see later, on the principle of the beaten paths.

The previously maintained example admits of an extension, by which it may become the foundation of the whole symptomology of mental diseases. We have only to replace the projection fields of speech by any other projection field. In the place of speech utterances any motor manifestation then occurs, and *m* represents this projection field, accordingly as the movement occurs in the arm, leg, back regions, etc. The central projection field of a sensation replaces the sensory speech field. In fact it occurs the same in seeing as in the comprehension of the spoken speech clang. Here also the primary identification takes place in the central projection field of the optic nerve, but for the comprehension of whatever is seen the conduction to other projection fields, secondary identification, is essential. Without this secondary process the sight impression is lost to the one receiving it and remains unintelligible, like the impressions of hearing in transcortical aphasia. And this is true, as slight reflection shows, of all sense impressions.

That this generalization of our scheme is permitted, even demanded, a closer inspection of our original example teaches. The answer, which I expect from the patient, does not need to be spoken; it may be written or com-

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municated by silent pantomime and gestures, or in the performance of any chosen command. According to the muscles engaged in its execution, the projection field *m* will have a different significance and correspond to different places in the cortex. On the other hand my question, respectively my command, can be given without a spoken word, either by writing, pantomime, expressive movements of the hand or the like.

A short time ago I said that our scheme with the proposed modifications can aid in the deduction of the symptomatology of insanity, in so far as it consists of the patients' movements. But then this limitation is only necessary when we exclude from the movements the speech utterances, pantomime, attitude and all those manifestations of the patient within the province of expression, as corresponds to ordinary parlance and the views of the laity. But in the last instance there are also movements which are utilized for judging of the inner processes of an insane person, and for scientific consideration it would be an error to neglect this condition. And the more you really see of the insane and become acquainted with their symptoms, the more you will be convinced that finally nothing else is to be found and observed but movements, and that the general pathology of the insane consists simply of the details of their motor condition; for as a matter of course the loss of movement may be just as characteristic as its occurrence.

We conclude from movements as to the processes occuring in the consciousness (in the organ of consciousness) of another. If these movements are those of speech, so this fact is much more tangible and evident than all the other movements. The symptomatology of the insane has then for its subject the movements, in so far as they seem to be the function of the organ of consciousness, in other words of the organ of association. We here find only the single reservation, which impairs the universality of the proposition. There are of course motions, which are independent of consciousness, like those of vegetative life, of the heart, respiration, the vascular walls, viscera; as well as

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the majority of reflex movements. As we will see later, these movements may be affected sympathetically in the insane, but then do not form the real object of observation. We will further find that in rare cases the state of the temperature and in almost all cases that of the nutrition, as expressed by the body weight, is of great symptomatic significance. But the exceptions are thus exhausted, and we will see that they are all to be considered secondary and in their turn possess a conformable dependence on the motor manifestations of the patients.

We are then justified in disregarding the exceptions enumerated, and have merely to keep more closely in mind the movements as functions of the organ of consciousness. A classification according to practical points of view is essential. Therefore we distinguish expressive, reactive and initiative movements. As we will see, this classification has the advantage that it embraces the sum of all possible manifestations of motion, and therefore it is to be preferred to Meynert's classification into movements of defense and offense, however portentious and fruitful this has proven in other respects,* it is defective and needy of improvement, in that a sharp boundary line between the three kinds of movement is often impossible. It is in the nature of the affair that certain movements of the one province come under another, that, according to the observer's standpoint, it may be a matter of dispute into which province a certain movement is to be placed. However, for the present we hold to the classification, because it has stood the test in the clinic of mental diseases.

By expressive movements we understand especially all those by which the affects and emotional state of a person are manifested. The speech movements largely serve this purpose, but not exclusively, and as far as they serve, they are speech movements in the broadest sense, so that they include, *e.g.*, the plaintive tones and the groans of pain. Words, which especially serve this purpose, are, as you know, the majority of interjections. Laughing and crying are specific expressive movements, like general pantomime.

*See his Sammlung popular-wissenschaftlicher Abhandlungen.

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But the expression of the face while at rest, depends on certain muscular actions, and also the attitude of the whole body, which may betray, as well as words or pantomime, the person's affective state and affective condition. The movements of the entire body, serving for the expression of joy, mirth, arrogance, egotism, scorn, anger, anguish, sorrow, trouble, despair, hope, hatred and love are sufficiently known and appropriate that it will be unnecessary to describe them here. Normally the person awake is always animated by an expression, therefore we have become acquainted with lack of expression as an important clinical phenomenon.

The reactive movements are those following actual external stimulation. A person's answers to questions, regardless of their content, are always to be regarded from this point of view of reactive movements. Also an answer, which does not consist of words, but of other expressive movements, when the person questioned, with a significant mien, places his finger to his lips, comes under the conception of reactive movements. The absence of an answer may often be regarded as a significant symptom. The reactive movements, which are of great significance in the clinic of mental diseases, are especially the patient's conduct during the physical examination, toward the little favors shown by the nurses, toward requests of any kind, on the approach and greeting of the physician, toward the entirely changed situation in the rooms of the asylum. Also those movements, which are necessary for the gratification of the bodily wants, although they are to be traced to internal stimuli, must be included among reactive movements. It might, however, be proper to add the last category of movements to the initiative, while again many of the former at the same time fall into the province of expressive movements. At any rate it is to be again stated, that the absence of reactive movements is just as characteristic and valuable as a symptom in the insane as their morbid modification.

By initiative movements we understand all those which arise spontaneously and are not due to an actual external stimulus. This negative definition includes a part of the

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expressive movements, while another part belongs to the reactive. We will then always have to judge of the expressive movements, whether they belong to the initiative or the reactive. It might be asked, whether there are really initiative movements, *i.e.*, those, which occur without any external cause; for usually an external cause may be demonstrated for an apparently spontaneous action. But such causes often have only the significance of exciting causes and recede in their importance before the preponderating internal motive, so the assertion of initiative movements is justified. In general the initiative movements consist usually of a whole series of individual motor processes and then are to be called actions. The whole conduct, behavior, actions of a person in a certain situation, all his movements, so far as they are not expressive and reactive movements, belong to the initiative.

The nerve excitation, which takes place over the path *sAZm*, may be compared to a reflex process and this path called a "psychical reflex arc." The movement innervated from *m* then appears as the result, as the tangible consequence of this process of excitation. The clinical method of psychiatry consists in studying the final result, in drawing a conclusion from the process as to how it occurred.

As you will likewise notice, it is really the reactive movement alone, which may be compared in this way to the reflex process. If the reactive movement may now consist, as in the example we started with, of a spoken word or any other movement, it may always be very readily considered a consequence of an external stimulation, an external impulsion depending on processes of motion. How is it then with the other kinds of motion, the expressive and initiative? Evidently these also permit of the same consideration; for with the exception, that in initiative movements it seems questionable, whether they occur entirely without external cause, we will be justified in replacing the external stimulation by the memorial images of past stimulation and in every case, where the present external stimulus is wanting, to consider those memorial images as initial members of the movement occurring in the psychical reflex

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arc. We may even go so far as to use the existing movement as a proof of this assumption. For as it is not conceivable without a cause, while an apparent cause is wanting for the movement, the actually existing movement can only be due to a force treasured up somewhere. But these supplies of reserve force are memorial images, as we shall see later.

After these preliminary remarks we are now able to familiarize ourselves with the morbid derangements of movement, which are observed in the insane. They all depend on disorders of secondary identification, as I have above shown. But still I must remind you, that we have considered as secondary identification, not only the relation of *s* to *A*, *i.e.*, of the nearest sensory projection field to the initial idea, but also the process of excitation proven in the inverse direction of conduction from the terminal idea *Z* to the motor projection field *m*. We were justified in this, because the path *Zm* is an association path, as well as the other *sA*, and in these association paths the physical process occurring in them must always be identical, in whichever direction it occurs. For the same reasons we can also infer the relation of *A* to *Z* to secondary identification.

As it is always a matter of nerve paths, so a morbid change of excitability, respectively capacity for conduction, is always to be based on the disorder of secondary identification, and all possibilities are exhausted, if we keep in mind the three cases of lowered excitability, respectively capacity for conduction, increased excitability and perverse excitability. We will call the path *sA* psychosensory, the path *Zm* psychomotor, the path *ZA* intrapsychical. The possible cases are then contained in the following summary:

Psychosensory	*Psychomotor*	*Intrapsychical*
Anæsthesia	**Akinesis**	**Afunction**
Hyperæsthesia	**Hyperkinesis**	**Hyperfunction**
Paræsthesia	**Parakinesis**	**Parafunction**

The objection may be raised against this, that there are always disorders of motion, which oppose us in the insane, as I have stated, and that therefore the whole symptoma-

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tology is exhausted in the three cases of hyperkinesis, akinesis and parakinesis. This objection is justified in a certain sense, and needs an exhaustive discussion. It is the easiest to refer it to the example of conversation, with which we started. If the patient is silent when he should speak, we will be able to consider this symptom a circumscribed form of akinesis limited to the province of speech. If he presents the symptom of loquacity, it is likewise a circumscribed form of hyperkinesis. Whereas, if his answer is nonsensical in its purport, so one will be justified in ascribing this to parakinesis, but still a closer inspection would always be necessary, because then a certain misconception is to be expected and presumed. For practical reasons we will always be obliged to differentiate two entirely different things in the act of speech, namely the motor act as such and the purport of the works spoken. But as there are now really morbid modifications of the act, or as we may term it, of the formal part of speech, so it would be the more correct to employ the word parakinesis in this restricted sense. We have an example in the symptom of imperative speaking and the monotonous repetition of the so-called verbigerator. The same consideration, that the content must be differentiated from the formal part of movement, applies to all the expressive, as well as to the reactive and initiative. As it is possible for a patient to utter the veriest nonsense in formal words perfectly correct, so the expressed affective condition in language perfectly correct can of itself be of a morbid nature, as well as his acts formally correct, but false in content. In all these cases then we will not assume a disorder of the psychomotor identification, but be constrained to seek the derangement in more remote parts of the psychical reflex arc. This corresponds to common parlance and the usual view, in that the means the patient uses to communicate his feelings, express affects, etc., are generally overlooked completely as self-evident affairs. After this discussion you will comprehend that in the insane, we often find symptoms of disordered identification, when the motor mechanism itself is perfectly intact.

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III.

NATURE OF MEMORIAL IMAGES. AFTER-IMAGES OF THE RETINA AND OPTICAL MEMORIAL IMAGES. THE ASSUMPTION OF SPECIAL PERCEPTION AND MEMORY CELLS DO NOT SUFFICE FOR EXPLANATION. LOCAL SIGNS OF THE RETINA. IDEAS OF SIGHT.

Ere I can introduce you further into the symptomatology of mental diseases, I must again return to the concept centre, so often mentioned, or rather, as you can apprehend more correctly, to the localized memorial images. You have become convinced, I hope, in the course of the discussion, that the presumed concept centre, as well as the concepts themselves, is incapable of localization in a certain sense.

In the introduction to my first lecture I have asserted as a fact, confirmed by the experiences of pathology, that the central projection fields are localized in different territories of the cerebral cortex. We must likewise ascribe to them the attribute of being places of memorial images, whence then a definite localization of the memorial images was to follow. We will have to make ourselves better acquainted with the nature of these memorial images.

I might very briefly cite the clinical facts, which, in my opinion, completely prove the principle of localized memorial images: they are the clinical experiences of sensory and motor aphasia and the cases of so-called tactile paralysis of the hand. The first are now so well known that I need not go into them, but the latter must be especially considered as to their significance. Here are two series of facts, which by their relation to each other, furnish the evidence. Cases of circumscribed cortical injury in the region of the so-called middle third of the two central convolutions, which leaves as a permanent defect the inability of the hand to recognize objects by touch, while real so-called sensory disorders are demonstrable only to a slight degree. Conversely, cases of spinal or peripheral disease are observed, which are accompanied by the gravest disorders of sensation, and, as I have especially shown, also of the so-called muscle sense or sense of position, and yet present only

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insignificant disorders of the tactile function. The last cited cases in a certain measure prove that even a very defective and faulty projection system conducts reports to the brain, which suffice for primary identification, if only the central projection fields and hence memorial images, tactile images, as we may call them in the preceding case, are retained. But the cases of the first kind can only depend on loss of the primary identification, if disorders of the projection paths are so slightly demonstrable. The principle of memorial images localized according to the projection fields is placed beyond doubt by such facts, and hence its application to all projection fields is warranted.

If we return to our example of the organ of speech, we find the process of *recognition*—primary identification—joined to the hypothesis, that a fixed possession of memorial images is present. So the question arises: How is such a possession brought? Evidently it is a matter of a very special attribute of the nervous system, that it undergoes permanent changes by temporary stimulation, an attribute which we call *memory*. The memory of the nervous system is manifested, *e.g.*, in that the faradic excitability of a nerve can be increased by frequent faradisation* The same stimulus later acts more readily, when it has often occurred previously, so that then a permanent change has taken place in the nerve, in consequence of temporary stimulation. All dexterity depends on this principle, all accomplishments. Paths, which were only passable with difficulty, become readily passable by repeated use, they become hollowed out, so to speak. Now, if such a memory is perceptible in the nerve fibres, it is very especially attained in the nerve cells or ganglion bodies. A reflex in the spinal cord, which is effected by these ganglion cells, occurs the more readily, as the more often it has previously taken place, and that it is here a matter of a special attribute of the ganglion cells, has been proven by the researches of Ward,† Jarisch and Schiff‡ and others. The after-images of the retina have

*Mann, Deutsches Archiv für klinische Medicin. 1893.

†Ueber die Auslösung von Reflexbewegungen durch eine Summe schwacher Reize. Du Bois-Reymond's Archiv. 1880.

‡Untersuchungen über das Kniephänomen. Wiener med. Jahrbücher, 1882.

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with good right been referred to the ganglion cells. In the brain cortex it is in the ganglion cells, to which must be especially ascribed the attribute of being permanently changed by momentary stimulation, that residues of it remain, which we call memorial images.

After what has been said it seems self-evident that the possession of memorial images or *content of consciousness*, as we will call it, is directly dependent on the condition of the projection system and the sense organ, by means of which it has been acquired. The consciousness of a weak-sighted person, or one with generally poor senses, is therefore different from that of an individual with normal senses. The person born blind will not be in possession of optical memorial images and therefore, in case he can be operated upon, will represent a state, which is also known to us from its pathological occurrence as the so-called mental blindness. Like the person born blind, the one born deaf has a content of consciousness, which is defective in a whole category of memorial images derived through the sense of hearing. In partial brain defects, as they have occasionally been observed in imbeciles from birth, who likewise have a sense defect, *e.g.*, are deaf, the same absence of memorial images is seen as a consequence of the defective formation of the central projection fields. No less instructive in this respect is the comparison of the animal brain. As is well-known, man has only stunted olfactory lobes, while many families of mammals possess those constituting a considerable portion of their cerebrum, have a special ventricle and are covered with several superficial convolutions. How the consciousness of such an animal, *e. g.*, the dog, differs from ours, daily observation teaches. It is filled with olfactory memorial images, in which the animal, sniffing about, manifests all the signs of a pleasant affective condition, like the epicure at the table, or the artistic eye at the sight of beautiful forms. The content of consciousness in this way shows its dependence on the condition of the projection system and the central projection fields, a condition, which permits the statement: Consciousness is a function of the central projection fields. If the assumption is confirmed,

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then the further proposition is allowable: Consciousness is a function of the cortex of the brain mantle.

If we now seek to further understand what we have to conceive by a memorial image, we will do well to keep in mind a definite example, like the optical memorial image. For this the comparison with the after-images of the retina is especially apt, which belong to the same sense province. How far is the comparison pertinent and warranted? As we have above seen, it is the ganglion cells especially, in which we trace the after-images of the retina to excitement outlasting the stimulus; by a definite arrangement of these stimulated cell elements an image arises, which we are able to project into a definite space. This image is of a very limited duration in point of time. There is nothing to prevent the assumption of such cell elements in the central projection field of the optic nerve, we call them perception cells, in which the projection fibres first terminate. Would the assumption that the memorial image consists of the re-echoed excitement of the perceiving elements sufficiently explain the evident difference existing from the after-images of the retina? Much speaks against it. According to my experience at least, the attribute of spatial projection is completely absent in optical memorial images. They seem to me projectable into space only so far as they take a definite position to the person. Besides they appear to be of unlimited duration. The last distinction is especially important. It may be hard to conceive, that the same perceiving element, which has once been used, should retain its permanent state of excitement, nevertheless it can soon after be engaged in a new perception from an entirely different stimulus. It would really be expected that it behaves similarly as with after-images, and that at least the subsequent process of excitement always obliterates the preceding. We assume, *e. g.*, it is a matter of the optical memorial image of a letter or a number. It can be accepted that for the origin of these memorial images, such retinal images, will essentially prevail, as occur at the place of the keenest vision, or very near it. Here only are the greatest number of sensory elements united, but the optical apparatus is

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also very accurately adjusted for the images of this region, so that the sharpest images can occur here. Accordingly Nature has so arranged it, that for visual impressions, which excite our attention, the place of keenest vision is adjusted wholly involuntarily by proper eye movements, an impulse, which in the adult renders it very difficult to completely control his eye movements. Consequently many of the same retinal elements, which previously represented the image of the letter, will soon be demanded for the production of a new image, *e.g.*, the number, therefore the cells of the central projection field serving for perception. The assumption is wholly permissible and even probable, that the place of keenest vision in the retina may occupy relatively a very considerable space in the central projection field. The difficulty of explaining, under these circumstances, the memorial image by a special memory of the cells, is therefore unchanged. It has been attempted to overcome it by differentiating perceiving and remembering ganglion elements and ascribe to the latter this special attribute of memory. Only the elements serving perception should represent a cortical projection corresponding to the points of the retina. However it seems to us the difficulty is not overcome by this assumption alone. The distinction between perception image and memorial image does not depend so much on a difference in the active elements, rather in that the common arrangement of the retinal elements concerned, or the *form of retinal excitement* is different in the different images, while the same retinal elements may have predominantly cooperated in their origin. But the memory of the like mutual arrangement of the functionating elements or, in other words, the form of excitement, completes the psychological concept of the memorial image. I fully concur with Sachs* and Goldscheider,† that the assumption of an acquired functional union of simultaneously excited perceiving elements by means of existing association paths is able to explain this special memory of the form of the retinal image, of

*Vorträge über Bau und Thätigkeit des Grosshirns. Breslau 1893.

†Ueber centrale Sprach—Schreib-und Lesestörungen. Berlin. Klinische Wochenschrift No. 4. 1892.

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the common arrangement of the stimulated points in the retina. When the same order of stimulation occurs and the retinal image is again recognized, the process may be conceived, as Ziehen* has done, that from the perceiving elements the memorial image is excited, because only the cell combination concerned is in a certain measure sensitive to this form of excitement (somewhat as sound-resonants respond only to definite combinations of tones). But this shrewd conception also depends on a comparison and does not relieve us of the necessity of explaining the fact of this "sensitiveness," and so we need the combination of perceiving elements by fibres or the process of association. We will see later, that an association of different sense impressions always occurs, when they have taken place simultaneously; just as we can here assume that the simultaneously excited perception cells serving perception are associated with each other and, because on renewal of the same sense impression, the like form of arrangement is always renewed, also remain associated. The memorial image then would be simply an acquired association of perceiving elements of the central projection field.

You see that in this conception the assumption of special memory cells is indispensable. In fact there are entirely different reasons, which have a bearing on this. I will only say here, that it would not be very comprehensible why the sensory activity leaves the memorial images, if the perceiving elements alone could be implicated and definite retinal points always corresponded to them. Also that the memorial images are not projected into space, like the after-images, then remains incomprehensible. Finally the structure of the central projection fields in the cortex cannot be considered a contrary reason. A simple layer of ganglion cells, which are all connected by projection fibres, would satisfy the previous assumption. But in the cortex we everywhere meet with such a number of superimposed ganglion cells, and more so still in the optical projection field of the occipital cortex, that they by far exceed the number of projection fibres. All these considerations we will

*Leitfaden der physiologischen Psychologie. Jena. 1891.

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have to make use of in the future. In the meantime we claim that we are finally able to trace to an anatomical distinction the demonstrable differentiation between memorial images and the after-images of the retina, namely, the durability of the first, the instability of the latter: ***the cortex has association fibres, the retina has not.***

If the stability of the memorial images can be explained by the repetition of the same order of stimulation and this proposition can be applied to the special case of optical memorial images, we soon meet with certain difficulties. The retinal images, which are produced from concrete things of the world, are first large, then small, accordingly as these are near or far, but we must consider their memorial images as units. The mutual arrangement of the retinal points remains the same, and the images will be regarded as perfectly congruent, so that still corresponds to the psychological requirement, which we must place on the memorial image. But there are always different retinal points, whose arrangement in one and the same memorial image must be represented, and even in the simplest assumption, that the object is fixed, numberless images of different sizes, if also congruent, would always appertain to a memorial image. This difficulty is gotten over, if the intelligent hypothesis of H. Sachs is accepted. According to it the so-called local signs of the retina are determined by two factors, namely, the meridian in which they lie, and their distance from the central point. For each half meridian of the retina a special muscle arrangement is required, by whose cooperation the eye ball is turned so that the source of light falls on the macula. This muscle combination is the same for all points of the same half meridian, only the amount of innervation varies and increases with the removal of the retinal point from the fovae centralis. Whereas for the different half meridians the muscular arrangement is always different. The varying size of images of fixed objects then depends alone on the sensation of innervation of varying intensity, while the anatomical factor, the combination of different muscle effects, remains the same. In other words, this retention may be expressed as follows,

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and transferred to the relations of the cortex. The perception cells of the central projection field associated with the retinal points of any half meridian have collectively the same associative connection with a definite point of the central projection field of the eye movements. We must consider the latter divided into as many different muscle combinations ("ideas of eye movements"), as there are half meridians in the retina. That is, of course, to be understood *cum grano salis*, as it is a matter of continuously graded series of muscle representation, not of special points. If this view will be taken into account, the optical memorial image is characterized, besides the attribute we have become acquainted with, in that the perception cells constituting it are associated with definitely localized ideas of motion of the central projection field of the eye movements. By repetition of the same visual perception, besides the association of the perception cells with each other, one between the corresponding, also localized ideas of movement, occurs. We will call the thus broadened concept of the optical memorial image visual idea. We now see that in spite of changed size of the image, the last named components of the visual idea remain the same, when they refer to the same object. That the same considerations apply to the retinal images, whose position is asymmetrical to the central point of the retina, you can see from Sachs' book, whose perusal I cannot too urgently recommend to you for the introduction to our subject.

A second difficulty, which is not to be misconstrued, consists in the different initial position of the object, of which distinct images are produced. An equilateral triangle, a cross are again recognized, whether the triangle now stands on its base or apex, the cross is upright, oblique or lies down. How can the same memorial image occur? To this is to be replied: by far the largest number of objects of the world and in consequence of this their retinal images, do not present this difficulty, for they have a fixed position with respect to our eyes. In comparison to these are the objects movable and changing their position, respectively retinal images on the one hand in the minority, on the

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other they usually have a definite, habitual position with respect to our person. If we still take into account the ability of our eyes to so place themselves that a known image appears again, so the difficulty arising from the changing position of objects will be but slight. But it cannot be denied, that under certain circumstances the memorial images are not numerous enough to identify objects occurring in strange positions. We do not recognize inverted letters; several well-known optical illusions depend on the same defect, and how strange seems to us the image of a person walking about when seen through a convex lens, and is thus inverted!

Admitted, that by this consideration several difficulties are removed, still the great number of cell groups required to harbor the optical memorial images alone will seem enormous. Yet experience teaches that the healthy brain is still able to acquire new memorial images, then an abundance of elements serving this purpose must always be present. I will soon call attention to a miscalculation, which perhaps may make this difficulty appear exaggerated: as I will show later, we are inclined to overestimate the number and variability of concrete things of the world; in like degree we consequently underestimate the frequency of the recurrence of the same impressions.

IV.

THE CONCRETE CONCEPT AN ASSOCIATION OF MEMORIAL IMAGES. CONSCIOUSNESS OF THE WORLD. NUMBER OF CONCEPTS. NECESSITY OF CASUALITY.

As we have found that the optical memorial images are acquired associations of perceiving elements of the central projection field, and that the form of stimulation determines the kind of this association, we are justified in transferring all sense provinces to the central projection fields. The acquirement of memorial images depends very generally on the attribute of the central projection fields, that their perceiving elements, *i.e.*, those ganglion cells which are directly united with the projection fibres, are united with each other by association fibres, the special fibres of each projection

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field. In the future we will speak of olfactory, acustic, tactile and gustatory memorial images, without going further into their nature. But I must especially call your attention to the fact that each sense province offers special problems,* and that these simplest psychical elements, the memorial images, may be of a complicated sort. By virtue of this possession of memorial images recognition, primary identification, occurs. If we limit ourselves for the sake of simplicity to the concrete things, which alone form the material for sense perceptions, we thus gain a content of consciousness, which is the sum of the memorial images of concrete things. It is now readily conceivable that within this sum definitely fixed groupings are to be differentiated, which always correspond to the attributes of a definitely concrete thing. One and the same concrete thing generally gives rise to several sense perceptions always recurring in the same way. The coincidence of these different sense impressions causes their memorial images to be associated. In this way to every concrete thing an acquired association of memorial images of different senses corresponds, and this association is the more stable, as the more often the same concrete object comes within the scope of our senses. In this way we gain an anatomical basis for those psychological qualities, which are now called *concepts*. We are now able to differentiate the stability and extent of the concept, but in concrete things we can differentiate essential and non-essential attributes, accordingly as they are always inherent to the thing or changeable. The extent of the concept of course extends to the non-essential attributes, as they must always show a certain constancy dependent on the nature of the thing. Of each concept, as is readily conceived, a curve might be constructed, in which the extension ("extent of the concept") would be shown by the axis of the absciss, the intensity ("stability of the concept") by the height of the ordinate.

We must therein perceive the nature of secondary identification, as contrasted with the primary, that from each individual component of the concept the sum of all the

*See Ziehen.

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others, i. e. the whole concept may be excited. The anatomical basis for the acquisition of these functionally homogeneous groups of cell elements is the presence of the association fibres between the different projection fields. We will call these transcortical association paths, as contrasted with the transcortical fibres of each projection field. The content of consciousness, which we have now become acquainted with, embraces then the concepts of concrete things, or, as we call them, the *concrete concepts*. The sum of these concepts we may distinguish as *consciousness of the world*, for in these concepts, in fact, we possess a true picture of the world.

As you will soon notice, in the consciousness of the world is contained the apparatus for simple processes of deduction, it is the same as also serves for secondary identification. From words I have heard, from the bark of a dog, from a definite odor, I deduce the presence of a person, a dog, a certain flower. Almost all deductive processes, which refer to the nature of concrete things, are of similar nature and then, as we have seen, only individual cases of secondary identification.

The content of our consciousness consists hence not only of memorial images, but second of very definite complexes of memorial images firmly united with each other by association, the concrete concepts. The number of concepts corresponds to the number of concrete objects. Perhaps it astonished you, when I said that only some few and always the same objects would come within the scope of our senses. Do not, you may ask, the things of the world in almost infinite number and indescribable variety come within the scope of our senses? Fortunately there is a very definite answer possible. The number of words gives us an idea of the number of concepts: of the number of these concepts, which a certain individual possesses, by the number of words he uses. One of the most comprehensive minds that ever lived or will live, is without doubt Shakespeare, his vocabulary was consequently unusually large: it amounted to fifteen thousand (1). How much we must deduct from that, when we will limit ourselves to the concrete things of

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the world! Not everyone is a Shakespeare, but it will astonish you if we go to the other extreme (within the civilized nations!): the vocabulary of an English sailor is not over a few hundred. The number of concrete things is then not so large, their variety not so significant, as we are really inclined to estimate, especially when the number of ganglion cells in the brain cortex is stated, according to Meynert's calculation, a thousand millions. Still the same concrete object must proportionately come within the scope of our senses extremely often, for in this way a firm union of definite memorial images must arise of what we have called concepts, will now seem intelligible to us.

It now appears self-evident to you, that the consciousness of the world is definitely dependent on the world or is a function of it, as we may express it. Quantitatively, as the above examples show, this is beyond any doubt. Yet as contrasts we must not only keep in mind the extremes, like Shakespeare and the sailor, but principally the consciousness of the city resident, well educated and living in the complicated relations of civilization, and of the countryman, fisherman or hunter, growing up in solitude and education neglected. But also the qualitative difference of the consciousness of the world must also be astonishly great. Think of the contrast between a tropical resident, living in the midst of a luxurant flora and fauna, in a world of color, and the inhabitant of the polar region, who in a short Summer sees only the traces of vegetation.

It well pays to still tarry a moment with the noteworthy fact of association and keep its conditions in mind. The majority of associations, which could heretofore interest us, depend on the coincidence of the impressions. This of course does not imply an explanation, but the fact is undeniable, that the memorial images of coincident sense impressions are associated, whether its occurence is due to an inner connection or the merest accident. Only accidental occurrences are not so readily repeated, therefore their association does not become so firm as those conforming to law.

(1) According to Meynert. Sammlung von popular-wissenschaftl. Vortragen, 1895, p. 5.

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The association of the different memorial images with each other is a second example of the appearance of the so-called beaten paths, i. e., the union between them therefore becomes so firm, because these paths have been so often used.

Besides association by coincidence, we know a second kind of association, that by sequence. I need only to refer to the fact, that in every attempt to learn a thing by heart, it plays the chief role. There are whole series of associations, which, early impressed upon us, remain in our possession for life; I refer to the alphabet, multiplication table, the Lord's Prayer, etc. This association by sequence alone gives us knowledge of things conforming to law. Whenever a definite sequence of phenomena recurs, we believe in a conformity to law, and very especially will we be strengthened in this belief, if we are able to voluntarily produce the first phenomenon, to then see the second phenomenon follow. That is the reason why experiment so irresistibly convinces us. But it is readily conceivable, that if an inner connection of the two phenomena is not thus disclosed, it will readily be proven by the presence of that association path, which has been used before in the same process. The necessity of causality, to speak briefly, is a congenital fault or merit of our brain. The phenomena of the world are far from possessing a connection with each other; the bond, that unites them, exists only in our brain and does not serve to unite the things themselves, but only the traces they leave in our brain.

We will see later, that a coincidence of sharp sense perceptions is impossible, owing to that attribute, which has been called narrowness or unity of consciousness. In reality only *one* sense perception occurs at a time, the second, apparently simultaneous, either follows or precedes it. Association by coincidence seems to be merely a case of ordinary association by sequence (1).

After having said so much of association, we cannot help seeing the difficulties which interfere with the comprehension of this process. On a former occasion (2) I compared it to the conduction of a wave through a system of

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closed tubes. Meynert and Ziehen recently have made similar comparisons. At any rate the fact of association may be explained by the assumption of conducting paths between the anatomical localities where the memorial images of the several senses are localized. In the white matter of the brain mantle, as well as in the cortex itself, a multitude of fibres are demonstrable, which serve for the union of different cortical areas, so its anatomical basis is undoubtedly provided. When two cortical areas of one and the same central projection field are excited in the act of primary identification, or different projection fields simultaneously by means of the projection system conveying stimuli of the world in the act of secondary identification, the path of union extending between them is likewise put in vibration, the resistances, which oppose the conduction of the process of excitement become weaker and weaker, the oftener the process is repeated, and more the path is beaten, as I formerly termed it, facilitated, as it has been called of late. It is not implied by this, that this path must be continuous, we can only claim a physiological continuity for it, as for the paths of the projection system. On the contrary the fact very definitely indicates, that there is a special layer of ganglion cells of the cortex, that of the spindle cells, which by their form and position seem related to the association system, also that ganglion cells are interpolated in the association paths. In general it is contradictory to our view to assume nerve fibres, whose origin from a nerve cell cannot be proven. The simplest assumption then will be, that each spindle or association cell sends out two nerve fibre processes in opposite directions, which by their terminal branches are attached to the ganglion cells of the projection fields to be associated. There is no difficulty in fancying that the ganglion cells of a central projection field implicated in primary identification are all united by these association fibres provided with an association cell, although under these circumstances an immense number of association fibres are required, if computed from the number of perceiving ele-

(1) As to the further conditions of association see Ziehen.
(2) In my first work on aphasia.

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ments to be combined. But as soon as the first physiological union, the memorial image, is disregarded, or only the next complicated case of visual ideas (see page 29), or the association between visual ideas and the memorial images of another projection field are kept in mind, the difficulty of fancying a definite material basis for the process increases immensely. Recently Goldscheider has correctly emphasized this circumstance. We will, however, consider the present possibilities. It seems wholly impossible to employ this scheme, which is conceivable within a projection field, namely that each perceiving element is anatomically united with every other by previously formed paths, for the union of memorial images with each other; as large as the number of fibres here at command may seem, it would be wholly insufficient in comparison to the almost infinite large number which must result from these combinations. Hence follows the absolute necessity of making another assumption, which simplifies the conditions of association. For the reasons above stated, but especially the last, I consider the idea justified, that the psychological unity of the memorial image corresponds to an anatomical unity. There could be *e. g.* cells of definite layers of the cortex, which received fibre processes from the above mentioned association cells, but also united with the perceiving or projection cells. There is nothing impossible in considering the processes of excitement of a definite cortical layer distributed to many elements, in a certain measure embracing the ganglion cells of the next cortical layer. Besides reflect, that for our consciousness it is the memorial images, not the perceptions, which remain associated, if the acquirement of association depends on the coincidence of the perceptions. Further reflect, how slowly and difficultly firm associations between different senses are acquired, but with what security they are retained, when once acquired. The opening of this road may be attended with very special difficulties.

(*To be Continued.*)

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INSANITY DEFINED ON THE BASIS OF DISEASE.*

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

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THE subject of the true nature and definition of insanity has always been one of profound interest to medical men, to philosophers, to medico-jurists, and to alienists especially. The student of psychiatry has not failed to observe a gradual evolution in the interpretation of that aggregate psychical phenomena which we have come to recognize as insanity, or as representing the aggregate insanities, for by custom we class all mental aberration under the one term, insanity. In the earlier ages insanity was observed and described purely in its psychical aspects. Its unfortunate victims were visited by the anger of the gods. Galen, in his definition of insanity, was one of the first, along with Hippocrates, to perceive that there is a physical as well as psychical perversion. He had a glimpse, like Moses on Mount Pisgah, of the promised land. He had a glimpse of the true condition of mental aberration when he described it as *delirio sine feber*. He knew there was delirium and he knew there was an absence of fever, and that is the best and most distinctive diagnostic sign we have to distinguish the ordinary forms of insanity from the delirium of fever. Of course, we have post-febrile and ante-febrile insanity.

*Presented to the American Medico-Psychological Association, May 10th to 13th, 1898. It was offered as a verbal communication, without notes, in lieu of the written paper we had partly prepared and failed to have with us. It is here reproduced from the proceedings without emendation except one verbal correction, viz: the word *brain* being substituted for the word *mind* in ninth word space, sixth line from close, the former being the correct word used by the author.

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Connolly defined insanity upon the basis of its psychical symptomatology. Blackstone seems to have gotten a glimpse of the true nature of mental aberration in its somatic and psychical aspects when he defined insanity in this wise: "A lunatic *non compos* is one who hath had, but by disease or grief or other accident hath lost, the use of his reason." This view of mental aberration, the standard of comparison being the individual with his former self, seemed to have been lost sight of by the medical men of Blackstone's age and was not brought prominently before the alienistic mind until Andrew Combe introduced the standard of comparison of the individual with his former self and as a definition said that a man affected with insanity had undergone a change in his natural habits of thought, feeling or action. Connolly considered insanity purely in its psychical aspects and regarded the man insane when there was impairment of the reasoning or comparing faculties; a purely psychical definition, one which does not embrace all forms of insanity and which includes men whom we are accustomed to regard as sane. A man may not be perfect in his comparing faculties and still be sane. All men are not equally expert, or equally competent, or equally logical in the manner in which they use their reason or comparing faculties and the result of offering such a definition in court would be that the expert witness would be easily confounded and he might be confounded with the just statement that such a definition might include a large portion of mankind in general, especially those who do not agree with us in their views of certain subjects. It was left to Esquirol to detect the relation of somatic with psychical defect in mental aberration, when he described it as a *cerebral affection* characterized by disorder of the intelligence and the will. But then Esquirol made no provision for those forms of insanity with which we are now quite familiar and with which he, himself, was quite familiar, the impulsive forms showing homicidal impulses, sudden epileptic automatism and other states. Thus *mania transitoria*, which we know is so often associated with conditions of psychical epilepsy, is not well provided for in that definition. Our immortal colleague of

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the past, Isaac Ray, whose delineations of mental aberration have never been surpassed by any writer, taking the definition of Connolly and Andrew Combe and coupling them with conditions of disease involving the brain, approached nearer the clearest conception of the subject of any writer of his day with whom I am familiar. When he said that insanity is due to disease of the brain producing a change in the natural habit of thought, feeling or action of the individual, he got upon ground that was to the physician logical standing ground, impregnable to any assault that might be made against the psychological expert in court, and it enabled physicians who stuck to it, to always sustain themselves with credit and their profession with honor. The only trouble with that definition was with the forms of mental aberration connected with inherent organic heredity, teratological defect, transmitted conditions of the brain, those conditions of insanity which had appeared in the individual and abided with him from early life as a congenital heritage of mental defect. We see in all these contributions to the subject of mental aberration what we see in every department of science and every department of human research; we see the natural evolution from the obscure to the more perfect light, from dim discernment to the clear light of the sun of scientific experience. We see that everywhere; in every condition that we attempt to interrogate. Combe characterized insanity as a prolonged departure, etc., without adequate external cause, from the natural habits of thought, feeling or action, but the departure from the natural may be exceedingly brief in some cases, as in imperative conceptions, the morbid impulsions of psychical epilepsy or mania transitoria."

Some insanities are just as precipitate and brief as the epileptic convulsion, the epileptic arterio-spasm which precedes them and which they supplement as in psychical epilepsy. But those who preceded us had not reached the clear conception which we now have of the inter-relation of the brain and mind. Maudsley, following Herbert Spencer, in his Psychology of the Human Mind, gave to medical men something tangible upon which to present the condition of

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the aggregate phenomena which we call insanity. And now comes the neuron theory and its relationship to mental disease, and now do we certainly know that there can be no such thing as insanity without disease primarily or secondarily or coincidently involving the brain. We stand upon clear ground with all the mists blown away by the researches of psychology, and psychiatrical observation, and we ought to be absolutely impregnable before any court in making definitions of insanity. It is no longer necessary to define insanity as in Shakespeare's Pollonius, "To define true madness, what is't but to be nothing else but mad." We no longer have to beg the question. We understand that insanity stands on the same basis as all other diseases, plus another organ. Not exactly as the liver secretes bile in its physiological state, as the stomach secretes gastric juice, or as we would say now, as the peptogenic glands secrete gastric juice, does the brain secrete mind. We do not now express the formula in the exact phraseology of Cabanis, but we say, as the brain in good anatomical condition is necessary for the physiological expression of mind, so the mind when it expresses itself to the world in a pathological manner, obeys the laws of all other diseases. Its organ, the brain, is wrong either functionally or structurally, primarily or secondarily, either in the intimate structure of the neurons or in their relation to each other in the cerebral cortex, or by reason of their abnormal blood-supply or by reason of changed conditions of nutrition, of metabolism, or whatever it may be. Now, by the aid of modern research assisted by the microscope, the test-tube and the crucible, we do know that there can be no expression of mental derangement without there is a substratum of cortex disease, either in the neuron, in the enveloping membranes of the brain, in the nourishing blood supply, in the behavior of the vaso-motor mechanism, or remotely in some of the organs of the body affecting the brain so as to cause these conditions, and we need never be at sea before any court, before any jurist, in giving our views of insanity as *a disease primarily or secondarily involving the brain of the individual so as to produce in him a change in the natural habits of*

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thought, feeling or action—a change of his normal, natural mental expression by which, and by reason of the disease underlying all, he is placed out of harmony with his surroundings, with his natural self or with his normal family type of mind.

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DEGENERACY STIGMATA AS BASIS OF MORBID SUSPICION.*

A Study of Byron and Sir Walter Scott.

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

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THE youth and manhood of Byron were spent in circumstances of decided contrast with those of Scott. In the Glennie school of Dulwich the evil influence of a degenerate mother loomed up. Of course, as Jeafferson remarks, the disputes and conflicts that arose between Dr. Glennie and Mrs. Byron seemingly related to small matters, but the school life of a school, more especially of a preparatory school for quiet young gentlemen, is made up of seeming trifles. Complaining of the slowness of her boy's progress Mrs. Byron acted as though her chief object was to make the progress slower. Instead of leaving George to his studies she was constantly driving over to Dulwich to take him out for the afternoon, for the theatre or for a children's party. To Dr. Glennie's first mild protests against these interruptions of her son's studies, Mrs. Byron replied with promises she failed to keep. But when Dr. Glennie became firmer and less conciliatory the lady's brow clouded. There were scenes in which the school master showed displeasure, and the lady became angry, followed by still stormier scenes that ended with Mrs. Byron in hysterics. Mrs. Glennie gently tried to manage this ungentle and exceed-

*Continued from ALIENIST AND NEUROLOGIST, October, 1898.

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ingly troublesome mother but succeeded no better than her husband. The boy's guardian intervened between the belligerents at the instance of the tutor. The earl decided that Mrs. Byron's inconvenient visits to Dulwich Grove should cease and that George's studies should not be interrupted during the six working days of every week. With due regard for the mother's feelings and not a little to the school master's disappointment, it was however, decided that Mrs. Byron should have a weekly visit from her son from the Saturday to Monday, on condition he was sent back to school on Monday in time for lessons. When Mrs. Byron showed her regard for this agreement by keeping the boy with her till Monday afternoon, till the middle of the week, and even on one occasion for an entire week beyond the time appointed for his return whereupon the earl was again entreated to speak in the interest of tutor and pupil.

By this time Lord Carlisle's power over Mrs. Byron was at an end. The woman whose insolent speech in Dr. Glennie's study had often been audible to the servants in the kitchen and the boys in the play ground, was not likely to stand in awe of an earl. At Lord Carlisle's last interview with Mrs. Byron he left her with the determination to see as little as possible of her in the future. Confessing himself beaten by the virago, with whom he never again condescended to bandy words, the earl said to Dr. Glennie "I can have nothing more to do with Mrs. Byron. You must now manage her as best you can." Lord Carlisle thought too unfavorably of the boy of halting gait and clouded brow, heavy features and sullen look, who spoke with his mother's brogue, who could not enter a room without dropping his eyes to the carpet from a shyness in no way distinguishable from the shyness of rusticity. Indeed who could have predicted thus early, as Jeafferson remarks, that this sheepish, awkward, thankless little fellow, after almost surviving his Scotch accent, and learning how to conceal his lameness, would ten short years thereafter assume a shape of singular elegance and a face of peculiar loveliness and burst upon the world almost in the same instance as the greatest poet and brightest coxcomb of his

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generation. It is not wonderful that when the brown bud had changed to perfect blossom, Byron never cared to talk of the Dulwich school, which he remembered only as a place where his mother had made herself more than usually contemptible and he had played the part of a young cub rather than of a young nobleman.

To understand the real Byron, as Jeafferson remarks, instead of the unreal rather absurd Byron of romantic biography and realize the difficulties under which he fought a painful way to a premature grave, the morbid propensity to fatten as well as the club foot should not be forgotten. It should also be realized how the two stigmata worked together in a way to increase degeneracy. Byron did not become unwieldly corpulent till he ceased growing in height. But among the Harrow school boys there could be found no stouter boy than that Byron who a few years later was remarkable for delicacy of face and elegance of figure. The sarcastic remarks of coquettish girls and women on his obesity must have deeply fixed the objectionable features of this stigma of degeneracy upon Byron's mind. To their deep wounds, not to vanity, must be ascribed Byron's later unhygienic battles against obesity.

In dealing with Byron's hatred of Harrow in his earlier years, the brutal system of fagging still existent in such schools must be taken into account. This system of allowing young delicately trained boys to act as menials to upper class boys can not but be regarded as extremely brutalizing on one hand and tending to produce sycophantic cads on the other. Had Byron not been of a degenerate stock, such a training must inevitably have produced suspicional egotism from the sense of injustice tolerated by the authorities. Certainly it tended to make Byron overestimate the effect of his deformity upon the minds of others. It is clear that the period of his extreme unpopularity was identical with the period of his hatred of the school and his misery in it. As an underling he was pugnacious, resentful and in general disfavor. When he had risen to a position to command and indulge his characteristics and essentially chivalric though slightly vainglorious taste for protecting little fellows

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and patronizing his juniors, he ceased to provoke enmity and gained a reputation for kindliness. As a junior he had good reason for disliking the school where even the infirmities of which he was so sensitive exposed him to insults. When later the coarser royalist newspaper snobs sneered at the bodily as well as mental deformity of the wretched rhymester, who not content with maligning Christianity had even presumed to lampoon the Prince Regent, Byron, with affected indifference, remarked that he had not gone through a public school without learning that he was deformed.*

In the domain of the affections Byron from boyhood, till his hair whitened, was of such acute a sensibility that it may well be termed morbid. To this excessive sensibility, and the various kinds of emotionalism necessarily attendant thereupon, must be attributed the quickness with which his "passions" succeeded one another. In part here occurred also the unequal balance of degeneracy. Chiefly in degenerates is such sensibility united with singular retentiveness of memory on minor subjects and with even stronger fancy. Byron could in two years so survive his first love for little Mary Duff as to be capable of a stronger passion for Margaret Parker and yet be deeply affected on hearing of the marriage of the object of the earlier attachment. In this was observable also the egotism of the degenerate which believes its love constitutes an ownership of the object loved. That the second love followed so soon on the first was due to the boy's sensibility. His agitation at the sudden announcement of Mary Duff's marriage arose in part from the quickened memory that brought before him all Mary Duff's lovable endowments, in part from the imagination that heightened the charms, which captivated his childish fancy and finally from an instantaneous renewal of his claim to ownership though it had been followed by a stronger attachment to another object. Though two "passions" could not coexist in the breast of a man so exceptionally constituted it was natural for several "passions" to occupy it successively and not to follow one another with perplexing

*Large use has been made in this as in the preceding articles of Jeafferson's "Real Lord Byron."

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rapidity. In a being so swayed by memory and fancy, a passion long dead might at any moment revive. The poet's closest friends knowing little of Lady Byron, therefore, even to the last, regarded it as possible that he and she would survive their mutual animosity and resume the affection that for several months unquestionably existed between them.

To the same elements may be referred what was most remarkable in Byron's love of scenery. To afford him all the gratification possible ffom nature's aspects, it was necessary that a landscape should remind him of scenes admired in childhood. At Genoa almost on the threshold of his last year he wrote:

"He, who first met the Highland's swelling blue.
Will love the peak that shows a kindred hue,
Hail in each crag a friend's familiar face
And clasp the mountain in his mind's embrace
Long have I roam'd through lands which are not mine
Adored the Alp and loved the Apennine
Revered Parnassus and beheld the steep
Jove's Ida and Olympus crown the deep:
But t'was not all long ages' lore nor all
Their nature held me in their thrilling thrall
The infant rapture still survive the boy
And Loch-na-gar with Ida look'd o'er Troy
Mixed Celtic memories with the Phrygian mount
And Highland linns with Castalia's clear fount.!
Forgive me, Homer's universal shade,
Forgive me Phœbus, that my fancy stray'd
The north and nature taught me to adore
Your scenes sublime, from those beloved before."

In this respect the man was faithful to the boy. In the pleasure which came first at Malvern, and afterwards at Cheltenham, in his fourteenth summer, from the hills that reminded him of the Highland mountains, delight at the scenery offered to his gaze was characteristically blended with delight at the scenery which quickened memory brought before his mental vision. Moore urges that "a boy gazing with emotion on the hills at sunset, because they remind him of the mountains among which he passed his childhood, is already in heart and imagination a poet." Countless boys without a single thread of imaginative force, and with no feeling more poetical than the homesickness that causes the dullest Swiss exile or any brainless Savoyard organ grinder to pine for his native scenes, have, as Jeafferson remarks experienced similar emotions under similar circumstances. Byron's appreciation of natural scenery largely owed its origin to association and the influence of environ-

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ment rather than the aesthetic sense which Moore supposed must be innate in a poet. This aesthetic sense far from being innate so far as natural beauty is concerned, is much more the result of environment and training than is usually supposed. The nineteenth century has gained a sense of natural beauty which the eighteenth lacked. Macaulay speaking anent the Celtic part of Scotland truthfully says:

"What was known excited no feeling but contempt and loathing. The crags and the glens, the woods and the waters were indeed the same that now swarm every autumn with admiring gazers and sketchers. The Trosachs wound as now between gigantic walls of rock tapestried with broom and wild roses; Foyers came headlong down through the birchwood with the same leap and the same roar with which he still rushes to Loch Ness and in defiance of the sun of June the snowy scalp of Ben Cruachan rose, as it still rises, over the willowy islets of Loch Awe. Yet none of these sights had power till a recent period to attract a single poet or painter from more opulent and more tranquil regions. Indeed law and police, trade and industry have done far more than people of romantic dispositions will readily admit, to develop in our minds a sense of the wilder beauties of nature. A traveler must be freed from all apprehension of being murdered or starved before he can be charmed by the bold outline and rich tints of the hill. He is not likely to be thrown into ecstasies by the abruptness of a precipice from which he is in imminent danger of falling two thousand feet perpendicular, by the boiling waves of a torrent which suddenly whirls away his baggage and forces him to run for his life, by the gloomy grandeur of a pass where he finds a corpse which marauders have just stripped and mangled; or by the screams of those eagles whose next meal may probably be on his own eyes. About the year 1730 Captain Burt (one of the first Englishmen who caught a glimpse of the spots which now allure tourists from every part of the civilized world) wrote an account of his wanderings. He was evidently a man of a quick, an observant and a cultivated mind and would, doubtless had he lived in our age, have looked with mingled awe and

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delight on the mountains of Invernesshire. But, writing with the feeling which was universal in his own age, he pronounced those mountains, monstrous excrescences. Their deformity, he said, was such that the most sterile plains seemed lovely by comparison. Fine weather, he complained, only made bad worse, for the clearer the day the more disagreeable did those misshapen masses of gloomy brown and dirty purple affect the eye. What a contrast he exclaimed between these horrible prospects and the beauties of Richmond Hill. Some persons may think that Burt was a man of vulgar and prosaic mind but they will scarcely venture to pass a similar judgment on Oliver Goldsmith. Goldsmith was one of the very Saxons who, more than a century ago, ventured to explore the Highlands. He was disgusted by the hideous wilderness and declared that he greatly preferred the charming country around Leyden, the vast expanse of verdant meadow and the villas with their statues and grottoes, trim flower beds and rectilinear avenues. Yet it is difficult to believe that the author of the "Traveler" and of the "Deserted Village" was naturally inferior in taste and sensibility to the thousands of clerks and milliners who are now thrown into raptures by the sight of Loch Katrine and Loch Lomond.

"Shall I tire you with a description of this unfruitful country where I must lead you over their hills all brown with heath or their valleys scarce able to feed a rabbit? Every part of the country presents the same dismal landscape. No grove or brook lend their music to cheer the stranger." Thus writes Goldsmith to Bryanton, Edinburgh, Sept. 26, 1753. In a letter written soon after from Leyden to the Rev. Thomas Contarine, Goldsmith says, "I was wholly taken up in observing the face of the country. Nbthing can equal its beauty. Wherever I turned my eyes fine houses, elegant gardens, statues, grottos, vistas presented themselves. Scotland and this country bear the highest contrast: there hills and rocks intercept every prospect; here it is all a continued plain."

"His feelings may easily be explained. It was not till roads had been cut out of the rocks, till bridges had been

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flung over the courses of the rivulets, till inns had succeeded to dens of robbers, till there was little danger of being slain or plundered in the wildest defile of Badenoch or Lochaber as in Cornhill that strangers could be enchanted by the blue dimples of the lakes and by the rainbow which overhung the waterfalls and could derive a solemn pleasure even from the clouds and tempests which lowered on the mountain tops."

This, so to speak, hypertrophied sensibility (resultant on the unequal emotional balance of degeneracy aided by environment as well as his keen sense of his stigmata) led Byron to evince intense appreciation of sympathy shown him by school comrades. The attempt has been made (as in the case of Shakespeare and Walt Whitman) to find in this, evidence of sexual inversion of the uranistic type.

With equal force and truth A. Moll* remarks: "There is nothing in his life or poems which would indicate a justifiable foundation for this opinion." Moll believes that the sexual invert charge is in part based upon the fact that Byron often travelled with young girls dressed in boy's clothes and in part was one of the many baseless calumnies against the poet.

While a hysteric female† has cited the biblical incest in "Cain" as evidence to support the hysteric delusion (born of degeneracy in Mrs. Byron) that Byron had relations with his half sister, still even the such paranoiac symbolism, failed to find evidence of uranism. Until Byron fell under the spell of the Countess Guiccioli, his Italian residence was marked by sexual excess of a vulgar type, but while calumny exaggerated this at the time, it spared Byron as to uranism.

The "Sonnets" seem to make a stronger case against Shakespeare if read from that point of view which regards the comradeship of the English-speaking nations as platonic expressions of sexual affection like that found frequently in the Latin and even high German races. It would be unjustifiable, especially in the latter, however to refer all

*Contrare Sexual-Emfinding. Third Edition.
†Mrs. Beecher Stowe, Atlantic Monthly, Oct. 1870.

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school friendships even between younger and older men to this sexual basis. In the "Sonnets" there is one stumbling block to the uranism theory. The friend of the "Sonnets" is for a time estranged by rivalry for a woman's favor from Shakespeare. The woman is loved by both. The estrangement is clearly put as an expression of normal sexuality not as rivalry between a woman and a male invert, for the favor of another male. In Shakespeare's age the English were less stoical in expression of feelings and affections than they are to-day. Friendship therefore would find expression of an intensity that in the nineteenth century might seem suspicious.

The case against Walt Whitman has been based chiefly on the tone of the poem "Calamos" which deals with comrade love. The intrinsic evidence of this poem was deemed by J. A. Symonds so strong that he addressed an enquiry to Whitman on the subject. This elicited a most emphatic indignant denial of any such significance to the poem. Despite this Havelock Ellis* inclines to believe that the poem is an expression, perhaps unconscious, of the pure, platonic, altruistic type of uranism. This view at first sight might be regarded as supported by the following stanza:

> "The dear love of man for his comrade, the attraction of friend for friend,
> Of the well married husband and wife, of children and parents,
> Of city for city and land for land."

This very stanza however destroys the uranistic theory since the sexuality element is decidedly thrown out of consideration. The "Children of Adam" takes such an emphatically healthy view of sexual relationship even to coarseness that it is impossible to reconcile the mental tone of it with any uranism in the author. It is possible, it is true, for normally sexual poets to write uranistic poetry as a psychologic or poetic experiment. Thus Eugene Field (as a literary experiment in a fit of enthusiasm for the period of Horace) wrote a uranistic poem totally lacking in the spontaneity and destitute of the *con amore* spirit of his childhood poetry. It smelt of the smithy and had, to borrow Sir Walter Scott's remark, the mental tone of the

*Psychology of Sex. Vol. 1.

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"forced impudence of a bashful man." The imitation by the uranist of the normal tone as to sexuality is as practically impossible as the assumption of normal sexuality itself. The mental attitude of Byron, Shakespeare and Walt Whitman toward normal sexual relations is a sufficient disproof of the uranism accusation. Of course such an argument would not be valid against a claim for the existence of psychical hermaphrodism but of this neither Shakespeare, Byron nor Walt Whitman is accused nor are they charged with sexual perversion secondary to excess. The healthy tone of Whitman as to sex was so obvious to Emerson that he early became one of the admirers of the "good gray poet." Emerson had made sex a biologic subject of study from the analytic standpoint. He was thus led to detect the germ of homosexuality in Margaret Fuller. His admiration for her did not prevent him from dispassionately stating: She had a feeling that she ought to have been a man and said of herself "A man's ambition with a woman's heart is an evil lot." In some verses which she wrote "To the Moon," occur these lines:

"But if I steadfast gaze upon thy face,
A human secret, like my own I trace,
For, through the woman's smile looks the male eye."

And she found something of true portraiture in a disagreeable novel of Balzac "Lea Livre Mystique," in which an equivocal figure exerts alternately a masculine and a feminine influence on the characters of the plot.

Emerson had a keen biologic insight into still darker sexual phenomena. In his poem on introspective philosophy the following simile is drawn from the sadisn of the female spider:

"That demon spider that devours her mate
Scarce freed from her embrace."

Emerson who detected the sexual abnormality in Margaret Fuller, would have been quick to see it in Whitman. *Welt-Schmerz* or "world weariness" is induced in the uranist by a sense that he differs from his fellows. Whitman has none. On the contrary he designates this feeling when expressed in poetry as the "literature of woe" and selects Byron (in whom it was due to the stigmata) for criticism

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as its exponent. Whitman feels himself one with mankind. Despite the conventional cant anent corruption in the States he hails the future of American democracy as strongly as did Byron through the teachings of his mother and May Gray.

"Childe Harold" shows how little Byron profited by the classic training of the school so largely indebted to him for its celebrity. Had he come to the school at an earlier age after better preparation Byron might have taken a more favorable view of the educational method of England's public schools albeit his view is no more pessimistic than that of Dr. Arnold.

Coming to a school with an ignorance which placed him at a disadvantage toward class mates greatly his inferiors in natural quickness and age, he never had heart for the steady effort which alone could enable him to compete for honors. No boy ever brought less Latin and Greek to Harrow or after rising to the highest form carried less away to the university. The Greek plays which he gave to the Harrow library demonstrates by his own handwriting, the insignificance of his classical attainments when in the purely philologic, albeit not literary sense, they were at their height. To mathematics he had a strong repugnance. At a later period of life he experienced no little difficulty in auditing weekly bills. Had he distinguished himself in Latin and Greek it would have been less remarkable that he went to Cambridge without having acquired facility in English orthography. In the early nineteenth century it was a point of honor with a public school boy who knew Homer well to spell English indifferently. The bad spelling of the Harrovian who prided himself on his knowledge of English literature deserves attention. While it may be regarded as indicative of the carelessness with which he read his favorite authors it is also evidence that he was not free from the school bias against English as a literary language.

But if he were weak in Latin and still weaker in Greek, Byron distinguished himself in declamation. In these exercises so excellently designed to qualify the youthful orators for public life, Byron was successful in attitude, gesture and

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vocal address. On one occasion Byron greatly impressed his most critical hearers. After delivering the earlier part of his written address he suddenly broke away from the restraint of the written words and (to Dr. Drury's surprise and sympathetic apprehension for the boy's failure) passed to extempore utterance that without impediment flowed through well balanced periods to a felicitous conclusion. Dr. Drury asked why he had altered his declamation. Byron declared he had made no alteration and did not know in speaking that he had deviated from it one letter. From knowledge of his temperament Dr. Drury was convinced that, fully impressed with the sense and substance of the subject, he was hurried on to expressions and coloring more striking than what his pen expressed.

The well deserved scathing review of "Hours of Idleness" stung Byron for the nonce into the employment of powers which continuously exercised would have placed him far beyond the "brilliant boys of poetry" among whom Swinburne not unjustly ranks him. Byron's declamations and early poetry were not much above those poured out in floods by classically trained youngsters whose poetic tendency vanishes with the close of puberty. The "Hours of Idleness" in the main is made up of poems rather below the magazine standard of poetry.

(To be Continued.)

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IMBECILITY AND THE INSANITY OF IMBECILITY BEFORE THE LAW.*

Murder by Suggestion.

The State of Missouri vs. Benj. F. Cronenbold, Charged with Murder in the First Degree.

A Medico-Legal Record.

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

Former Superintendent and Physician of the Missouri State Lunatic Asylum, Honorary Member British Medico-Psychological Association, Professor of Psychiatry, etc., and President of the Faculty, Barnes Medical College, etc., St. Louis.

"THE feelings of horror and vengeance excited by the bloody deeds of the insane, completely unfit the popular mind for a careful and impartial investigation of the plea of insanity, and ought to convince us that the mental condition of the accused," when insanity is suspected, "should be examined by men who have become fitted for such duties by a peculiar course of study and experience." "It is not necessary to go into a labored argument to prove that this method of determining the grave and delicate question of insanity, must be infinitely more satisfactory than that of summoning medical witnesses to the trial—most of whom have but very imperfect notions of the disease,

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and probably have not had the least communication with the accused—and forcing out their evidence amid the embarrassment produced by the queries of ingenious counsel, bent on puzzling and distracting their minds. If a physician, after listening to divers, vague and rambling details concerning a person's ill-health, and looking at him across the apartment, without being permitted to address to him a single word, or lay a finger on his person, should then be required to say, on his oath, whether or not the individual in question were laboring under inflammation of the lungs, bowels and kidneys, he would scarcely restrain a smile at the stupidity which should expect a satisfactory answer." "And yet, absurd and foolish as such a course would be considered in the abstract, it is the only one recognized by our laws, when the disease, whose existence or non-existence is to be determined, happens to be insanity." "When mental derangement is suspected, there are many physical symptoms and numerous other circumstances that can not be investigated in an hour or day, but require a course of diligent observation that may occupy weeks or months before the suspicion can be confirmed or disproved."

Thus long ago wrote almost *verbatim*, as we have penned it, our venerable *confrére*, Dr. Isaac Ray, in the first edition of his excellent work on the Jurisprudence of Insanity, and the words still stand in the latest editions, as scientifically true as they were when first they were uttered. And they have begun to bear their legitimate fruit in the Criminal Jurisprudence of the United States, in the substitution of commissions of specially skilled medical experts, in lieu of the ordinary jury, to pass upon the question of mental unsoundness when raised in criminal cases, so that the conclusion of the afore-mentioned authority,—"that in criminal cases, where insanity is pleaded in defense, the ends of justice would be best promoted by the appointment of a special commission, consisting of men who possess a well earned reputation in the knowledge and management of mental derangement, who should proceed to the examination of the accused, with the coolness and impartiality

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proper to scientific inquiries,"* will probably soon become the rule of action in these cases, throughout the whole Union.

New York has taken the initiatory by statutory enactment, and it is to be hoped that Missouri will at once imitate her example. One of the courts of the latter State has recently practically adopted the course now enjoined by statute in New York, in the case of "The State of Missouri *vs.* Benj. F. Cronenbold, indicted for Murder in the First Degree."

A commission of experts was appointed by the court, sworn to discharge their duty faithfully, and empowered to send for persons and papers, to examine witnesses under oath, to make personal examination of the prisoner, and otherwise proceed as their judgments might suggest; their decision to determine the question as to the disposition of the prisoner, and the further progress of the trial.

The principal attorney for the defense was put under oath as to the possession of any facts which might bear upon the question of feigning, and every thing was done by the court, the prosecution and the counsel for the defense to elicit the whole truth, even to the volunteer aid, proffered by the attorneys, on both sides, to examine witnesses.

Nothing was lacking in the whole procedure to ascertain the exact truth, except the absence of rebutting testimony, and the presumable legal incompetency of the commission to determine the precise legal value of the testimony of witnesses. The prosecution, however, had no testimony to offer in rebuttal of the issue of insanity.

It might be better, however, if in all future commissions of a similar character, the commission should sit and examine the witnesses in the presence of the court. In the present case, the presence of the court was not essential.

The following history of this remarkable case embraces all the essential facts connected therewith, together with so much of the prisoner's life history, as was deemed necessary to enable the commission to form a correct judgment on the question before them.

*Ray's Jurispru. Insan., p. 70, 4th edition.

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In the narration, much irrelevant detail of the official records is here sacrificed for the sake of brevity.

HISTORY.

Benjamin F. Cronenbold is twenty-three years of age, American born, of German parentage. On December 9th, 1873, he shot and killed Richard Boetticher, who, at the time, was betrothed to his (Cronenbold's) sister. The homicide was committed on the eve fixed for the nuptials, and while the bridegroom, accompanied by his spouse and her mother, was leaving the Cronenbold residence, to have the ceremony performed at church.

The murdered man, Boetticher, was a coachman and head servant in the Cronenbold family, introduced to the family, and employed by Cronenbold, who was at the time, himself, engaged to be married to a former female domestic in the same household. To break off this match, which the mother and uncle disapproved, (Cronenbold's father was not living,) the son was induced to go to Europe, in April, 1873, but returned after a brief tour, and three months before he killed Boetticher, with no abatement in his attachment for Miss Hendricks, his affianced. After his return he heard of boasts having been made by the deceased, (Boetticher,) reflecting upon the chastity of his mother and sister, and on the fourth of December, his mother informed him that his sister and Boetticher were to be married that evening. The same day he received an anonymous letter, reciting slanderous rumors in circulation, respecting his mother's and sister's virtue, having their foundation in the statements made in public, by his sister's intended husband, and urging him to vindicate the honor of the family, by visiting summary vengeance upon the defamer of his mother and sister.

That evening, (December 4th,) he prevented the attempted consummation of the nuptials, by shooting Boetticher in the leg, and when the next attempt to marry his sister was made, (December 9th, as already stated,) the homicide was committed.

The rumors and the anonymous letter, produced great

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agitation and excitement in the mind of Cronenbold, which culminated in the killing, and ended as we shall see hereafter, in complete mental and physical exhaustion. After his arrest and incarceration, Cronenbold seems not to have reasoned upon either the propriety or consistency of his conduct in killing Boetticher, or to have reflected upon the consequences of the murder, to his family or himself.

Boetticher, if he had seduced Cronenbold's mother and sister, of which there was no evidence to Cronenbold's mind, except rumor, having its probable foundation in the statement of Boetticher, over his beer, in a saloon, was about to go far towards giving the lie to such statements, and make the only reparation possible, by an unsolicited and voluntary matrimonial alliance with the family. Cronenbold made no effort to obtain the exact truth or falsity of the statements attributed to the murdered man. He did not make use of even the most ordinary diligence, to assure himself of any sort of justification in the eyes of the public, for the deed he was about to commit, in so open and undisguised a manner. There was indeed, no evidence to show that the boasts of Boetticher were founded on facts. There was no evidence that the social disparity between Boetticher and Cronenbold's sister, influenced Cronenbold to commit the murder. Boetticher lived on terms of familiar equality with the Cronenbold family, although their chief servant, and was in no way inferior to the servant girl, whom Cronenbold intended to marry.

Cronenbold even looked up to Boetticher as one possessed of superior mental endowments to himself, which was indeed the fact, as will be shown hereafter. He seems to have had no rational justification to himself whatever, evolved from the operation of his own mind, for the committal of the deed, but gave at the coroner's inquest, the *imbecile reason* that "*they told him he ought to do it*," meaning by they, those who had circulated the aforementioned rumors, and were concerned in the anonymous letter, and he seems to have regarded this as an all-sufficient justification.

He does not say to the coroner, that the virtue of his

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mother and sister had been defamed, the good name of his family destroyed, and he was impelled, in a fit of fury, to avenge their dishonor.

He makes no attempt at escape, denial or evasion of the act. Before the coroner he manifests no real appreciation of the momentous importance of the examination to his own future. He maintains neither silence, nor reserve on any subject, but answers, without individuality, pretty much as the interrogatories of the coroner lead him, without appearing to comprehend the ultimate weight and significance of his replies against himself. His answers are mostly in short sentences, and not always intelligible, although in the examination by the coroner, who was incapable of forming a correct judgment as to his mental *status*, language, and a combination of expressions, are attributed to him, which he had not the mental capacity to frame, or to express, (if framed for him) in so ready a manner. He says not a word in palliation of his crime, and under the interrogatories and promptings, and leading questions of the coroner, whose hypothesis is evidently unjustifiable murder, he weaves for himself a web of criminality, from the meshes of which, no sane man could possibly escape, and he is either unconcerned or unconscious of the part he is taking in constructing this net. In a subsequent examination, March 21st, 1874, before the Court of Criminal Correction, "He had so little comprehension of his situation, that when the examination was closed, and he was remanded to jail, he thought that his trial was over and that he might go free."

In jail, when his attorneys, friends or physicians visited him, he never introduced any subject of conversation, but would sustain, in an imperfect and unsatisfactory manner, a conversation conducted by interrogatories propounded to him, to which he would contribute, in a capricious way, replies in monosyllables or short sentences, sometimes pertinent to the subject, but often irrelevant. For example, when his intended wife was present at one of the writer's interviews, the writer asked him in an undertone, and unobserved by her, "if she was his sweetheart," to which he replied,

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