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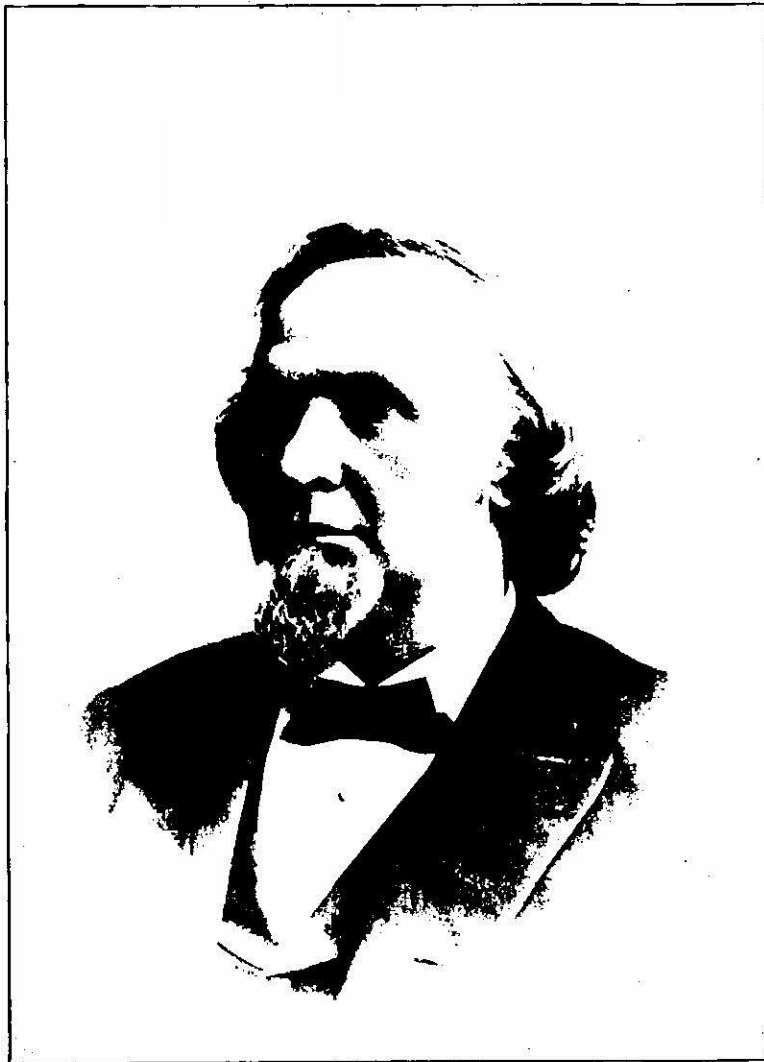
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ALCOHOL INSANITY, IN THE LIGHT OF MOD-  
ERN PATHOLOGY.

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While in the majority of cases the onset and early history of mental disorganization under alcohol point to extensive and wide-spread involvement of brain areas, it happens that in a certain number of others, these extensive and generalized changes are by no means the most prominent or typical feature, the change in these being more *intensive* and *specialized*, falling with peculiar vehemence on this or that sensorial, psychical, or psychomotor region, and comparable, therefore, to other local and intensive lesions like the focal epilepsies. It is, we think, in the latter type of alcoholic insanity we find the features which tie this class to the instinctive criminaloid and the epileptic individuals in whom the typical and peculiar morbid characteristics are also intensive and specialized. We have seen how, in the Jacksonian epilepsies, the primary focus of disease may be in some area of the psycho-motor, sensorial, or psychical sphere, and that the external manifestations vary accordingly.

So it is with our *early* alcoholic insanities. It may happen in *some* that the whole progress of the brain (mental) disease will have progressed in an *extensive and generalized* fashion, gradually lapsing into chronic weakmindedness and terminal dementia. During the period of lapsing into such dementia, or later, when the dementia is obvious, it will happen that these patients exhibit the most protean and multiform clinical symptoms — *e. g.*, senile excitement, emotionalism, epileptiform convulsions, cerebral softenings and paresis, apoplexies, acute hallucinatory excitement, etc., etc.; a vast sea of symptoms in which the flotsam and jetsam of the most varied psychical and bodily conditions are present; a state of affairs that has given rise to the adage that “to the alcoholic all things are possible.” But before such an ultimatum is reached a definite and intermediate clinical history will have been gone through by the vast majority of alcoholics, the lines of march of these falling in certain fairly distinct and definite tracts, so that at the onset and in the early and intermediate stages it is possible to arrange the subjects of these diseases into certain definite natural orders. It is customary among neurologists, who, in the main, deal with the former kind of case, to state that the symptomatology of the chronic alcoholic is of the “extensive and generalized” kind, and such is the clinical type portrayed in our text-books (*vide* Gowers’ “Diseases of the Nervous System,” Vol. II., *sub voce* Chronic Alcoholism). While these cases are by no means rare in our asylums, the majority of our alcoholic insane are those who belong to the other class in which the main morbid stress and evolution of symptoms is developing in this or that “intensive and specialized way.” This latter is, at any rate, the predominant symptom, though careful investigation will in some cases reveal the presence also of the more generalized group of symptoms. The logical development of the symptoms in our opinion is from (*a*) the generalized and extensive to (*b*) the specialized and intensive, the real fact being that these first vary according to the personal equation, *e. g.*, heredity, stress of special sort, etc.,



under which the person lives. Having said this much by way of making our ground clear, we shall take up the feature in the onset and morbid evolution of the disease.

The chronic alcoholic exhibits among the early recognizable symptoms, the following seven main groups :

Generalized and extensive symptoms-complex.

*First.* Diminished power of recollection (amnesia), *i. e.*, of revivifying past mental images or ideas.

*Second.* Diminished power of attention and volition, *i. e.*, in sensorial or kinæsthetic spheres, including their interconnections.

*Third.* Diminished initiativeness and energy in conduct (correlated to one and two).

*Fourth.* Diminished muscular power ; trembling (kinæsthetic sphere); muscular act (kinæsthetic center) requiring to be reinforced by other sensory stimuli for efficient execution.

*Fifth.* Blunting of higher moral and ethical sense.

*Sixth.* Insomnia ; loss of capacity for sleep and recuperation (*i. e.*, nutritive breakdown of the whole cortical sphere).

*Seventh.* Serious disturbance in the balance of cortical representation of *external* world and empirical ego, with melancholia and suspicion, delusions of persecution, and excitement, hallucinations, vague and gloomy feelings, and other pathetic emotional states, suicidal tendencies, passing into various chronic insanities.

We shall consider these groups of symptom groups *seriatim* :—

(a) *Diminished power of recollection* (amnesic type). Under the law of psychogenesis we had previously noted that the power of recalling past memories — of re-visualizing things seen, of re-hearing things heard, and of re-representing previous mental images — imply a highly evolved cortical (mental) organization, and that it has behind it a nutritive law of deep significance, under which “ the external logic of events is now no longer a *sine quâ non* needed to

revivify them. They arise spontaneously, they become recalled thoughts, memories. Thus, thoughts arise in the child's mind. The feeling of spontaneity which accompanies these thoughts gradually get built up into the distinct recognition of the ego as the empirical source and center of such feelings." This capacity depends upon the integrity, therefore, of the cerebral organization in two regards, viz., (a) the integrity of the latest evolved and elaborated anatomico-physiological *connections* between the neurons which subserve it, and (b) the high nutritive elaboration, the high "nerve tension" and capacity for spontaneous discharge of the said neurons from time to time. Though these two are not separate, yet we shall consider them separately in order to be able to apprehend more clearly the pathogenesis of amnesia. In what respect does alcohol produce changes in these, viz., *first*, in the anatomico-physiological connections, or "field of conjunction" between the neurons, and *second*, in the *higher nutrition* of each individual neuron.

The results of our investigation with *Golgi's* method show us that definite and recognizable changes occur in each of these respects.

*Changes in the anatomico-physiological connections (or "field of conjunction") between the neurons.* Since the exact nature of such connections in health has been proved indisputably by the application of Golgi's method, it remains to inquire how and to what extent these are altered or destroyed, if at all. Our observations show that change of a very striking and unmistakable character occurs in the ultimate protoplasmic expansions and "contact-granules" situated upon them on the one hand, and in the ultimate naked fibrils (collaterals and terminals) which everywhere come into relation with such protoplasmic termini and granules on the other. Beginning with a softening and swelling of these contact granules, and also of the protoplasmic twigs on which they are situated, the earliest noticeable changes are a coalescence of these into small irregular "composites" of such, recognizable here and there as a local coarseness. As

the changes progress in coarseness and extent, they can now be more easily recognized as commencing moniliform swellings along the course of the terminal protoplasmic twigs. These are chiefly seen in the alcoholic brains we have examined with Golgi's method in the superficial parts of the cortex—molecular and sub-molecular plexus regions especially. With the further progress of the lesion these softened and enlarged protoplasmic masses form irregular botryoidal masses, mainly clothing the now irregularly bared protoplasmic stem, which itself rapidly becomes softened, attenuated, and excavated (vacuolated) in places, till finally what is left is a mere ghost-like tattered protoplasmic stump, such as some of the cells exhibit. These changes affect the apical expansions of both ambiguous, long pyramidal, and mixed pyramidal or polymorphic cells, and the chief stress of the lesions fall in the region of the molecular and sub-molecular plexuses, and in the sub-pyramidal plexus region. In the latter (and below) we come for the first time on the mixed pyramidal cells, and these show further changes, extending to the cell body itself, and remarkably striking in character. We are speaking of brains in which there is as yet no vascular blockings, and consequent softenings, for such we have purposely excluded from the present research, as the changes were too grossly secondary and advanced. The changes we now refer to are such as appear in this or that group of cells, when other cells in a part of the convolution a few millimetres off will appear but very slightly diseased. These changes consist in a gradual disintegration of the cell body; after the apical several of the basilar processes have considerably suffered. Here and there at the side of the cell body the protoplasm seems to get frayed, and, as it were, eroded or ulcerated away, the site of such being a local excavation of the cell protoplasm, with an adjacent little heap of *debris*. In other cells these changes will start from several points on the surface of the cell body irregularly eroding and demolishing it, until but small fragments of the cell, mere ruins, with a little *debris*, are left in

the pericellular sac. Such a cell, in which the destructive process has yet left its axis cylinder and a few withered basilar-protoplasmic processes is seen. In other cases, again, the cell-protoplasm gets vacuolated from within, and the progress of this continues till its whole internal protoplasmic structure is channeled and tunneled by such holes and seams of liquefaction. We do not mean to correlate early and recoverable alcoholic amnesia with the *advanced* destructive changes in the cell body. Rather we look upon it as associated with the early changes in the fine protoplasmic contact granules of the apical expansions which we have already figured and described. The lesions in these fine protoplasmic granules, however, represent but one element in the field of conjunction, and we must now refer to the other element, viz., the fine collaterals and terminals which, arriving from association, commissural or terminal fibres spread out in the three main plexus regions, viz., molecular, sub-molecular, and sub-pyramidal, forming the other element of the nervo-protoplasmic connections. These have to be carefully looked for with high powers, as, owing to their extreme delicacy, and their paleness of staining with silver chromate, they are else liable to be overlooked. A careful search, however, will soon reveal the fact that these are extensively changed and altered. The changes we have noted are mainly of two *kinds*, external and internal. *External changes*: These refer to the outline and contour of these fibrils. In health they are fine, delicate, smooth, and clear-cut in outline, like a thread of silk, and stain *internally*, with a uniform clear coffee-colored tint. In disease these become *granular* and *wrinkled* in outline, as though the firm smooth consistence of the fibre underwent a granulation with softening, and lost its cleanness of contour. Here and there, too, small irregular swellings are seen. *Internal changes*: These are very distinct in many specimens, and can leave no doubt in our mind that chemical alterations are taking place within the fibril. The most striking feature is discontinuous and uneven staining. The fine and delicate collat-

eral or terminal fibril, which stained (if it stained at all) of a uniform clear coffee tint, is irregularly stained along its course, in some parts the pallor and want of staining almost indicating that the fibre is broken into separate fragments, till the most careful focusing and search will reveal the unstained intermediate parts. These streaks of discontinuous and irregular staining are so remarkably frequent and conspicuous in several specimens we have examined, that we have no doubt they represent what is a real pathological change going on within these naked nerve fibrils.

These two sets of changes in the naked collateral and terminal fibrils (internal and external) constitute, to our mind, the other element of earliest and recognizable change in the field of conjunction, whereby the pathways for the passage of nervous excitations from neuron to neuron, and from one complex group of neurons (nerve center) to another, is thus rendered difficult or impossible. Both these sets of changes in the field of conjunction are, as far as the present author is aware, only recognizable with the use of Golgi's method and its modifications, the author having used for this purpose his own modification, published in the *British Medical Journal*, March, 1894. Our work in this line leads us to the view that it is here, in the changes in the anatomico-physiological junction regions, in this field of conjunction, we find the earliest dynamical changes, and that these represent, on the psychical side, the diminished capacity of the neurons to be excitable to presentative sensorial stimulations (the equivalent of the softenings and obliterations of the protoplasmic contact-granules), and a diminished permeability in the pathways of nerve currents issuing from one neuron by its nervous process and its terminals to another neuron in the cortical area, the psychical counterpart of which would be a *slowness in the arousing of associated images, and delay of reaction time*. Finally, as regards the earlier and subtler nutritive changes within the cell body and nucleus. The physiology of nutrition is in the nerve cell elaborated to a high degree, and each nerve center of

this or that part of the central nervous system has its own intrinsic nutritive rhythm. In the alcoholic brain, the early and subtler changes affect, not merely the field of conjunction (produce *dynamical effects as far as the reception and transmission of nerve currents are concerned*), but the *trophic or nutritive focus* (cell body and nucleus) of each individual neuron. The *advanced* trophic changes, especially as shown in the polymorphic elements, we have already described and portrayed. The cells in this region are also favorable for the study of the *commencing* trophic changes in the neuron. The methods we have used for this purpose are four in number: (*a*) sublimate and alcohol fixing, and staining with Toluidine blue; (*b*) frozen sections, stained with aniline blue-black; (*c*) Nissl's methylene-blue method; (*d*) Golgi's method. Each of these helps to supplement the other.

*Commencing* trophic changes in the cell bodies and nucleus. We are of opinion that these also are definite and recognizable, and further, that in certain respects (*viz.*, as elucidated by the aniline blue-black method) these have been abundantly described and figured by Bevan Lewis ("Text-book of Mental Disease," 1890). For our own part we would add certain details obtained by our investigations with the three other methods named, *viz.*, the Toluidine, Nissl, and Golgi methods. The first and second of these methods are useful for showing certain fine intra-cellular and intra-nuclear changes which the aniline method does not help to show, while the third enables us to apply a certain test to identify what fragments of nerve-protoplasm still remain. Fortunately for us, not all the cells show equally advanced changes in the alcoholic brain, for while some show moderately advanced intra-cellular changes at once recognizable as such, others (neighboring cells) on whom the stress — for some reason or other — has not fallen so severely will show us appearances consistent with health, or only faint indications of a commencing departure from the normal. This graduation of pathological changes helps us greatly, for it offers an intrinsic control method of distinct value. Keeping

this in mind the earliest changes we see are: (*a*) Deeper staining, of cell body and protoplasmic processes (with aniline, Toluidine, and Nissl's method). (*b*) Swelling and softening (indistinctness of outline) of the intra-cellular chromatin rods, and increased intensity of their staining (with Nissl's method). (*c*) Thickening of intra-nuclear reticulum, and increased prominence of nucleoli (with Toluidine method). (*d*) Increase of the normal golden cell pigment which is present at or near the basal portion of the cell (with all three methods). We are not as yet in a position to state which of these four changes occurs first, or whether any two or more of them occur simultaneously; but certainly they all occur in the *earliest* stages, when the contemporaneous changes in the finest nervo-protoplasmic regions which we have before detailed occur. To us these four points mentioned indicate two things, viz.: (*a*) that there is increased functional activity in the cell body, and (*b*) that this is productive of a degradation in the form of nerve energy, the physical accompaniment of which is a softening and alteration of the blue chromatin rods and granules, and their gradual replacement by yellowish pigment. The increase and progress of pigmentation is the equivalent of the onset and progress of *degradation* in the functional activity of the cell — the replacement of living protoplasm by non-living pigmentary product as in senile decay and in chronic epilepsy: here (in chronic alcoholism) it is attended with the other intra-cellular changes of a more subtle kind, viz., intensity of staining of cell protoplasm, and swelling and softening with increased staining of the intra-cellular chromatin rods and granules, the reservoirs for the building up and storage of nerve energy under high tension, *i. e.*, the pabulum of the cell. The earliest lesions, therefore, of alcoholism are of a nutritive and dynamical type, dynamical in so far as it affects the protoplasmic granules on the one hand and the nerve collaterals and terminals on the other which enter into the constitution of the nervo-protoplasmic plexuses (fields of conjunction) in the brain; and nutritional in so far as it affects

the protoplasm and nucleus of the cell body and therefore interferes with the higher evolution and elaboration of nerve energy, and especially with the quasi-spontaneous or voluntary vivifications of former memory images which is the peculiar property of the cortical neuron during its period of increased functional activity:

But this is not the only result of the alcoholic lesion. Another outcome of it is the next group of symptoms.

(*b*) Diminished faculty of *attention* and *volition*.

Here there is a slightly deeper involvement, we think. In the mild amnesia we have considered there is the loss of *re-vivification* or re-rousing of past experienced mental images and states; here, even when the objective images are present, the capacity of receiving and registering them in the mind is diminished. On the psychical side this is, in other words, diminished power of attention. It may be that in one case this is mainly limited to the visual, in another to the olfactory, in a third to the kinæsthetic, or in a fourth, etc., to the auditory, etc., sphere, and that in other cases it extends to all these. The faculty of attention is an early one in the infant, and we think it is simpler in character and grade than volition. At least two sensorial elements enter into the composition of attention, viz.: (*a*) the special or local sense which is being active; (*b*) its special kinæsthetic auxiliary. The mode of evolution of each special or local sense has been a twin evolution, a special kinæsthetic element having entered into it, and got incorporated with it. With sight there is the representation of the movement mechanism, which is concerned in *fixing* an object seen, in bringing it into the field of clear vision before it can be the special object of attention. With it comes *accommodation*, which is also brought to bear on the object. Besides these bin-ocular and intra-ocular kinæses a head movement may also enter into the primary constitution of attention to a visual impression (turning the head towards it), *cf.* also auditory attention and movements of the ears. This is the primary kinetic reaction, appearing



early in the animal kingdom, and early in the child. It is forerunner of and prerequisite for attention.

So in hearing there is the external ear movement and the internal one (tensor tympani), these kinetic elements entering into the composition of auditory attention. So with smell (nostril and respiratory indrawing as in the child on its mother's breast, etc.). And with touch or tactile there is a parallel incorporation of a movement sense of the organs of touch (the fingers, hand, etc.).

Attention is thus analyzable into a compound or complex of at least two sensory elements ; therefore it is a higher sensory state (psychical state), and is the psychical concomitant of nervous action in such conjoint sensorial sphere. The feeling of effort enters into both attention and volition, and this has misled some to speak of the act of attention as an essentially "motor" process. But this is due to a little confusion of ideas. The sense of sight, of hearing, the tactile sense, the muscular sense, etc., each of these has its appropriate auxiliary muscular organs, the function of which has been to produce a movement in the peripheral sense organ. This has been so constant a thing that from frequent repetition their organization has become perfect, until in man the motor action is habitual and follows the sensation. Thus according to our view every sensory organ has its auxiliary muscles which by their aid help to reinforce its function. The cycle of events is: (*a*) Stimulations of cortical sensory center = consciousness of sensation. (*b*) Movement following, whereby the external object is brought into the *center* or focus of the field of consciousness by pricking of ears, fixing with eye, etc. (*c*) As the result of (*a*) and (*b*), stronger arousal of cortical sensory center by the re-entering sensory currents both from the *sensory organ* and its *auxiliary muscles*. Such re-entering of auxiliary kinæsthetic currents serves to *reinforce* and increase the *functional activity* of the sensory center. The psychical side of such intensification of the activity of the sensory center is attention. Hence we cannot localize the faculty

of attention in any one "area" of the brain (as *e. g.*, Ferrier, in the pre-frontal lobe in monkeys). It accompanies, and can accompany the activity or any of the specific centers of sensation, whether visual, auditory, tactile, gustatory, olfactory, or kinæsthetic. There is no special center for the faculty of attention.

Now the above heightening of the functional activity of a sensory center has for its object some act immediate or future on the part of the organism in response to the sensation which is now distinctly felt. It may be now one, or it may be at another time other act, according to the dynamical (anatomico-physiological) connections possessed by the sensory center which is in a state of such increased functional activity.

During the condition of attention there is thus not only an increased functional activity in this or that sensory center, but an overflow or discharge from that center to *others* along definite routes, or diffusely all over its borders. Where a voluntary act or movement is one of the outcomes, the neural discharges consist of (*a*) primary sensation, focusing-reflex, and attention; and (*b*) discharge from such sensory center, (*c*) with resultant excitation of other sensory or psychical centers, arousing feelings and mental images (ideas), or of a kinæsthetic center, in the last case evoking a more or less obviously special movement. The sequence of events comprise, therefore, (*a*) arousing a sensory center to attention; and its discharge, along (*b*) a tract to (*c*) a kinæsthetic center; followed by an appropriate movement to its completion, or, in psychological language, *first*, perception; *second*, apperception and attention; *third*, strong revival in mind of the act to be performed; *fourth*, execution of the idea.

Attention thus belongs to the sensory side; volition to a specialized and intensive discharge therefrom to the kinæsthetic sphere. Volition is thus a development from attention, and passes on to execution; it is thus the passing from *attention to execution*: in the brain it overlaps the psycho-

motor sphere on the one side, and the sensory on the other; its region is, therefore, the *transitional* or association system one between these two.

On the anatomico-physiological side we think the mixed pyramidal or polymorphic system to chiefly represent this association region, partly on comparative and developmental grounds, and partly from pathological considerations. The gradual historical development and elaboration of this system in the mammal, till it attains its acme in man, and the lateness of this lower cortical organization to complete its growth in the new-born and young indicate that this "accessory association system" of the brain is the chief structure which subserves the higher psychical functions, and especially volition. Further, of all the various cell systems involved in chronic alcoholism, it is the one in which the changes—especially the trophic ones—are most advanced.

We therefore correlate its special implication and various before-described phases and early change with the special neurasthenia of the alcoholic, including the next group of symptoms on our list—diminution of initiativeness in conduct, and laziness with blunted moral and ethical sense behind these.

Coming next we have a definite group of symptoms, viz.: (a) *loss of* muscular power, with tremor on exertion. We regard this special condition as due to lesions in the kinæsthetic area, affecting both the dynamical and nutritive parts of the nerve apparatus; *i. e.*, both nervo-protoplasmic connections and cell bodies. Indeed, this Rolandic (or movement) sphere is the commonly used one for its study because the cell elements are large and easy, therefore, for study in this situation; and perhaps because the further progress of the lesions are apparently more conspicuous and striking here (*e. g.*, atrophy and wasting of convolutions: œdema and thickening of pia-arachnoid, etc.). We have seen in studying the development of the Rolandic region in the young how the increased growth and extent of collaterals from the descending axis-cylinders of the ambiguous and pyramidal

cells, and their coming into further contact with the protoplasmic expansions of the lower and larger pyramidal cells constitute a special intrinsic mechanism for the consolidation of movements. These collaterals conspicuously suffer, viz., in the Rolandic area, and to this we attribute the tremor and unsteadiness (dynamical disturbance) in movement. Apart from this tremor there is a true *weakness*, as shown with the dynamometer, which may amount to a paresis of 20-40 p. c. below health.

We correlate this with the commencing nutritive degradation of the nerve cells which discharge down the pyramidal track, inciting thereby the motor cells of the cord. It is, we think, a phenomenon parallel to the muscular weakness of neurasthesia when tested with the dynamometer. This combination of tremor and weakness are the basis for the dyskinæsis of alcoholism.

The reinforcement these cells require, even to enable them to act continuously for a time, should be noted. The alcoholic holding a ball or jug in his hand will often drop it if he be not looking — fixing his attention — on it. For the normal tactile and kinæsthetic ascending currents arrived at the brain, have to act on psycho-motor cells of but low energy which may flag. By looking at the object (attention) the sensorial visual excitations arrive after passing the visual center, to the hand center, and *reinforce* the volume of the sensory exciting currents which keep up the functional activity of the psycho-motor cells. The phenomenon here is also analogous to that of subminimal stimulation of the cortex, which, though of itself failing to evoke movement from the kinæsthetic focus, will do so if the paw be first stroked gently a few times, and then the electrodes applied. The center thus slightly roused in its excitability now just reacts. Instead of the paw the stimulus of some associated area (*e. g.*, *smell*) will also serve the same purpose, viz., heightening the excitability of the kinæsthetic center. (In this connection, note also Belmondo's experiments on the spinal cord motor cells associated with stimulation of the

posterior roots, *Archiv. Ital. de Biol.*, 1891, Part I.), which also fall into a similar category.

(*b*) *Insomania*. This is another of the early alcoholic symptoms. How far this may be due to habit it is difficult to say. But its injurious effect on the brain is certain. We know from physiological experiments that cell elements, whether secretory or motor, exhibit physico-chemical changes during activity: *e. g.*, electric changes and changes in intracellular structure. When pushed to the limits of fatigue, these changes in the *secreting cells*, the *muscle fibre*, or the *motor end plate* of the nerve are not too difficult to recognize. A pseudo-sanctity which has hitherto surrounded the nerve cell and sought to exclude it from the circle of these metabolic changes is now breaking down, and of late years the experimental work of cerebral thermometry (Mosso), and of the microscopic changes in nerve cells accompanying functional activity (Hodge and others) have gradually brought a series of positive facts to displace the old superstition.

Hodge's work in this respect, following on the older observations of Sadowski and others, shows that in the cerebral cells of the honey-bee, swallow, pigeon, and sparrow, such recognizable changes are found. To summarize them, and finds (*a*) changes in the nucleus, viz., shrinkage, and crenation of outline, loss of fine intra-nuclear reticulation, and tendency of the nuclear chromatin to stain more darkly than during rest. His experiments were extensive, carefully and laboriously done with abundance of control material, and the results obtained are regular and very uniform. Besides these intra-nuclear changes, there are (*b*) the alterations in the cell protoplasm: these include shrinkage in size of the cell with (in the case of the cerebral cells) enlargement of the peri-cellular lymph space, commencing vacuolation in the cell protoplasm, and diminished staining reaction of the fatigued cell. The present author having been favored with the actual microscopic specimens from Dr. Hodge, can entirely concur in the above statement of facts as borne out by the preparations. This subject has also a further interest

owing to the researches of Dr. Batty Tuke, who, with Dr. Mann, has investigated the changes underlying fatigue in the bipolar cells of the retina (second layer), and in the occipital lobe of the rabbit in connection with visual stimulation, as well as the changes in the cells of cervical ganglion also, during fatigue induced by stimulation of the sympathetic cord lower down. The specimens and micro-photographs which illustrate their research (yet unpublished) leave no doubt that a series of changes parallel to those described by Dr. Hodge are present beyond doubt. Their conclusions I present in Dr. Tuke's own words: "In the unstimulated cell the nucleus stains lighter than the protoplasm; the first effect of stimulation is to reduce the staining of both to the same degree of intensity; as it is continued the nucleus darkens, but remains lighter than the protoplasm; then the nucleus becomes distinctly darker, and begins to get deformed and crenated; and eventually a condition is produced which may be spoken of as a collapse, nucleus and protoplasm losing all power of taking on stains." The third stage, in which there is the conspicuous dark staining of the nucleus, as well as of the cell protoplasm, and in which the nucleus itself begins to get deformed and crenated is stated by Dr. Batty Tuke to be the "limit of functional activity changes." Experimentally it has been reached after eighteen hours' continuous excitation of the cell, and marks the borderland where the whole pabulum or nutritive material of the cell body is used up, and yet leaves the organ in a condition admitting of reconstruction (recuperation). A fourth stage, according to the same observer, marks the pathological, the condition of actual or commencing vacuolation and disintegration within the cell protoplasm "from which it is doubtful whether full recuperation can be obtained." The consensus of results obtained from the work therefore of Heidenhain, Langley, and others on glandular secreting cells, of Kodis, on cells of the epidermis, *Sadovski* ("On the Changes of Nerve Centers caused by Peripheral Irritation," 1889), and *Madame Ternonski* ("Changes in the Spinal

Cord due to stretching of the Sciatic Nerve, etc.," 1885), on spinal ganglia and the cells of the spinal cord, and the more recent work of Lambert and of Vas on the sympathetic ganglia, and of *Hodge* on nerve cells ("A Microscopical Study of Changes due to functional activity in Nerve Cells," 1892), and of Drs. Batty Tuke and Mann (on the same subject, 1893-4) form a growing body of definite and well-ascertained facts which the present author thinks will have the profoundest bearing on the scientific basis for practical treatment in neurasthenia, insomnia, and fatigue, with commencing breakdown, which mark the milestones along the high road to the ultimate development of the various alcoholic insanities, the melancholias and the various other protean brain and nervous maladies which are so abundant in our decade.

And this leads us now to the next group of symptoms-complex in our general consideration of the alcoholic group of the insanities, which completes our general survey, viz.:

Melancholia with suspicion, vague dreads, mixed with phases of momentary excitement, and finally of acute hallucinations and delusions, maniacal excitement, delirious conditions, and epileptic fits, from which, if relief is obtained, a permanent residuum of weakmindedness is left behind, or of chronic mania or systematized delusional insanity. The earliest in this group is melancholia, with vague and general suspicions, intensified at moments with distinct hallucinations of the senses. It is at this stage that most of our asylum alcoholics come under observation, having at home passed through the previous six stages. This, the seventh stage, is one of bad omen. It indicates not only a serious progress of the mischief beyond the limits where, according to Batty Tuke, repair is possible, but is very often the beginning of a downward progressive stage of peculiar malignancy, most unsatisfactory to treat, and very disheartening in its sequelæ. Of course all parts of the higher cerebral organization have not suffered equally in these cases; the clinical and psychological indications they exhibit prove this. But though the patient be placed under good hygienic conditions,

with rest, abundant food, and absence of worry and anxiety, and the administration of sedatives to procure sleep, of massage for the body tissues, and even of intestinal asepsis, in the vast majority of cases the capacities for recuperation have been passed, and their march and progress is towards systematized and chronic insanity.

Considerable extents of cortical tissue have been damaged beyond repair: points of softening and breaking up in the molecular and sub-molecular nervo-protoplasmic plexuses, and a more notable involvement in the sub-pyramidal region (polymorphic system) with pigmentary and fatty degenerations of nerve cells, cutting off and complete degeneration of one or more entire basilar protoplasmic processes or of the whole apical process, and similarly to crown all a vascular disease (endo-arteritis and fatty changes with narrowing of lumina of cerebral blood vessels) with *its* sequelæ, viz.: imperfect nutrition of the brain tissue, thrombosis and focal softenings which complete the picture of progressive rottenness and disintegration of brain tissue which can never be recovered from. This stage is associated with softenings and swellings in the neuroglia elements themselves, with *vacuolation* of their cell protoplasm, with pigmentation of the cell body, with swellings of the processes, and the abundant formation of so-called colloid bodies in the brain. Our observations show us that in a considerable number of cases these latter structures, viz.: "colloid bodies," are derivatives of the neuroglia fibre cells, as revealed by the method of staining with silver chromate. They are to be met with in all sizes, from the smallest recognizable speck situated on a delicate neuroglia fibre to a considerable swelling or series of beaded swellings occurring along the course of the same neuroglia fibres. As to their origin in medullated fibres from swellings and spherules of the myelin substance, our observations give no indication (negative evidence), but it leaves no doubt in our minds, in so far as the sharpness and precision of staining with Golgi's method leaves no possible ground for doubt, that at least one source of their origin is



the neuroglia element — the fibre-cell. In the surface condensation system of neuroglia fibre, in a region where the medullation fibres are absent, these bodies can be recognized in all sizes from the minutest to the largest met with. Is it not singular that according to the view of the origin of these bodies from myelin, these bodies should be rare and conspicuous by their absence from the very heart and center of Exner's plexus, where medullated fibres abound, whereas when we pass more superficially through the "clear zone" and enter into the substance of the tangential plexus of neuroglia fibres, that here, in a region barren and devoid of medullation nerve fibres, but abounding in neuroglia fibres, these colloid bodies should be abundant? We have also noted their presence in the ependyma in connection with the special layer of stellate cells in the subepithelial region, these bodies being undoubtedly in this region caused by swellings along the processes of these stellate fibre cells. With alumbæmatoxylin we have confirmed the statement of Obersteiner that they stain a fine blue color, and their deep violet reaction when treated with iodine, followed by dilute sulphuric acid. With Ranvier's picro-carmin they also stain darkly, but not with aniline blue-black. Chemically we regard them as coming closest to the eleidin granules discovered by Ranvier in the epidermis. We have now in the briefest manner to touch upon the specialized and intensive lesions in chronic alcoholic insanity to finish our general survey of the law of pathogenesis.

*Specialized and Intensive Pathological Types of Alcoholic Insanity.*—The subjects of these have a neurotic heritage, epileptic, intemperate, and criminaloid. The early and severe implication of certain regions of the cortical organization in these betrays to us a significant fact, that the vice is in the nerve cell; the cell is the selective agent, so to speak. Under stress of another kind, *e. g.*, worry, sexual excess, etc., the result would have been a form of downbreak (disorganization) of a similar sort (*e. g.*, melancholia and delusional insanity) to what it would be under alcoholic stress.

We must recognize the intrinsic hereditary vice of organization of the nerve cell ; giving to alcohol, syphilis, sexual excess, worry, etc., or other external facts, its subordinate position as an element of *stress* which, whether acting directly as a chemical poison or indirectly, *via* the peripheral nerves, is but an auxiliary in bringing out the intrinsic cerebral defect. The intrinsic vice of organization is within, and requires but little stress of circumstances to reveal itself. In these subjects the "generalized and extensive" group of symptoms before mentioned is rapidly passed over or abbreviated, and the special and intense insane involvement early makes its appearance, viz., melancholia with persecutory delusions (two-thirds of the total number of cases) with or without ideas of grandeur, varied by outbursts of acute excitement (mania), in which acute hallucinations may play at times a casual part. These hallucinations and delusions may be *aural, visual, olfactory, cutaneous, gastric and abdominal, genito-urinary*, etc., or several of these combined, in fact the most protean and multiform that could be imagined, and having affinities with the more rapidly evolving G. P. on the one hand, and the more slowly developing paranoiac on the other, and equally with those of hopeless prognosis.

We have now concluded our brief survey of the law of pathogenesis, which in a future publication we intend to deal with in greater detail than is possible within the limits of the present paper. We have seen how the onset and early course present all the phenomena comparable to fatigue conditions of the nerve cells, and that when these nutritive changes pass a certain limit, the manifestations of insanity commence. We have seen also how, with the involvements of the delicate collateral and terminal fibrils and protoplasmic granules which enter into the dynamical constitution of the cortical centers, this general diminution of brain power will be accompanied by sensory, psychical, and kinæsthetic clinical symptoms of a very distinct and definite kind, and how, with the added vice of hereditary taint, the law of psychogenesis finds its rapid and full realization in the various delu-

sional and melancholic states, with alternating phases of gloom and excitement, which passes on by natural evolution to the more hopeless and helpless grades of insanity.

From the whole body of the foregoing research and discussion, long and tedious as it has been, the following conclusions are therefore drawn :—

GENERAL CONCLUSIONS.

*First.* The doctrine of localization of functions in the brain is the basis which renders a study of the psychology and pathology of insanity possible, and especially the extension of the function to the "neuron" the unit of nervous and psychical function considered from every point of view.

*Second.* All nervous mechanisms of the bulbo-spinal type are organized on a common fundamental basis, and consist of at least two nerve elements—a sensitive epithelial bipolar cell, and a central motor element. Over and above these an intermediate system of cells may be developed, subserving a great variety of functions in all vertebrates.

*Third.* These intermediate cells of the bulbo-spinal axis allow of co-ordination and correlation of activities between the various metameric segments of the bulbo-spinal tube, and between the several bulbo-spinal centers on the one hand and the encephalic organs on the other.

*Fourth.* There is an actual and demonstrable basis of structure in the bulbo-spinal system which allows of a great variety in so-called reflex movements; some of these latter being sufficiently elaborate to almost deserve the name "purposive."

*Fifth.* The cerebral system is a growth and elaboration of neurons in connection with three great sensory projection systems, viz., the *olfactory*, the *optic*, and the *bulbo-spinal* (this last including within itself *tactile*, *gustatory*, *kinæsthetic*, and other sensory projection systems).

*Sixth.* The cerebral system has developed at that part of the organism which led in locomotion, was the first to come into contact with the environment, and whose sensi-

tiveness and reactivity would therefore be the most highly developed in the organism. It is a region, therefore, towards which not only ganglionic concentration takes place, but in which the higher and more complex nerve mechanisms continue in a growing and therefore more plastic state; a highly educable nerve organization.

*Seventh.* The cortical mechanism or pallium arises in the scale of mass (quantity) and internal elaboration (quality) as we pass from the amphibian, *via* the reptilian, to the mammalian series, finally attaining its highest quantitative and qualitative evolution in man. It becomes the seat and organ of every form and quality of psychical life.

*Eighth.* The elements which enter into the cerebral organization in man are the ultimate product of a long series of evolutions in structure and function through countless ages past. These elements are mainly of three kinds, *nervous protective*, and *nutritive*.

*Ninth.* The cerebral nervous elements (neurons) are separate and distinct anatomically; they do not anastomose one with another, but function only by contact. The individual neuron is a three-fold mechanism, its protoplasmic and nervous processes constituting the two parts which enter into dynamical relationship with other neurons, while the cell protoplasm and nucleus constitute the highly-evolved and specialized trophic and nutritive focus of the whole.

*Tenth.* The cerebral cortex in man is composed of various cell elements disposed in layers; of these there are four main systems, *viz.*: the molecular, ambiguous, long pyramidal, and polymorphic, each having its special anatomico-physiological characters.

*Eleventh.* The sensory excitations passing upwards to the cortex by projection fibres, mainly spread and get distributed in the molecular and sub-molecular regions, affecting thereby both ambiguous cells and long pyramidal cells. This is true of the olfactory and optic projections, and probably true also of the fillet radiations.

*Twelfth.* While the main fibres and branches of such

sensory projection systems are medullated and insulated, the insulation ceases in the "field of conjunction," or nervo-protoplasmic plexuses of the *molecular* and *sub-ambiguous* regions. Here the "naked" collaterals and terminals of these fibres come into the most intimate contact with the enormous expanse of protoplasmic branches and twigs which ramify in those plexus regions.

*Thirteenth.* A sub-pyramidal nervo-protoplasmic plexus is also formed in the cortex to further increase and perfect the various intrinsic association and commissural systems in the brain.

*Fourteenth.* That as we rise in the vertebrate scale to the mammalia, a new sub-cortical system of elements (polymorphic cells) is developed. This is even in early life still undergoing demonstrable evolution. It is to be looked upon, therefore, as the latest portion of the cerebral organization, and one distinctive of the mammalian brain.

*Fifteenth.* That the whole system of association and commissural fibres grows in accordance with the degree of brain evolution, and that these, together with the polymorphic cell elements, attain their highest relative and absolute evolution in the human brain.

*Sixteenth.* That the specific natures of psychical processes depend upon the specific activities in the various sensorial "areas" of the cortex, and that the latter are to a certain extent localizable. That the whole body of anatomico-physiological and pathological evidence demonstrates such localization of function; and that the Golgi method enables us to push this localization further, at least as regards the kinds of cortical nerve elements, which are the first to subserve sensorial activities.

*Seventeenth.* That in disease such centers (according to the locality of the disease) may be the seat of visual, auditory, gustatory, tactile, and cutaneous, olfactory or kinæsthetic discharges (hallucinations and Jacksonian epilepsies); and that similarly more extensive and higher cortical areas may be involved, giving rise to "psychical epilepsies."

*Eighteenth.* That recent evidence and facts tend to show that the Rolandic area is the seat of sensory processes mainly belonging to the kinæsthetic order, concerned, therefore, with the executive activities (bodily *acts*) of the organism in relation to or in adjustment to the environment; and that the whole Rolandic area thus is the finally disposed executive mechanism as far as the brain is concerned.

*Nineteenth.* That the study of the *aphasias* show that according as various cortical centers and tracts are the locus of the lesion, the clinico-psychological symptoms vary. The whole body of evidence so far considered in our paper shows that the cerebral cortex is the seat, of various psychological activities not only differing in kind, but different also in the form and extent of their elaboration.

*Twentieth.* That in the Rolandic (kinæsthetic) area a structural evolution is at the root of, and accompanies the functional evolution of movements and acts, the progress of the nerve organization being parallel to the progress of movements from dyskinæsis to eukinæsis. A similar anatomico-physiological evolution of the cortex takes place in other areas.

*Twenty-first.* That according to the nature of this anatomico-physiological growth of the brain, it is capable of receiving new impressions and is within certain limits plastic and educable, not a rigidly pre-established structure.

*Twenty-second.* That quality (extent and complexity) of organization in the brain is the real basis of intellectual (mental) capacity, and not mere quantity or mass; that thus a brain small in size (like that of Gambetta) may from its intrinsic high elaboration be able to subserve more varied, extensive and multiform activities in life and thought than others of grosser organization, even if blessed with greater size, can be capable of.

*Twenty-third.* That the law of psychogenesis takes place in the child not only in the psycho-motor and sensuous, but also in the intellectual (relational) sphere which combines these two, following very definite lines, and that

during such stages the child is peculiarly impressionable to surroundings.

*Twenty-fourth.* That the evolution of language as an instrument for the reinforcement of psychical activities (which, however, can take place in its absence) co-operates greatly in brain development. It allows the child to represent the most varied and different things in terms of a common denominator; it is thus of the highest *formal* value in the exercises and repetitions of psychical processes which underlie mental evolution.

*Twenty-fifth.* The gradual recognition of the empirical ego as the center and source of spontaneous activities and its distinction from and antagonism to the external world, are the bases of self-consciousness, self-assertiveness, and volition; the higher states of self-sacrifice and altruism arising later (during and after adolescence) in human character.

*Twenty-sixth.* That under the law of pathogenesis many of these early evolutions in brain and mind, from the foetal to the adolescent stage, may undergo *alteration* (perversion) or *defect* (absence), and that such pathological conditions of the organism are the basis of the insanities.

*Twenty-seventh.* That besides lesions in the nerve elements proper, lesions may occur either in the special *protective* or the *nutritive* mechanisms of the nervous system, which we have fully described before, furnishing additional bases towards pathogenesis.

*Twenty-eighth.* That the whole course of clinico-psychological and pathological evolution in the early stages of an insanity of slow development like alcoholic insanity, enables us to recognize two great classes or types, in one of which the morbid changes are more *generalized and extensive*, while in others this first stage is slight or abbreviated, and a *specialized and intensive* development of pathological changes takes place.

*Twenty-ninth.* That it is possible to correlate the early pathological (internal) changes taking place in the brain

with the early clinico-psychological symptoms of the alcoholic insanities, viz. : amnesia, diminished power of attention and volition, diminished initiativeness and energy in conduct, muscular weakness and tremor, and insomnia, and that the further progress of the morbid changes in the brain in association with the psychical conditions of melancholia, with delusions of suspicion, acute hallucinations, maniacal and epileptiform outbursts, are of a more protean but also more advanced type, in which serious destructions (disorganizations) occur chiefly in the nervo-protoplasmic plexuses of the molecular and ambiguous regions on the one hand and in the polymorphic elements on the other; in these cases the nutritive changes *within* the cell-protoplasm and nucleus being also advanced beyond the limits of repair, the changes in the non-nervous elements being also far advanced.

*Thirtieth.* That the whole of the above body of neurological and pathological evidence, together with recent experimental work, show that in the early stages of the insanities there is a profound *nutritive and dynamical* failure in the nerve elements of the brain, which finds expression in the insomnias, the melancholias, and the commencing loss of memory, with easily induced mental fatigue which their subjects experience, and that the pathological facts ascertained, in so far as they afford us any light, force on us the conviction that we are dealing with serious nutritive and dynamical changes in the central nervous organ, a conviction which must profoundly influence the clinical study and practical treatment of insanity in the future more than it has in the past.



TREATMENT OF DELIRIUM TREMENS.\*

BY DR. NORMAN KERR, LONDON, ENGLAND.

Of the treatment there has been no end. Not so very long ago all cases were freely plied with alcoholic beverages from outset to finish. The question used to be, not "Shall this patient have an intoxicant?" but "What stimulant shall he get?" the practice being to give liberal quantities often of both wines and spirits. During the past thirty-five years or so, the superstition on which this treatment was based, that it was perilous to cut off alcohol at once, has gradually been exploded, though the writer has now and then met with patients whose attending practitioner has shrunk with horror at the risk involved in "so dangerous a step." By respectable authorities we are even now gravely assured that in serious cases it is imperative to continue to give the patient the same intoxicating drinks in which he has been accustomed to indulge, and that it is a mistake to suddenly withdraw the liquor.

An experience of some hundreds of cases has shown the writer that this is an erroneous belief. In this disease he has never seen the liquor do anything but decided harm, in some instances putting in jeopardy the safety of the patient, in other instances contributing to a fatal issue. Both by their direct effects and by their influence in reaction, alcoholic drinks are injurious.

The patient is laboring under a toxæmia induced by alcohol, and to keep giving him more of the poisoning agent is to keep up the toxic action. He is being weakened by the excessive and prolonged discharge of nerve energy, and by his muscular convulsive restlessness and struggling. If more

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\* This paper consists of a part of a chapter on Alcoholism, published in vol. 3 of the *Nineteenth Century Practice*.

alcohol is supplied more nervous energy is called forth and there is more muscular excitement. Thus he is directly enfeebled. Further, after alcohol freely administered there is apt to be reaction, which reaction in this and other diseases not unseldom perils the recovery of a worn-out and collapsed patient.

There need be no fear of serious danger from the sudden cessation of stimulants. Not many less than one hundred thousand criminals and paupers are admitted into prisons or workhouses every year in Britain. The bulk of these are broken down inebriates, shattered by alcohol, yet their liquor indulgence is forthwith cut off, not only without injury, but with such remarkable benefit that they speedily regain health and strength.

The first condition of cure, then, is complete abstention from all intoxicating drinks.

Where any risk is feared, aromatic spirits of ammonia in cinnamon water, aromatic powder in hot water, or hot water itself, or some liquid preparation of beef, or hot milk, or broth may be substituted with advantage.

It is true that even in some special institutions for the treatment of inebriates, beer, stout, or an ardent spirit is employed in small doses as a calmative; but through this quieting is sometimes achieved for the moment by the anæsthetic influence of alcohol on some individuals, it is never unaccompanied (even when for the moment successful) with some risk of subsequent damage.

The writer, therefore, strongly insists on the exclusion of intoxicating liquors from the remedies with which we should attempt to combat delirium tremens. In incipient slight attacks, soon after the premonitory symptoms have threatened a seizure, a good dose of tincture of opium, an old-fashioned but useful drug, will sometimes produce a sound, long sleep, and avert the threatened attack.

With this exception, the less opiates are resorted to, the better. The once common free administration of opium with alcohol has been proved to be as unsafe and unreliable in delirium tremens as it is in cholera.

Opium and morphine in substantial doses, by their lowering of vital energy, diminish the chances of recovery, apart entirely from the risk of an overdose. It seems to be too often left out of consideration that opium and morphine do not counteract the deleterious narcotic action of alcohol, but rather intensify it. That the risk of an overdose of opium is real, the reports of many inquests testify. Fellow-students of the writer, fairly moderate consumers of alcoholic intoxicants, have taken to opium or morphine to secure the sleep which their arduous labors as physicians or scientific investigators have robbed them of, and have been found dead from the combined effects of the two narcotics; while patients laboring under an attack of delirium tremens have died from a sub-cutaneous injection of an opiate administered by the attendant physician.

Digitalis, in one dose of half an ounce of the tincture, followed, if necessary, by a second in a few hours and a third of two drachms, has been highly recommended by Jones; but the writer found it of no avail in averting a fatal issue in one case, and its potency demands great caution in its administration.

Opium used to be largely employed in the endeavor to induce sleep, which has been deemed by many to be the true cure of the disease. But there are two kinds of sleep, one sound, healthful, and natural, which if sufficiently prolonged and if the patient awakes refreshed and calm therefrom, is the principal curative process; the other light, disturbed, fitful, short, and morbid, on coming out of which the patient awakes unrefreshed and delirious or semi-delirious.

The sleep secured by opium and morphine seems usually to be of the latter variety, and in many cases, by the subsequent reactionary disturbance, to aggravate the nervous tumult. These drugs require to be given in very large doses to procure sleep in delirium tremens, and with such heroic doses, in tissues already saturated with alcohol, deep and prolonged coma may supervene, with a fatal issue accompanied often by profuse serous cerebral effusion. If an ordi-

nary dose of either narcotic is given, the brain is only excited and the general nervous perturbation intensified.

In one case of considerable gravity in a male intemperate of the age of twenty-seven, the writer tried the experiment of an evening dose of Dover's powder one day, and on the succeeding day an emetic dose of ipecac.

The sleep following the Dover's powder was restless and disturbed, the patient next morning when fully awake feeling parched and excited; while after the emetic of the preceding evening he had a sound, restful, uninterrupted sleep of at least five hours' duration, and awoke comforted, rested, and refreshed, with a steadier hand and quieter brain. A good deal of these unfavorable effects may also arise from cannabis, chloral, sulfonal, ether, chloroform, hyoscyamine, and to a less extent from the bromides. Phenacetin in 8 to 10 grain doses for not more than two hourly repetitions is less risky but unreliable. Chloral and sulfonal are depressing to the heart, besides, their lowering and disturbing influences on brain and nerve function, the latter having in some cases a strong and somewhat prolonged injurious depressed excitant effect on the cerebellum, the patient sometimes for days or weeks having a tendency to fall backward, and to walk with unsteady gait. Paraldehyde, trional, and other hypnotics less dangerous than opium or morphine, are all more or less liable to be succeeded by reactionary excitement after the artificially induced sleep is over. Potassium and sodium bromides, either alone or in combination with chloral and henbane, have certainly at times proved useful; though even when given by themselves, they have often, to be effectual, to be given in such very large doses, or in so many repetitions of a dose (by the summation of their cumulative influence more than equivalent to such an unusually large dose) as seriously to depress vital function and deprave the blood.

Even such comparatively innoxious antispasmodic drugs as asafœtida and such harmless tonics as calumba and humulus, though productive of no direct injurious effects through their

own action, and of no substantial reactionary after-symptoms, are open to the objection that reliance on them is wasting valuable time. The writer excludes such more potent tonics as strychnine and its preparations as out of the question till the delirium has ceased.

As delirium tremens is a direct product of alcoholic poisoning, practically an acute disease produced by the action of the poison on a nervous system so responsive to such acute poisoning, either by reason of a preceding chronic poisoning or of a susceptible nervous organization, rendered so by a constitutional neurosis either inherited (as it generally has been) or acquired under abnormal non-alcoholic conditions; as, in fact, the delirium is simply a symptom of active poisoning, the first indication of treatment is to eliminate the poison as rapidly as possible.

None of the medicinal substances just enumerated can take an active part in this process of elimination, however efficacious they may possibly be in other respects.

The poisoning process must be grappled with by speedily freeing the system from the poison, and there are but three easily available means of achieving this end.

So far as this alcohol elimination is concerned, the object might be gained by diaphoresis in a Turkish hot-air bath, but the depression and exhaustion consequent on a sojourn long enough to be effectual, as well as the impossibility of securing a bath with adequate attendance, in most cases, contribute to render this plan as a rule impracticable. Even in a hospital furnished with an ample Turkish bath, expensive attendance would be needed, the temporary dwellers in the sutatorium being bodily unrestrained by bedclothing, with the additional risk of the delirious injuring themselves in their convulsions and struggles. The perspiration, which is the only efficient method of securing the necessary elimination of the poison, might be secured by the wrapping of the patient in a wet pack, but this is liable to the special objection that, particularly in grave cases, the close restraint of the contorted sufferer in a properly fitting pack would

heighten the nervous excitement and cerebral pressure, everyone knowing this to be the effect of forcibly restraining violent involuntary muscular action.

In light forms of delirium tremens, both the Turkish bath and the wet pack are sometimes of service where they can be conveniently applied, and the writer will later on speak of their great usefulness in certain phases of chronic and sub-acute alcoholism ; but in violent cases of delirium tremens he cannot recommend either, in ordinary practice.

In addition to rapidly clearing the alcohol out of the body, it is of the highest importance to conserve the patient's strength. To restrain his muscular contortions would be more quickly thereby to exhaust his vital energy, which, especially in those who have had repeated attacks and have not been abstemious in the intervals, is not generally so abundant as to warrant any preventable loss of it.

This preservation of nerve force is best accomplished by allowing the muscular movements to be as untrammelled as possible. There are two ways for providing for this. One is by shutting up the delirious patient in a padded room, where he can have nothing to injure himself with and cannot hurt himself, even if he dash himself in blind fury against the padded walls.

This is a procedure which is rarely obtainable, though by the favor of the master of a London workhouse the writer was once enabled to employ it in the case of a publican, who could not properly be controlled or fed in his public house by five men, and whose unruliness and cries were seriously detrimental to the trade carried on in the shop beneath his bedroom.

The man received no medicine, milk and coffee being handed to him through an aperture in the door padded in the interior, but in some three days he exhausted himself and fell into a profound and long sleep, from which time he steadily and thoroughly recovered.

This excellent provision of a padded room being, however, rarely within our reach, must be regarded as in gene-

ral practice also impracticable. One is therefore driven to find a medicine which, while operating, as soon as may be, to get rid of the accumulation of alcohol in the system, would not by the depression of narcotization on reactionary excitement weaken the vis medicatrix, in which latter really lies the potency of cure.

All this the writer believes he has found in the innocent yet powerful liquor ammonii acetatis, which in addition seems (either by its antifebrile properties or by some unknown chemical action on the alcohol saturated tissues) to exert a specially favorable influence on the rapidity and completeness of the elimination.

The usefulness of this drug in alcoholism is not limited to delirium tremens; but in delirium tremens it has appeared to combine all the advantages of the cooling and calming emetic treatment by ipecacuanha, with, by the characteristic profuse perspiration which it causes, the best qualities of the wet pack and hot-air bath.

Withal, there being neither chemical nor muscular restraint, the restless sufferer's already lessened nerve force (lessened by the disease) is not further drawn upon to combat the depression occasioned by opiates or other narcotism, and the nervous exhaustion from the excitation aroused by the physical restraint (envelopment in a close packing of sheet and bedclothes, as in a straight-jacket) of turbulent and inco-ordinate muscular contractions.

Since relying mainly upon the acetate of ammonia, the writer has had much less trouble with cases of delirium tremens, a great deal less anxiety from serious complications (which formerly chiefly arose from the after-effects of opiate, chloral, and bromide remedies), and a much larger percentage of good recoveries. Of course, care must be taken to have sufficient attendance to guard the patient from harm. This is a point very often of vital importance. If in delirium the vigilance is relaxed, there may be a sudden termination of the case.

Though, usually, alcoholic deliriates in attacks of delirium

tremens are fairly easily manageable, suicide may be attempted in almost the momentary absence of a nurse. The maximum extent of freedom compatible with safety is attained by the patient being kept in bed. With a little tact, an intelligent attendant can exercise considerable control over the excited patient by pressing down on the patient near and over the knees outside the blankets. This allows free play for practically all needed involuntary muscular movement. The patient is thus allowed to exhaust himself by his continuous muscular efforts, till the true restorative state of natural sleep overtakes him through sheer weariness. There is nothing so valuable here as the sound, wholesome sleep of fatigue; in character and effects so opposite the unwholesome, disturbed, and disturbing sleep procured artificially by narcotics.

In all that has just been stated about the treatment of delirium tremens, and this is equally true in other diseases, it should ever be borne in mind that exceptional cases may occur which may require alcohol or other remedies not here referred to.

The writer is ready, for example, to administer alcohol at any time when it appears to be called for, but he has never yet seen a case of delirium tremens in which he considered this remedy was desirable.

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WE give place to a long clinical paper to make known the value of trional which has come into much prominence lately. Schieffelin & Co. are the American agents for this drug.



REPORT OF THE MASSACHUSETTS HOSPITAL  
FOR DIPSOMANIACS AND INEBRIATES AT  
FOXBOROUGH.

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The following extracts from the report of this hospital under the charge of Dr. Hutchinson will be of great interest to our readers.

There have been 212 admissions during this year, 59 more than during the previous one. The daily average number resident in the hospital was 125.14.

Few subjects are receiving more general and persistent consideration than that of inebriety, and there is none upon which more varied and opposing views are maintained. The term "inebriety" is inexact, and thus far no clear and sufficient definition of it has been given. Still it is accepted as the distinctive name of a true disease, a phase of insanity, characterized by an intense, imperative, irresistible craving for the soothing effect of some narcotic poison, notably alcohol. It is distinguished as a disease, not as a habit. As a disease it has its history, causes, and symptoms, and is subject to pathological laws as are other diseases. In the words of the American Association for the Cure of Inebriates, it is "a disease that is curable in the same sense that other diseases are, its primary cause being a constitutional susceptibility to the alcoholic impression, which may be inherited or acquired."

It does not, as an organism, enter the system from without, but arises from within, and exists as a change of structure or function, or both. Apparently no organ or tissue escapes. There are irregularities in the functional activity of the various organs; there is impairment of muscular movement, even paralysis; also neuritis, with its attendant pains, frequently called "rheumatic pains." When fully developed, it manifests such symptoms as are associated with hardening of the

tissues and fatty degeneration. The most characteristic of them, diminished will-power, blunted moral perception, and impaired cerebration, point to the brain. They indicate a state of dementia which frequently can be recognized long before it is sufficiently pronounced to justify a certificate of insanity.

The careful observations and studies already made of the condition of the inebriate, the subject of chronic alcoholic poisoning, have made it apparent that this disease is very largely dependent upon inborn tendencies, or heredity, and upon surrounding conditions and influences, or environment ; that it is frequently dependent upon physical conditions and causes with which the substance alcohol has nothing to do ; that where there are no predisposing or exciting causes, it may be originated by the indiscreet or inconsiderate use of alcohol itself.

The inebriate, as he is presented for care and treatment, is usually shattered by years of alcoholic indulgence and dissipation. Not infrequently he is further weakened by some associated neurosis, or by some organic or constitutional disease. It is not reasonable to suppose or expect that under such circumstances he can be restored to health in a few weeks by the use of any one drug, or combination of drugs, alone. Other agencies must be employed,— complete cessation from the use of alcohol, restraint and control of the person for a time, even for a long time, rest, freedom from worries, baths and systematic exercise, occupation, regularity in habits, diets, and good hygienic surroundings. Most persons must seek the protection and care of a hospital, for they are too deficient in will-power to be controlled by personal appeal, pledge, or fear of financial or social ruin.

There is no short cut by which the disease can be checked and the diseased tissues restored to their normal condition. It is necessary to follow the same general course as in the treatment of other diseases, particularly those affecting the nervous system. Until the exact pathology of the disease and the true physiological action of alcohol are demonstrated,

it will be necessary to look to the inferences and results of experience for guidance in its treatment.

It may be of some interest to indicate what is sought to be done in the care and treatment of those committed to this hospital. By the statute law governing commitment to and detention in the hospital, provision is made for one of the chief factors in treatment,—time, or prolonged residence in the hospital. Time is necessary, compelling the non-use of alcohol, affording an opportunity for nature to restore the diseased tissues to their normal condition, and also for the sustained use of drugs, baths, exercise, and other remedial agencies. Under the law, a man, when committed, can be detained for two years. The trustees are given discretionary power for earlier discharge, which discharge is not full or final, but conditional, or leave of absence. When so discharged, any person violating the conditions of his release and resuming his drinking habits may be returned to the hospital and there detained during the unexpired portion of the two years for which his commitment papers are valid. According to the rules established by the board, each person is allowed to go from the hospital on leave of absence at the end of six calendar months, provided he has met all requirements as to the taking of medicines, occupation, and attendance upon the classes in physical training.

When received at the hospital each person is bathed and then examined for injuries or anything else unusual. He is then placed in a room, where he remains in seclusion for some days, to preserve his strength, if much debilitated or in a state of delirium. The use of alcohol in any form is stopped at once. While in a state of delirium he has an attendant constantly near him, both night and day. When otherwise seriously sick the same watch is maintained. Appropriate treatment is directed to the relief of the conditions resulting from the use of alcohol, and also any complicating disease.

At a suitable time each one is required to attend regularly a class in physical training. About one quarter part are

excused for some positive incapacity. The classes in physical training are under the direction of one who has been specially educated for such work. His services are given during five half-days of each week. At the close of each exercise each class receives, at the hand of the instructor himself, a carefully tempered bath, a spray bath, which cleanses the body of all exudations, stimulates the nervous system and the subcutaneous circulation. As the patients present themselves for the training, they show faulty attitudes, weakened organs of circulation and respiration, imperfect muscular co-ordination, comparative inability to concentrate and apply their mind, slow response to mental stimuli, diminished will-power. It has not been sought to train athletes for the performance of special acts, but to bring about a healthy action of heart, lungs, and mind, and more perfect co-ordination of nerves and muscles, a proper performance of the other bodily functions, to form habits of order, application, and purpose; most of all to increase the power of the will in controlling, through its organs, the central nervous system, all functions, movements, and desires of the body. This end is sought through a series of movements so arranged and executed as to bring all parts of the system under the influence of the will, and to strengthen the will through the frequent and well-directed use of it.

To afford the instructor a thorough knowledge of each patient, to enable him to better understand his condition, his weaknesses, and needs, and in turn to more intelligently regulate the amount and character of the exercise he is to receive, an examination is made. Such matters as height, weight, lung capacity, state of nutrition, etc., are noticed. By means of special machines, tracings are taken upon paper of the outline of the chest in a vertical section from front to back, while in a state of rest and also while in the state of full inspiration and of full expiration. Similar tracings are made of a horizontal section of the chest. Another tracing is made showing the line of the spinal column and any lateral curvature, if present. Another such set of tracings is made

just before the patient goes from the hospital. By comparing the two sets, a ready estimate of the improvement secured is made. By the original diagrams, particularly when compared with those of fellow-patients, each one is shown his defects, so that he will the more willingly and intelligently assist in remedying them. Each month what is called the strength test is made. This consists in ascertaining the height, weight, lung capacity, strength of back, chest, legs, and forearms by means of special instruments. These items are brought into relation to each other, and projected on a chart as a diagram. As a record, and for the purposes of comparison, each patient has a chart devoted to him, upon which his line or diagram for each month is projected. These charts act as a safeguard to the instructor. They show the exact standing of each patient, and give him a chance to modify the treatment for such as have not made satisfactory progress. By explaining his chart to each patient he can see and know how much progress he has made, or to what extent his defects have been remedied; and it may be hoped that he will be stimulated to more earnest co-operation and effort.

The patients are also placed upon parole within the limits of a certain portion of the hospital grounds, and have this freedom from breakfast time to that of supper. When given parole they are at the same time assigned to some task. Thus they assist in the kitchen, dining-rooms, laundry, boiler-house, barns, in the work upon the farm, in painting and general repairs. There is also a broom shop, which affords employment for some all the time and for many during the winter season.

During the past winter the patients have provided themselves with an entertainment nearly every week. These have been arranged and conducted by a committee chosen for each evening, by their own action, from among their own number. They have always relied upon the talent to be found among themselves and employes. Occasionally kind friends have assisted, coming from the village.

Another great need in connection with the classes in physical training is better and increased facilities for bathing. As it is at the present time, the class is huddled together in a small room under a waterproof canopy, touching elbows, while receiving the needed bath administered through the spray nozzle of an ordinary garden sprinkler. A few of the men have objected to attending the classes because of the lack of privacy in connection with the bath.

Mention is made below of some of the men who have been longest away from the hospital, and who are still looked upon as doing well, or abstinent. They serve to indicate the good accomplished under adverse, even seemingly hopeless circumstances. Many who are admitted are evidently hopeless from the first. During the year seventeen have been transferred to a hospital for the insane. Many others are recognized as very close to the line, if not actually within the limits, of insanity. Others are subject to such gross physical degeneration as to preclude any hope of lasting benefit.

Stone cutter, sixty years old, widower ; has been drinking for forty years ; to excess during the past twenty, as often as every two months. Has no known heredity or exciting cause. Has no known associated habit. Has been much more intemperate since the death of his wife, sixteen years ago. At time of commitment was tremulous, irritable and somewhat confused and debilitated. He was under treatment about six months. He has been absent from the hospital twenty-three months, and according to the statement of his children he is doing all right, is working regularly, is as they would wish him, is happy with them and they with him, contrary to what has been during the past twenty years. He has not taken anything intoxicating but once, in small quantity, and that was associated with July 4th.

Professional man, forty-three years old, married ; has drunk for years ; uses Jamaica ginger as freely as he does liquor. For six weeks just prior to commitment he con-

sumed large quantities of liquor, also of Jamaica ginger. At entrance appeared to be verging upon delirium tremens. His father used liquor. No known exciting cause. His indulgence was solitary. During this last spell he has imagined that his wife was intending to poison him, and he became very ugly towards her. At entrance he was much debilitated, tremulous, and his stomach was much disordered. Had an alcoholic fit four days after entrance. Says he had a similar fit about thirteen years ago. Was in the hospital about six months. Has been at home twenty months, and from reliable sources it is known that he has continued abstinent and has attended to his business regularly.

Laborer, thirty-two years old, unmarried; duration of drinking habits unknown. His father was a heavy drinker. He has been known to the committing physicians as a confirmed inebriate, who wandered about at night searching for some imaginary thing, and was a nuisance to those around him. Had no known associated habit. At time of admission he was extremely weak, but not intoxicated. At end of ten days he began to rally, and improved rapidly. Was in the hospital about six months, and his improvement was very pronounced. Has been at home a little more than nineteen months, and is known to have worked regularly and to have been abstinent.

Carpenter, forty years old, married; has drank for twenty-five years, or since he was fifteen years old; has always drank immoderately, but much worse since his head was cut, two years ago, taking his liquor away from home. His father and mother both used liquor to excess. All his relatives are or were people of weak constitution. When not in liquor he thinks well of his family, but when in liquor he is ugly and abusive, and for that reason his wife has once left him. An employer has discharged him because of violence threatened. He was in the hospital six months. Has been home eighteen months. From reliable sources it is known that he has worked regularly, has been what he should be to his family, and also abstinent.

Bartender, thirty-eight years old, married; has drunk during all his married life of five years, how much longer is not known. Has drunk immoderately during the last year. No known heredity. Entered the hospital in a state of delirium tremens; was entirely incoherent and very tremulous. Required camisole during the first twenty-four hours, to prevent self-injury. Became coherent on the third day. He was in the hospital a few days less than six months. Went home in a very much improved physical condition. After an absence of nineteen months it is known that he works regularly and is abstinent.

Salesman, twenty-eight years old, married; has drunk for seven years; has also used choral and absinthe. His father and all male relatives on his father's side have used liquor. His maternal aunt is insane. During the year preceding his commitment he used whisky or brandy daily in large quantities, and developed marked chronic alcoholic poisoning. He has had eleptiform seizures undoubtedly due to alcoholism. At such times he was violent to persons and destructive to things, requiring vigorous restraint. At entrance was sober, but tremulous and much debilitated from recent drinking. He had a severe fit the same evening. He was in the hospital about six months. Has been absent from the hospital eighteen months, and according to good authority he has been constant at work and abstinent in habit.

Clerk, thirty-five years old, unmarried; has drunk during eight years, and to excess during the last three. Hereditary or exciting causes unknown. He always began with beer, socially, and ended with whisky. He has had treatment a number of times in a private institution. At entrance quite tremulous, stomach much disturbed, heart's action irregular, and had bromide eruption over body. Has been out of hospital twenty-three months, and has continued abstinent and industrious. Recently his father wrote: "He is one of the best improved young men in ———, in a good position. If you saw him I think that you would not know him, the improvement is so great for the better. He has no use for liquor now."



Salesman, forty-four years old, unmarried ; presented himself for examination and asked for his commitment. Has drunk during twenty-three years, and to excess during the last eight or nine. Admits being in house of correction about four years ago, and also in the Massachusetts Reformatory about a year for inebriety. His drinking habits quite constant of late years. He bore evidence of continued chronic alcoholism. Eight months prior to admission was much troubled with diarrhœa, for which he took laudanum and rhubarb ; then laudanum alone ; became frightened at the laudanum, and took to whisky. Said he had been drunk every day for six months. After being in the hospital three months he ran away, remaining out one month, when he was returned to the hospital. He then remained about seven months. Has now been out of hospital seventeen months, and during that time has been seen frequently by people from the hospital ; at such times always was sober. He is now managing a good business. His friends claim that he has at all times been abstinent.

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ANGINA PECTORIS DUE TO TOBACCO. — Professor Potain points out (*Journal de Médecine de Paris*, October 6, 1895) certain peculiarities enabling the physician to diagnose the angina pectoris caused by the excessive use of tobacco. In true angina pectoris from a coronary lesion, the attack is due to increased work of the heart ; the pain is of a tearing, burning character, and is substernal. In tobacco-angina the attack is spontaneous, without any effort on the part of the heart, and lasts several hours. The pain is often substernal, but also frequently præcordial ; it is as intense as in true angina pectoris, but there is a feeling of dilatation. This rule, although not absolute, will be found to apply in the majority of cases, and it will also be observed that whereas in true angina pectoris the least movement will increase the attack, that due to tobacco is in nowise influenced by movement.



This general grouping is clinical and describes cases by the most prominent symptoms apparent. Many of the chloral, ether, and other drug-takers, may at times use spirits, opium, and cocaine. But for some unknown reason abandon them soon and depend on some specific drugs, such as choral, ginger, ether, or allied narcotics. These cases are repeaters and are often treated in different asylums for different drug addictions. The complex cases are of the same class, except they do not appear to have any special drug addiction, but use any one most convenient. It is unfortunate that any cases should occur in which spirits are used by advice as voluntary for its supposed medicinal effect. In the two cases under treatment, both the patient and friends became alarmed at the necessity for the use of spirits and the treatment was followed by the most favorable results. The cocaine cases were the usual complex examples where other narcotics had been used before. Physicians seem to be the most exposed to this form of drug addiction and not unfrequently the most incurable.

In a study of the causes the same class of facts have become more prominent.

The following table gives an outline of these facts :

Heredity direct, - - - -	19	Traumatism, - - - -	6
Heredity indirect, - - - -	12	Exhaustion, - - - -	5
Heredity collateral, - - - -	11	Environment and contagion, -	7

Direct heredity is used to describe cases where the drink craze or symptom was prominent in the parents. The indirect heredity describes cases where inebriety of some ancestor noted in the grandparents, and the immediate ancestors were free from this disease, although exhibiting defects and degenerations.

In the collateral heredities various neurotic disorders occurred in the ancestors, of which inebriety, epilepsy, hysteria, paranoia, consumption, and other brain and nerve disorders are common.

Traumatism or injuries are no doubt responsible for many cases that are unknown at present. Shocks and brain



*Duration of the Inebriety.*

From 5 to 10 years, . . . . 8	From 15 to 20 years, . . . . 15
From 10 to 15 years, . . . . 26	Over 20 years, . . . . 11

*Education.*

Collegiate, . . . . . 19	Academic, . . . . . 20
University, . . . . . 10	Common school, . . . . . 11

*Former Treatment in other Hospitals.*

Been treated at Keeley Institutes, . . . . . 31
Treated by other Gold Cure Specifics, . . . . . 10
Treated at other hospitals, . . . . . 7
Never treated before, . . . . . 12

The relapsed cases from the use of specifics are increasing, and the same class of symptoms, resembling acute insanity with hallucinations are common. The experience of other asylums are confirmed in the difficulties of treatment and the extreme prostration manifested by these cases. The delusion that the cure is effected when the taste for spirits dies out, and that some heroic remedies can be given to change and restore the brain to health in a brief time, is very prominent in most of these cases.

*The Results of Treatment.*

Recovered, . . . . . 23	Improved, . . . . . 13
Unimproved, . . . . . 6	

These figures are a fair approximation of the present results. The unimproved are those who relapse soon after leaving and who manifest, during treatment, a continuous desire to procure spirits. They are practically insane and possessed with a dominant idea of using spirits without any particular motive. Every possible physical ill suggests spirits and every condition of life, real or anticipated, demands the same. The control of this impulse by drugs is only another form of restraint, that is temporary, and fails because it does not reach back to the real causes. Many of these cases recover permanently, usually dependent on unknown causes and physiological conditions.

This gives encouragement to continuous effort, even in the most hopeless cases, especially hygienic and constitutional measures, which encourage physiological changes in the entire body.

Of the class marked recovered, a knowledge of the causes of the inebriety has suggested methods of treatment that would remove such causes and point out conditions of living that would prevent relapse in the future. Many of these cases may be considered cured in the broadest meaning of that word. The results of exact physiological hygienic and asylum treatment of all these cases is not only helpful and hopeful, but brings the reasonable promise of cure in exact proportion to a knowledge of the causes and their removal, together with the building up and restoration of the entire organism.

That inebriety is curable is an established fact. To what extent we do not know, nor are we yet familiar with all the various means and appliances suitable for each case.

One of the most serious obstacles which all institutions encounter is the unreasonable criticism of the public.

The delusions of patients are accepted as facts, and the work is regarded as empiric and based on the lowest motives, of which taking advantage of the weakness and emergency of patients is prominent.

The laws do not give asylums power to hold cases long enough to secure reasonable promise of cure and the suspicions of the public magnify the failures, and those who are permanently restored disappear and make every effort to conceal the fact of treatment.

Yet, notwithstanding all the various obstacles, the growth of asylum treatment of inebriates has been rapidly increasing.

WALNUT LODGE HOSPITAL has followed a uniform continuous course of progressive experimental work; especially in seeking to obtain a clear history of each case and the proper means and remedial measures best suited for restoration.

It has been repeatedly proven by experience, that special individualized personal treatment, based on a knowledge of

the facts of the history, gives the best promise of success in recovery.

This can be accomplished in small hospitals and by persons who manifest a practical scientific interest in both the pathological and psychological symptoms, fully realizing that recovery depends on the use of every means that can possibly build up and restore the brain and body.

The publication of the *JOURNAL OF INEBRIETY*, now in its eighteenth year at this hospital, brings us in a very close relationship to the literature and scientific studies of this subject from all over the world.

We are thus able to compare our work and utilize and test the experience of others to a greater extent than usual. Many of the conclusions from studies here are published in this *JOURNAL*, which, together with the experience of other asylums, form a valuable addition to a knowledge of the subject.

The results of the year's experience is the accumulation of facts confirming the conclusions which were asserted years ago with so much confidence "that inebriety is a disease and curable as other diseases are."

Starting from this point the great questions awaiting solution are, To what extent are these cases curable? What are the laws which govern the origin, progress, and termination of these drug neurotics? Also, what are the means and remedial measures most valuable for this purpose? Towards the solution of these questions we have been able to add considerable evidence.

The narcotic neurotic is still a mystery. The term inebriate is used to describe a class of neurotics whose disorders are only faintly outlined by the most advanced studies. Each hospital and asylum is slowly and with great difficulty pushing on into this new land. In every direction new facts, new laws, and new forces appear. The work of each year widens and enlarges the next and the failures and successes of any particular asylum really broadens the road and gives greater capacity for a larger work. The men and

women who have been restored and helped at WALNUT LODGE in the year past have been literally object lessons and mile posts, to indicate the direction of the movement that will literally stamp out and neutralize in the future not only the drink evil but many of the forces which manifest themselves in this way.

It is impossible, in a brief report, to convey more than a general impression of the work at this hospital. The kindly sympathy and interest by the members of our board have helped to make the work more effectual and has elicited our deepest gratitude.

The possibility of still further helping on the work by contributions of books to our library has created a lively interest among many of our friends which we hope may extend to others.

TEA CIGARETTES.— The *Lyon Medical* for December 1st says that fashionable English ladies are no longer content to drink tea, but that they smoke it at their five o'clock teas. A lady who is very well known always has tea cigarettes passed around after dinner. Another spends nearly two pounds sterling a week in order to gratify her taste for tea cigarettes, and three celebrated actresses have given tea-smoking parties several times. In Kensington a number of literary ladies have organized a club for this same purpose. The habit has spread so elsewhere that tobacco merchants are offering packages of tea cigarettes to the public.

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THE surgeon-general now assures us, and furnishes statistics to prove, that inebriety is on the decrease. In 1890 no less than seventeen posts had more than ten per cent. of their average number under medical care for drunkenness; in 1891, eleven posts; in 1892, ten; in 1893, seven, and in 1894, four. These figures are hopeful, and warrant the belief that in the near future delirium tremens will form no part of the unofficial tactics of our standing army.



THE LATE DR. ALBERT DAY. — A BIOGRAPHICAL SKETCH.

BY T. D. CROTHERS, M.D.

Our readers will recall the many papers and selections from the writings of Dr. Day which have appeared in the *JOURNAL* almost from the beginning of its publication. These papers were always noted for a breadth of observation and practical recognition of all the conditions present. The inebriate to him was diseased and degenerate in all directions, physically, mentally, and morally.

His writings always attracted more attention among temperance philanthropists and reformers, and were very largely quoted, and had a wide influence in correcting popular errors of the day.

Dr. Day was born in Wells, Maine, in October, 1812, and died at Melrose Highlands, Mass., April 27, 1894. The death of his father in early life forced him out into the world dependent upon his own resources. After mastering a trade, he determined to secure an education, which was accomplished by studying nights with great persistency and energy. He finally graduated from the Harvard Medical School and entered upon asylum work for inebriates.

He was early attracted to reform measures for inebriates, and was identified with the Washingtonian movements of 1840. In 1856 he was a member of the Massachusetts Legislature, and introduced measures which finally culminated in the establishment of a home for inebriates. After varied reform efforts he became superintendent of the Washingtonian Home at Boston, organized in 1857. This was the first asylum that was opened for inebriates in the world. Other institutions were in process of organization, and the idea of disease and physical care and treatment were maintained and disputed with energy and earnestness.

The Washingtonian Home began as a lodging house, and by slow beginnings and halting progress, grew up to an asylum, in which the idea of physical care and treatment became prominent. Dr. Day followed, with good judgment and clear sense, making prominent the moral side to keep the confidence of the friends and patients of the asylum, and at the same time urging the physical necessities to support the moral. The power of an idea, and the force of moral contagion was pressed daily as a remedy, and for years this was ostensibly the special treatment of this asylum. In reality it was only the stage setting, the play and actors were very different.

After enthusiastic appeals to sign the pledge and trust to faith and prayer, Dr. Day would urge in private a materialistic course of conduct that was startling to the patient, who supposed his malady was a spiritual one. To many persons this was very strange; after making one side prominent in public, in private he attached little importance to it. Evidently Dr. Day had a very clear conception of the power of the mind over the body, and its peculiar potency in this class, and realized that a combination of the two methods of treatment were essential.

In 1867 Dr. Day was called to preside over the fated asylum at Binghamton, N. Y. Three years later he resigned and opened a private home at Greenwood, Mass. This was burned down some years after, and he was recalled to the charge of the Washingtonian Home, where he remained until 1893, when he resigned from ill health, and moved to Melrose Highlands, Mass.

He was actively engaged in asylum work for inebriates thirty-seven years, and some six years before he was manager and director of an inebriate lodging house and asylum for the temporary relief of drunken men found homeless on the street. Altogether his active life in this special field was over forty years. More than ten years before he had been a very active temperance man and was always engaged in efforts to help the inebriate and educate the public to realize the dan-

ger from the use of spirits. At his death he was the oldest pioneer worker in this new field. He had no doubt seen more inebriates and treated them medically than any other person. Dr. Day was one of the original members of the American Association for the Study and Cure of Inebriates which was organized in 1870, and at his death he was president.

In 1888, a reception and dinner was given to Dr. Day on the thirtieth anniversary of the Washingtonian Home, an account of which has been published in this JOURNAL.

Dr. Day was not considered a great scholar or bold pioneer leader far in advance of his day and generation, but he was eminently a wise, prudent man, who sought rather to give shape and direction to events of the present than to lead beyond. While not antagonizing the theories of the day in any harsh way, he turned them into new channels and roads, and pointed out new and wider meanings to the foolish dogmatism of his cotemporaries. This was done in such an adroit way as to escape all criticism. On the platform as a public speaker, in his contact with patients, and everywhere, he seemed to accept all the moral teachings of others, and added to them the most pronounced materialistic rational means of treatment, which were accepted without controversy. He was an optimist who realized the limitations of theories, and who never lost faith in the final triumph of the truth. The most of his life was an exasperating struggle with theorists, and delusions of half-vice and half-disease. The public demanded that he should point out remedies to reach and control the paranoic inebriates, and teach the only proper means and methods of cure. Wild storms of harsh criticism were always about the asylum, and the pulpit and press and philanthropists and good men and women were always ready to condemn. A new work opposed to the common sentiment of the day must pass through the fires of persecution, and Dr. Day and the Washingtonian Home were no exceptions.

Dr. Day was clearly a great captain guiding a ship freighted with new facts and new truths down through the

most difficult narrows to the open waters beyond. His genial, sunny faith never lost sight of the highlands before him. Thus year after year he struggled on until he saw the final acceptance and endorsement of the truths which had been so violently opposed in the early years of his work.

The yearly reports of the Washingtonian Home contain a very significant history of the growth and progress of the disease theory, and the struggles to keep just ahead of public sentiment and not startle the friends of the asylum. The asylum was an infant dependent on a variety of widely differing theories; the acceptance of any one to the exclusion of the other would have been its ruin. It required rare tact and judgment to follow a medium course, and avoid the threatened dangers. Dr. Day could not have succeeded had he been indiscreet and impulsive, or failed in any way to recognize the conditions about him, and act upon them wisely. He could not have accomplished more by original research or elaborate investigation. All his tact and energies were needed to formulate and organize the half-theories into working principles, good for the present and valuable as stepping-stones for the future.

Later, when he was beyond this point of preliminary work, he realized that more might have been done from elaborate studies in this field, but he saw that it was only by the long era of preparation that the ground had been cleared away for other and more scientific work.

Dr. Day's real work to the cause of science and the development of the fact of disease in inebriety will appear more clearly as the years roll on and the subject is better understood. He, more than all his cotemporaries, gave prominence to the power of ideas, and the mental force of suggestion. He taught that ideas, coupled with physical forces, were all powerful. This is a realm which has not yet been opened. The appeals and prayers and pledges, and the physical means used continuously, were forces that sent many poor unfortunate inebriates back to health again. Dr. Day was a cheerful, sunny man, kind-hearted, tender in his sympathies,

and warmly attached to those who were struggling to do right. He was a close reader of current events, and followed with great interest all the changes of science and social life. He took an active part in church and masonic matters, and stood high in the latter order.

After a long life of active, arduous work, he resigned, and with a few patients went to live in a quiet suburban village near Boston. A few months later he died suddenly of heart disease.

The only work which Dr. Day wrote was "Methomania," which had a large circulation in its day. It was an excellent summary at the time of the facts of inebriety, and was a very useful influential work. His annual reports and lectures to various societies, and papers in the *JOURNAL*, were all of an exceedingly practical character. We are too near to judge clearly of the great work Dr. Day accomplished.

A sorrowing family, consisting of a wife, one son, and two daughters, survive him. Beyond this, his influence and memory continues in the hearts and homes of a vast army of men and women who have been made better by his life.

We present a fair portrait of Dr. Day in this number of the *JOURNAL* and assure our readers that in the coming century he will be one of the few men whose life work will be studied with critical interest.

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BUFFALO has the discredit of having the largest number of liquor saloons in proportion to its inhabitants. In Philadelphia a license cost \$1,000, and there are 1,355 saloons, or one to every 841 persons. In Boston a license costs \$1,500, and there are 1,080 saloons, or one to every 500 persons. In New York city a license costs \$200, and there are 7,300 saloons, or one to every 234 persons. But in Buffalo, a saloon license costs only \$125, and there is one saloon to every 160 persons.

## TRANCE-DOUBLE CONSCIOUSNESS, ETC.

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BY C. SPENCER KINNEY, M.D., MIDDLETOWN, N. Y.

*Assistant Physician, Asylum for the Insane.*

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The following unique cases are presented for the consideration of the society, as the psychical changes here noted came under my immediate observation.

*Case I.* — For a number of years G., aged 28, had been a periodical drinker, at which times he had not hesitated to take anything containing alcohol, going so far as to be wholly content with commercial alcohol so long as there was enough of it. He possessed a remarkable physique, with a very even commingling of bilious, nervous, and phlegmatic temperaments. He was well educated, had traveled considerably, and the effects of his frequent debauches had produced no apparent degenerative results. He was an accountant, and capable of occupying a good position. At no time had he shown any especial mental symptoms. There had been no insanity in his family, and his drinking had become an acquired habit rather than a disease. The attacks of drinking varied from intervals of a week to several months.

The instance which I have to mention in his case arose at a time when he had been for some days without drinking at all, and was in excellent physical condition. While out of doors and walking briskly, and in exuberant spirits, he suddenly heard some unfortunate news — news that affected him personally. As soon as he was able to appreciate the importance of the information and its bearing upon his future, he suddenly took on all the appearance, actions, and helplessness of a drunken man. He staggered in his gait, stammered, stuttered, and mouthed his speech. The expression of his face changed to a sottish cast, his eyes became suffused, and he needed the assistance of a friend to make his way along the street. This continued for over half an hour before it passed off and he was able to collect himself.

I had never seen an instance of this kind before, and although fifteen years have passed since this case came under my observation, I have never seen its counterpart.

Four years ago last October I presented a short paper to the Homœopathic Medical Society of the State of New York on "Alcoholic Trance." Since that time I have met a number of instances of this peculiar condition, and one of which I was fortunate enough to be present at the transition from the trance state to one in which he became appreciative of his surroundings.

No. 4131 ; age, 27 ; married ; occupation, laborer ; predisposed by inheritance to insanity ; assimilative powers weak, and his general appearance showing a lack of harmonious development ; was admitted to the Middletown State Homœopathic Hospital May 9, 1894. His friends state that during the past twelve years he has had times when he would suddenly leave his work and home and be absent a week or two without either knowing his whereabouts or, on his return home, being able to give any account of where he had been or what he had been doing previous to the time of regaining consciousness. He had used tobacco freely and had drunk occasionally, but never to any great degree, although easily influenced by either one of these two agents. The death of his mother brought on a depression of spirits that was followed by a condition of excitement in which his friends became alarmed. Suicidal tendencies developed, and, for safe keeping, he was placed in the jail, when one of our nurses was sent for him. From the time the nurse saw him until he reached the hospital, a period probably embracing thirty minutes, the patient was continually talking to the nurse about fighting, and telling what he could do. He showed considerable irritation because the nurse would not fight with him, and called him many names.

I happened to be on the ward when the patient came, and on attempting to talk with him he showed irritation, and was overbearing in his manner without any apparent reason. Finally I asked him if he would not sit down and

talk the matter over quietly. He consented, although no change occurred in his general style of acting until he stopped suddenly, pressed his hand to the back of his neck, and, looking about him with some degree of interest, said, "Where am I?" I asked him where he thought he was. He said, "In some hotel." On being told the character of the place he quickly answered, "Why, my brother was employed here for some time," which was true. With this his manner completely changed; he was pleasant, exerting good self-control, showed no trace of his recent irritation, and had no memory of anything that had occurred directly previous to his coming here or of his great desire to quarrel with the nurse who accompanied him to the hospital. From that time until he was discharged, several months after, he presented no symptoms not to be found in a case of ordinary melancholia. How long he had been in this trance state he did not know, nor could any facts be gained from his friends that would point to any clue, although the duration of the time in which he was said to have been sick was given as one month previous to his admission.

The peculiarities of this trance condition have struck the novelist as being an unexplored mine. An article in the *Cosmopolitan* for February, 1894, entitled, "The Disappearance Syndicate," by T. C. Crawford, and another article, "People Who Drop Out of Sight," written by Dr. E. A. Osborne, in the *Medico-Legal Journal* for June, 1894, are worthy of careful consideration.

The next case is one of somnambulism that has some peculiar features. This patient was a strong, athletic young man of 21; single; occupation, law student; of good education and habits, and with no insanity in his family history. On his admission, his pupils were somewhat dilated, bowels inclined to constipation, had a good appetite, was coherent in his speech, feeling in good spirits, and gave the following history: In July, 1893, he with a party of several others, rode to Washington, D. C., on their bicycles. One day during their journey the party covered about 120 miles



over quite a rough road. They rode in and about Washington, and returned to Brooklyn on the cars. The patient rode from Hackensack, N. J., to Middletown on a very warm day and suffering from a sharp attack of diarrhoea. He felt weak on reaching home, as well as on the following day, but immediately resumed work. At no time during his trip was he conscious of being overcome by the heat, although he had exercised violently several consecutive days, riding from six in the morning until ten at night, with only an occasional stop during this time. About two weeks after his return home he began having headaches. They came on in the morning on getting up, and continued until about five in the afternoon. The pain began in the forehead, extending over into the back of the head and neck and was throbbing in its character. When the headaches prevailed, the patient had no appetite and occasionally had water-brash. They came at irregular intervals, occasionally coming on every day for two or three days and then skipping a week or two. Nothing seemed to aggravate them during the day. Following this condition came frequent attacks of somnambulism; in which he would dress in his bicycle suit, and at other times would not dress at all, and, taking his wheel, would ride about town and into the country, usually meeting with some accident that would awaken him. These accidents generally resulted from his being unable to use the same degree of judgment when in this trance-like condition that he would exercise when awake. One night in August, 1893, he got up, and dressed only in his undershirt, rode his wheel out of town, down a steep hill, and woke up lying on his back, with his head on the edge of a pond of water and his wheel about thirty feet distant. His fall awakened him. At another time he woke up and found himself suspended in the air, by his shirt, from the limb of a pear-tree in his father's yard. Whether he had fallen from the roof of the house or whether he was trying to get on to the roof, he has no way of knowing. At other times he has gotten up and gone to the office at which he was employed during the day, filled out a copy of

service, and had the same correct, although not remembering anything about it afterwards. One day he worked hard in the settling up of the accounts of an estate, and found that he was unable to draw a balance. He was, at last, obliged to give it up for the day. The next morning, on returning to the office early, he found the balance correctly drawn, and an error corrected that he had repeatedly overlooked the previous day. These experiences gave rise to his facetiously remarking, "I guess I am smarter when I am asleep than when I am awake."

These experiences simply illustrate what the patient has gone through during the past eight months, bicycle riding and office work being the things he indulges in during these attacks of sleep-walking. The patient has no memory, when he comes to himself, of what he has done during these intervals. The attacks, he claims, leave him with a sensation of exhaustion that he carries with him the next day. At times objects appear as if they were a long distance from him. His first night's record was a counterpart of many nights. His roommate stated that he got up three times. Once he jumped out of bed suddenly and banged into the door of his room, which was locked, and bumped his head against it so suddenly that it awakened him. Another time he ran against the wardrobe and wall with so much force that he woke up. The third time he tumbled over his roommate and his bed, which also awakened him. He returned to his bed each time with no serious results from the attacks.

As an illustration of what he would do when asleep, I present the following as coming directly under observation. As a rule, he went to sleep almost immediately on going to bed. At a quarter past nine I found him up and walking about his room, talking as if he were speaking to some one at the telephone. He carried out his part of the conversation quickly and in a spirited manner, correcting himself on making mistakes. His mind appeared to dwell wholly upon business relating to the office he had been working in. Every effort that was made to awaken him was met by him with

violence — striking or pushing. He could be lifted about or pinched, called to, shaken, and cheek slapped, with no result so far as getting him awake. The fumes of ammonia were placed under his nose, when he suddenly came to, bright and with perfect control of his faculties. The patient said he had no memory of what he had been saying, nor did he know that he had been talking. Another night he jumped up on the top of his wardrobe, where he sat with an open umbrella over his head, and talked rapidly and incoherently for some time, until he was rescued from his perilous position and put to bed. It was found that any excitement during the day induced a disturbed night, consequently every effort was made to have him lead as quiet and uneventful a life as possible. Company was avoided, attendance on dances and witnessing ball games were prohibited, and no exposure to the hot sun was allowed.

Another instance, peculiar in its character, occurred on the evening of June 10th. While sitting on a balcony, talking in a lively manner with some of his fellow-patients, the chair in which he was sitting slipped on the floor and he fell, striking the back of his head with considerable force. He was at once picked up, and was found to be sound asleep, was taken to his room and efforts made to awaken him, which were met with the usual resistance. On being awakened he complained of pain in the back of his head, and hot water was applied, but almost immediately he went to sleep, and continued asleep until morning. Each morning it was found necessary to awaken him, although it was a less difficult matter than when he was in one of his somnambulistic states. On August 7, 1894, there had been a gradual improvement in his physical and mental condition, without any essential change in the character of his attacks, although they appeared to be less in degree. On the 7th he complained of a headache, that he described as a sharp, hard, frontal headache, and after a careful study of the symptoms it was decided to give him *natrum muriaticum*, which was given in the 30th potency every three hours. From the

time he began taking this remedy his symptoms lessened in severity, his sleep became more restful and he woke in the morning of his own accord, free from all headache and with good self-control, was more hopeful regarding his case, and, in an indescribable manner, felt better than he had since his sickness began.

On September 20, 1894, he was paroled, and his parole has been renewed from time to time in order that we might keep his case under observation ; he reporting at the hospital every three or four weeks. On November 9, 1894, he returned and made the following statement: "Before I began being disturbed in my sleep I was passionately fond of music, both instrumental and vocal. During the last few months while under medical treatment I have refrained from having anything to do with music, even to the giving up of playing on my banjo. Since I have been away from the institution on parole, I have found myself unable to listen to a combination of instrumental and vocal music, the vocal music having the effect of making me nervous and restless to the extent that I have been unable to remain in the room or house, or in fact within hearing of it. Instrumental music does not seem to affect me in the way that both combined do. Several times a severe headache has been induced by listening for a short time to music, I at first believing that such an effect could not be produced, and it is only after repeated trials that I have become convinced that the above is the case." (On February 9, 1892, I presented a short article to the New York State Society on "The Influence of Music on the Insane," touching this peculiarity.)

While directly under our observation every effort was made to prevent his being subjected to any emotional strain, and he was cautioned to lead as much of a vegetative existence as possible. While here, previous to the *natrum muriaticum*, he had *aconite*, *belladonna*, and, for a while, five drops of the tincture of *cimicifuga rac.* every night on going to bed. This seemed to give marked relief, and lessened the intensity of his headaches. While he is still under

observation it is not likely that he can, with any degree of safety to himself, take up any intellectual brain work for, at least, a year.

The next case mentioned was reported by Dr. Talcott at the annual meeting of the Medical Superintendents of the American Institution for the Insane, held at Old Point Comfort, Va., May 18, 1888. No. 2207 was admitted to the Middletown State Homœopathic Hospital November 17, 1887. This patient was a male; single; age, 18; occupation, laborer; education, common school; habits temperate, and no record of insanity in the family. When admitted he was in good physical condition, and his history declared that down to the date of his injury he had been a bright boy. During the past year he had been trying to earn his own living; part of the time keeping books, and part of the time working on a farm in Westchester county.

On the 8th of October, about six weeks previous to his admission to the hospital, while standing on the top of a ladder, twenty-six feet in length, picking apples from a tree, the ladder broke and he fell to the ground, striking on the back of his head. He was carried into the house unconscious, and remained so for several hours. He remained in bed only one day. A few days after the accident he returned to his home in Delaware county. From the date of his accident to the time of his admission, he is said to have spoken but two or three words. He could not speak when admitted; but during his entire illness he was able to comprehend questions written upon paper, and would answer these questions readily and rationally in writing. In his written replies he states that all spoken words sound like noises to him, but have no meaning. He could hear a low tone of voice but not a whisper. In writing answers to questions he does so quickly, and shows a clear comprehension. He asks questions intelligently by writing, and says that he has a dull steady pain from the base of the brain down the spine to the small of his back, and this pain is aggravated by any sudden jar. On examination, the spine

from the first lumbar vertebra to the skull was found to be very sensitive to touch and pressure. He says that exercise does not tire him, and he has for several weeks been allowed to do as he pleased. He has spent much of his time out of doors playing with a large Newfoundland dog, to which he became much attached, and which attended him when he came to the hospital.

On the 13th of November he became much enraged at his mother, who would not grant some request he made, and he flourished a long knife and tried to injure her. On being shut up in a room, he broke the door and was very violent. His friends then had him committed to the hospital at Middletown, where he arrived November 17, 1887. When admitted his pupils were normal in size, and the reaction was natural. The tongue was clean and firm, with no muscular tremor. The pulse was 78; the temperature was 98.4° F. The patient weighed 150 pounds, and seemed generally in a good physical state. He had a good appetite, slept well at night, stated in writing that the pain in his head had ceased; and he deported himself like a bright, good-natured, active boy. But he could not hear distinctly, and he could not speak at all, although apparently comprehending everything that was written and placed before him.

Here was a case of motor aphasia or aphemia (can write but cannot speak), resulting from a blow upon the head, with occasional attacks of maniacal excitement; the excitement being displayed by restlessness and ebullitions of rage, without any ability to give articulate utterance to his emotions or passions. Although the patient had been allowed to walk about as much as he pleased for nearly six weeks, we concluded it would be better for him to remain quiet. Consequently we placed him in bed and kept him there.

November 19th.—Writes on paper that he caught cold last night, and when he coughs it hurts his head. On the 23d, about 9 A. M., he wrote on a slip of paper "headache," and gave it to the attendant. About 11 A. M., the pain

in the head had increased, and at 11.30 A.M. he was rocking backward and forward in bed with both hands pressed tightly against his head, one being over the forehead, the other over the occiput and upon the seat of the injury. His face was flushed, pupils dilated, and the eyes deeply injected. While I was noting these symptoms, he suddenly removed his hands from his head, looked up like a person awakening from sleep, gazed about the room in an inquiring manner, turned to the window, looked out for a moment, then suddenly turning to me said, "Where in the devil am I?" These were the first coherent words uttered since the injury. This patient's mind went back to normal position with a snap, so to speak, just as a dislocated bone returns to its socket when it is "set" by a surgeon. On being asked if he did not know where he was, he said, "Not in the least. I know I was picking apples when the ladder broke and I fell, striking on the back of my head. Oh, how it hurt!" On being told that it was some weeks since the accident and that he was in a hospital, he said, "Why, that was on the 8th of October; what day of the month is it now?" On being told that it was the 23d of November, he replied, "To-morrow will be Thanksgiving Day; a lunatic asylum is a queer place to pass Thanksgiving Day." When told that he had not spoken before since coming to the asylum, he said, "I must have been good company!" On questioning him, he declared that he had no memory of anything that had taken place since his fall from the ladder. For six weeks time had been a blank to him. He had become well acquainted with me since his admission to the hospital and always recognized me pleasantly on the morning visits. On the morning mentioned he had anticipated my coming with hopes of obtaining relief from his headache. A moment before he became conscious of where he was he knew me and the circumstances connected with our acquaintance; the instant he regained his normal state of mind I was a stranger to him and he knew nothing of me.

After he began to talk his headache lessened. He was

kept quietly in bed and given hot milk and beef tea every three hours. The headache and tenderness along the spine soon passed away, and no symptoms of brain or mind trouble returned.

He remained at the hospital under observation until the 27th of February, 1888, when he went home in excellent physical and mental condition. While his memory was dislocated from October 8th to November 23d, he could, after the later date, remember distinctly all the previous experiences of his life, and all new experiences; but he could never recall any incident that occurred between the dates just mentioned.

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THE abuse of alcohol has been the *remote, sole, and direct* cause of more litigation in cases of life insurance than anything else that can be imagined. — *Judge Jordan.*

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It has been pretty well established that the children of intemperate parents are afflicted with degeneracy and various neuroses. Associate this, then, with suitable environment and the drunkard or inebriate is an inevitable result.

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ALCOHOL POISONING AND STRYCHNINE. — Runkewitch in the pharmacological laboratory of Professor Burzynski, of Tomsk, studied the action of strychnine in alcohol poisoning, finding that the drug rapidly and distinctly augments the excitability of the motor area of the cortical substance of the brain, previously depressed by alcohol. In this manner it raises the action of the depressed respiratory centers and augments the blood-pressure during alcoholic narcosis. It affects the temperature only in doses large enough to cause tetanus. The experiments of the author were made upon animals, and further investigations are necessary in order to determine whether his conclusions apply equally to man.



## Abstracts and Reviews.

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### ACUTE COCAINE-POISONING.\*

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M. V. BALL, M.D., PHILADELPHIA.

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In presenting this report of a case of acute cocaine-poisoning, I doubt whether I can offer anything new, and yet there are several interesting points to be noted.

The literature on cocaine intoxication, though widely scattered, is, however, quite extensive. Mattison of Brooklyn and Germain Sée of Paris have each reported, in 1892, two hundred and more cases of poisoning, with twenty deaths. Since then quite a number of deaths have been recorded in medical journals.

The dose at which fatal poisoning has occurred varied within marked limits. In five fatal cases reported by Mannheim the quantity of the alkaloid taken was over 15 grains. In two cases reported by Mattison death occurred after hypodermic injection of  $\frac{3}{4}$  grain.

Symptoms of poisoning have set in when the drug was administered by the stomach, when thrown into urethra, nose, ear, rectum, or when injected under skin or into the gums; or when simply rubbed over the surface of the face.

Absorption is very rapid, and in some of the cases reported the operator barely had time to withdraw the needle of his syringe before symptoms of intoxication set in.

The symptoms described in each case differ greatly, and there are all stages, from slight incoherency in speech, with dizziness and dilated pupils, to excited hallucinatory delirium, thready, uncountable pulse, convulsive breathing, or sudden collapse, or marked tetanic spasms.

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\* Read before Philadelphia County Medical Society, October 9, 1895.

Cocaine-poisoning exhibits the symptoms of strychnine-poisoning in some cases ; in others, that of alcohol, and in some a mixture of both.

I will describe the case in question :

Mrs. C., aged thirty-five years, white, a sufferer for ten years past from rectal stricture, accustomed to use cocaine locally on pledget of cotton in the rectum, being tired of her existence, resolved to end her life by swallowing 25 c.cm. (6 drachms) of 5 per cent. solution of cocaine, equal to about  $1\frac{1}{4}$  grammes ( $18\frac{1}{2}$  grains) of the alkaloid.

The dryness in the throat was speedily produced, and, in attempting to get up from her couch to ring for the servant, she felt dizzy and fell to the floor. A young medical student, living in the house, and summoned at once, found her in a raging delirium. She wanted to throw herself from the balcony. She talked loudly, incessantly, and incoherently. She was restrained by physical means, and when the student endeavored to give her a hypodermic of morphine, she resisted, and would not allow him to do so. He persuaded her to take the tablets by the mouth, and so  $\frac{1}{4}$  grain was administered. It was about half an hour after that I saw the patient. She was held down on the bed by her friends, and was gesticulating wildly, yet was able to recognize me as soon as I entered the room, appealing to me for help. I suffered her to be released, when, immediately rushing past me, she made for the open window to fling herself out. This she was prevented from doing, remarking, as she was led back to her couch, that, after all, "she wanted to look pretty when she died."

Her pupils were widely dilated, the pulse hardly perceptible and very frequent. The tongue would be protruded spasmodically, and teeth gritted together in a tetanoid manner. She talked incessantly. In a few minutes I was able to gain control over her without using physical restraint ; and, though she talked irrationally at times, her delirium was less marked, and she told me that she was not going to get over the effects, nor would she allow me to give her an antidote ;

in the next breath she would ask me to listen to her singing or recitation. Frequently looking at her hands, they appeared dirty to her, and she would rub them. Her tongue was much congested, bluish, anæsthetic. Her throat was very dry; other parts of the body, tested superficially, gave no indication of anæsthesia.

Respirations were normal. Temperature normal. Pulse, when counted, was 140. She stated that she felt glorious—never so happy before; wanted to drink champagne, and when it was brought to her, forgot that she asked for it. Delusions of persecutions were present to a slight degree, and her most intimate friend was accused of treachery and underhandedness. She was desirous of moving around; wanted to leave the house and visit a place she had not thought of for many years. Gradually a feeling of tiredness supervened, talk became less lively, bodily sensations were now complained of, and especially great thirst, which water or ice had no power to quench. Lemon and vinegar applied to lips was tasted, showing that sense of taste was not entirely absent.

Pulse still very frequent and small; was able to administer black coffee and lukewarm water, and thus induce free emesis. At this time, which was two hours after the cocaine had been swallowed, the patient was resting quietly, with her pulse stronger, but still rapid. Thirst was extreme, and in attempting to go to bath-room, she found her legs almost useless. The urine was passed. Strychnine, grain  $\frac{1}{8}$ , was administered by mouth, and some champagne was given. Perspiration started on skin, and the former pallid condition of face changed to a slight glow. Four hours after the initial onset the patient was sleeping soundly, and the pulse went down to 100, but was much stronger. Consciousness entirely returned, but no recollection of time, and little of previous events, although she remembered when I came in. Next morning she was very weak, her body felt bruised, and her limbs heavy and almost useless. Feces and urine had been passed without trouble. No appetite. Tongue and throat

still much parched, and thirst still present. Congestion of tongue was gone, and normal sensations had returned.

A history of a previous overdose was obtained. The alkaloid in dry state was taken by mistake, and an active delirium, much worse than the one just recorded, occurred. Morphine was administered in large quantities at the time.

Very few cases are on record of recovery from so large a dose as the one taken in this case, although in a case where 22 grains were given by mistake, by the mouth, patient died almost immediately. Forty grains have been taken daily by persons habituated to its use. Recovery would probably not have occurred were it not that patient was under the influence of the drug, more or less, for some time past.

One of the earliest, possibly the first, case of cocaine poisoning is recorded by H. Ploss in the *Zeitschrift für Medicin, Chirurgie und Geburtshilfe*, vol. ii, 1863.

Nieman, who was the first to isolate the alkaloid and gave it the name it now bears, made known his discovery in 1859; but this fact was known to a certain apothecary who was experimenting with cocoa leaves, and who, in 1863, thought he obtained a poison from them as fatal in its effects as strychnine. He took of this extract a considerable quantity, with a view of ending his earthly existence, and, while waiting for the drug to take effect, he joined some friends in a beer hall and indulged in a few mugs of beer. He then retired to his bed and fell into sleep. Some three and a half hours after he took the poison he awakened with severe thirst and dryness in mouth, dizziness in head, and in attempting to walk across the room his legs gave way. He was unconscious then of what occurred until the morning, but, from the appearance of his room, he must have been rather active. In the morning he felt very weak, and still dry in mouth, and thirst.

In the cases of poisoning that I have been able to collect, frequency of pulse, dilatation of pupils, convulsive twitchings of face and general convulsions, respiratory muscle spasm,

unconsciousness, excited delirium, suppression of urine, and cyanosis are the symptoms most common.

The delirium is to be distinguished from alcoholic delirium from the absence of frightful hallucinations. Hallucinations are rarely present. One, the so-called cocaine bug, and which occurred in my patient, is believed by Erlenmeyer to be due to disseminated scotoma.

Spots of dirt are seen on white surfaces, as noted in this patient, the fingers seemed black and dirty.

LeGrain states that alcoholic tremor is wanting, but it was distinctly present in our case. The thirst and dryness of throat is a distinguishing feature. Otherwise, without a history, they seem very much alike.

Moreno Y. Maiz (*Recherches Chimique et Physiologique sur l. Erythroxyton Coca*, 1868) states that the thoughts are not mixed up as in alcoholic intoxication. The phantasms are brilliant; there is a flow of wit. I have seen in an advanced case of general paresis a similar delirium—a desire to sing and recite, to move about, to express a feeling of happiness. An habitue of cocaine has expressed himself as desiring ten years with cocaine rather than 10,000 centuries without it. The element of grandeur and personal aggrandizement sometimes enters.

Dujardin-Beaumetz, in his *Dictionnaire de Therapeutique Supplement*, 1895, states that the effects of cocaine in toxic doses in warm-blooded animals are similar to strychnine, but in cold-blooded animals—the frog, for instance—no convulsions are produced.

It is a curare for the sensitive nerves, exciting the nerve-trunks, and rendering the peripheral nerves analgesic.

Francois (*Arch. de Physiologique*, 1892, p. 562) finds it a paralyzing poison, not only on the sensitive fibres, but also on the motor, and on the fibres of muscles as well as the protoplasm of cells.

The frequency of pulse is probably due to paralysis of the vagus; the prenic nerve is likewise interfered with, causing the respiratory spasms and tetanic arrest in some cases.

In my case there was no interference with the urine. The urine is often suppressed; other secretions, as those of the mammary and sub-maxillary gland, have been noted as likewise affected by toxic doses.

Maurel thinks that death is due to destruction of leucocytes, their dead bodies collecting in capillaries and forming embolic processes.

Reclus holds that thrombi form in veins, and when death occurs after an injection under the skin, it is due to the penetration of a small vein.

This will hardly account for the deaths happening after the drug has been thrown into the urethra, or when swallowed by the mouth.

As to treatment, I cannot offer anything suggestive. Morphine has been looked upon as antagonistic, and has been given in the majority of cases recorded where symptoms of collapse are present early, with tetanic convulsions and cyanosis. Nitrate of amyl is indicated.

Where heart's action is weak, stimulants, strychnine,—hypodermatically,—alcohol, ammonia, and ether have all been suggested and tried.

The early administration of  $\frac{1}{2}$  grain morphine did probably influence the course in the case described, but recovery is often rapid without any treatment.

As the poison is eliminated rapidly by the urine and skin, the free action of these organs is desirable, especially as there is a tendency for them to be less active than usual.

While the dosage of cocaine cannot be said to have any well-defined limits, several clinicians, among them Hänel and Decker, believe that  $\frac{1}{2}$  grain, hypodermatically, should be the maximum dose.—*Medical and Surgical Register.*

THREE HUNDRED AND TWENTY-FIVE CASES  
OF INEBRIETY. BY R. M. PHELPS, M.D., Roches-  
ter, Minn., Assistant Superintendent Rochester State  
Insane Hospital, Rochester, Minnesota.

As holding a position by reason of which I have had some 400 admissions of inebriates, representing some 325 individuals, pass under my observation, mostly during the past five years, surely some resume of such observations and some deduction based upon the same should be of value. I here simply wish to group a few of the impressions which have grown out of such work.

1. *Kind of Patients Received:* Patients received have been such that their behavior made it seem that they could not otherwise stop drinking, or that they had in some way become obnoxious to society. They were mostly, therefore, what are called confirmed inebriates, or in the later stages of inebriety. Of these inebriates ten have received the Keeley Cure, and about twelve have received cures, which, under other names, had yet pursued the same hypodermic medication. Nineteen had also definite mental derangements, quite sufficient to have committed them not as inebriates, but as insane. Others showed varying grades of mental impairment, but about 80 per cent. would, by all ordinary tests, be sane and responsible.

2. *Is Inebriety a Disease?* This is perhaps still a living question, but would be better stated as follows: *In what way is inebriety a disease?* The question, indeed, calls for definition rather than argument. We, personally, would define alcoholic inebriety as the drinking of alcoholic liquors (not "excessive" drinking, for that makes an indeterminate and variable drinking). Then, inebriety (drinking) would be a cause of certain diseased conditions, of which the kidney lesions would be most prominent in some cases, lesions of the liver in others, neuritis in others, and brain lesions (causing mental impairment) in others, and so on through less common lesions. This conveys a different meaning from that given by the simple statement that

"inebriety is a disease." The difference is considerable. As a subordinate fact, of course, it is to be allowed that occasionally a nervous or mental weakness *induces* (rather than "causes") the inebriety.

Some subordinate questions may be anticipated. First, some have assumed that there is always mental impairment—"obscure brain degeneration,"—and have assumed *that* to be the disease, thus inferentially making inebriety one form of insanity.

A bird's-eye view of the whole field, however, will show that there is the tendency to call only those inebriates who have shown, as a mental symptom, a lack of control, which is inferred to be a mental or moral reduction. But these are not one in 25 of the whole number of drinkers. We would think, then, the preceding statement not accurate. Though every drinking in every drinking man may induce invisible increments of mental reduction and brain degeneration (as they may also, indeed, of the kidneys as well), so, also, may many other causes which may be mentioned, etc., etc.

Secondly, direct heredity I have not been able to demonstrate in these cases. Indeed, as descending from a generation in which a large proportion drank, drunkenness in the father and child would indeed come as mere coincidences. Fifty years ago drinking was not so disreputable as now. If inebriety be inherited *directly*, as for example, inebriety in the father, producing in the child a quick and uncontrollable appetite for alcohol, it would not be exceeding strange, although I personally have not met any such cases among this chronic class.

Thirdly, *periodicity* rather fails to prove disease. Some periodicities in people are normal, like that of menstruation. Usually in insanity, though not clearly understood, it seems quite clearly the sign of a defective constitution, usually inherited. And in inebriety it is probably the same defectiveness, in its exacerbations calling for alcoholic or other relief.

3. *Causes of Inebriety*: Naturally these fall into two



divisions. (A) The causes of the beginning of the habit.  
(B) The cause of its present excessive continuation.

In our list there are none noted, who started at the very beginning of the drinking with an excessive appetite. Though such cases are noted in literature, usually here from five to ten or more years have been needed to bring about their present condition. Their answers as to the causes are various. Brain work, producing a nervous or neurasthenic condition, is occasionally claimed. Not, however, more than 2 to 3 per cent. in the 325 cases. Worry of a family or domestic kind is much more frequently spoken of, often, however, we think, more as an excuse than a cause. In general, however, mere sociability has to carry all of the blame of the early drinking, and this shows the trivial character of such drinking.

As to the cause of the present drinking, the gross inebriety, nearly every one will say that he loses control of himself after taking the first glass. As to the feelings that prompt this "first glass," they are very vague indeed. Rarely can they seem to know clearly. It is a kind of mysterious *vis-a-tergo* impelling them on. Frequently it is a kind of depression, produced perhaps by some family trouble or worry. Occasionally one will describe a vigorous fighting against periodical, overwhelming desire. Only some three or four in the whole number, however, have so described their appetite, and close study seems to show that what happens is the coming of a depressed state, for which they seek relief in alcohol; probably the current element is the depression, instead of the appetite. Of course, also, as in all movements, there is in alcoholism a tendency to periods or sprees; the exhaustion from one attack leading toward a remission, and a recovery leading toward a renewed fall.

Briefly stated, the later stages of inebriety seem to be caused by unstable nerves, calling for support. Morphine produces a like condition of the nervous system, with its tremulous unrest and pain, calling imperatively for some

stimulant; and the stimulant in turn producing secondarily the same condition which it tries to relieve.

Some prevalent erroneous ideas seem worthy of note. First, drinkers rarely realize at all how hopelessly they are bound, and the friends and relatives can hardly realize it well either. In fact, only the persistent recurrence of the subject under our observation makes us fully realize it. So well, clear, rational and so seemingly of good intent are the best of them,—so free from desire after a residence here that it is difficult to believe.

2d. Drinking alone does not make an inebriate. The essential is a constitution affected by drink. Probably of twenty-five who drink, only one is so constituted as to give away fully to its control.

3d. Few drink, because they like the taste of the liquor. Even though they hardly know it, they drink for the mental and physical uplift or well being. The gross intoxication which follows is to them an undesirable accident.

4th. Few drink because of an imperious desire. This is the reason that they feel ordinarily so secure. Each new spree seems to them a kind of "happening"; they do not see that it is always of this character, until toward the last of their trouble.

5th. The more intelligent and highly educated the man, the more complicated is the mental and nervous complex of symptoms, the more apt to be exhibited the periodicities and more apparent the brain failure.

4. *Treatment*: That the Keeley treatment is a "scheme," even the popular mind is coming to believe; but assuming strychnine to be the basis of the hypodermic treatment, I have used it (usually with some atropine also) and have produced, to a large extent, the same incompatibility to the drinking of liquor as described by the Keeley graduates. There was here no revival to help it out, and I did not have the same most promising subjects, as were selected by Keeley, especially during his early work.

For the most part our patients fell back. Strychnia seems to be the central drug in treatment, however. Of other tonic treatment, and the treatment of any causal or complicating lesion, no detail is called for here, nor need the judicious use of baths, electricity, exercise and general hygiene be advocated.

All told, however, the inevitableness of the relapse is appalling. I always look with favor on the as yet fancy picture of a colony made up of such people with their families ; a colony large enough to furnish all of the trades and occupations, and the living of a life just as at home, with only one restriction, and that is the keeping of them with their bounds and free from liquor. This is, of course, in final analysis practically only a local prohibition law, and it is an even chance to wonder about, whether this or *general* prohibition will come first.

Twenty-five to fifty years from now will doubtless show wondrous changes. For, after all is said, men struggle with the results of this drink,—annually a million men are being impaired in their work, and probably some 200,000 men with their families are yearly in despair, disgrace and probably 100,000 die when logically the prohibition of the drinking is as much the easier as would be the quarantining of cholera, instead of letting it freely in and then drugging, legislating, and trying to cure the sufferers, which steadily are taking the disease.

When, simply to shut the saloons of New York city over Sunday almost pulls down the power of a law that tries it, we simply confess that we want the cholera and will stand our chances. It is beginning, however, to be common for newspapers to denounce the traffic in liquor, which is an index of the forward swing of public opinion, and this, as its overbalance toward prohibition becomes more probable, will act the faster, and some kind of prohibition or restraint will rapidly prevail.—*Medical Fortnightly.*

## INEBRIETY AND INSURANCE.

In a paper before the London Insurance Association, on "Doubtful Cases," by Dr. Dreschfeld, occurs the following:

"Dr. Dreschfeld went on to speak of those cases which were classed as doubtful because the family history showed some hereditary disease, although the individual proposer had unexceptionable health. He mentioned consumption, cancer, gout, Bright's disease, diabetes, rheumatism, epilepsy, insanity, and intemperance, and put briefly before his audience some of the principal considerations to be kept in mind in dealing with proposers in whose family history any of those affections occurred. With regard to hereditary intemperance, he said that they met occasionally with a whole family of drunkards, where both male and female children were affected with the complaint. In such cases it must be looked upon as an inherited disease rather than a vice. On the other hand, they often noticed cases in which, though one of the parents, or even both, were habitual drunkards, all the children were abstemious, though they often suffered from some nervous affection. As far as it affected life assurance they might say that the intemperate habits, when inherited, showed themselves at an early age, and were often fully developed before the individual reached the age of twenty-five. If, therefore, the proposer had reached that age, and was of temperate habits, such a life might be accepted; and he would not except from this even the offspring of those who, like publicans and hotel-keepers, had special temptations to become intemperate, though in that opinion he differed from some well-known authorities. From his own observation, he must conclude that the children of publicans of intemperate habits were often most temperate, and remained so. Dr. Dreschfeld next spoke of a second group of doubtful cases, which included those where there was no hereditary taint in the family history, but where the individual, either by his occupation, mode of life, or from the result of some illness, or because of the presence of some slight disorder, could not be considered as an A1 life. Among the occupations which

rendered life risky he mentioned those which gave exceptional temptations to over-indulgence in alcohol, such as publicans and commercial travelers. As regards habits, the most important to inquire about were as to temperance. Intemperance was the most formidable enemy to the safe assurance of life. They could not often in these cases rely on the statements of the proposer, as some could "carry drink" well and were not easily intoxicated, and often the evidence of friends was not trustworthy. There were, however, certain signs of alcoholism which might be inquired into by the insurance agent—using, of course, a certain amount of tact—with results which he had often known most useful. Where the decided symptoms of alcoholism appeared the "life" was no longer doubtful, but ought not to be accepted at all.

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TEXT BOOK OF NERVOUS DISEASES—A COMPENDIUM FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. BY CHARLES L. DANA, A.M., M.D., Professor of Nervous Diseases in the New York Post-Graduate Medical School, etc., etc. Third Edition. William Wood & Co., New York City, 1894.

The author, Dr. Dana, is a widely-known teacher in New York, whose accuracy and thorough knowledge of mental and nervous diseases has given the profession great respect and confidence in his ability to write an excellent book. In this volume of over five hundred pages he has compressed a most excellent summary of the present knowledge of mental and nervous diseases.

Special attention seems to be given to the anatomy and pathology of nervous diseases.

Many of the anatomical descriptions are models of clearness, although appearing, in some cases, to be burdened with technical terms, which could be made clearer in other forms.

The classification and description of these diseases are excellent, and conservative in all questions of doubt; and the

reader, who may not be acquainted with the author and his personal work, will feel great confidence in the accuracy and soundness of this book.

In future revisions changes in the proportion of topics will be made, and the scientific technique of terms will undergo some changes. The work commends itself as among the most valuable books on this topic which has been published. The excellent illustrations, clear type, make it very readable.

A work of this class, from so prominent a teacher and author, needs no commendation. It comes to a class of readers welcomed from the start. The third edition, already out, shows the high appreciation of its value.

To all our readers we urge the value of this work, which should be on the table for daily consultation.

The *Scientific American* is unrivalled for interest, and each week brings a most fascinating table of contents.

The *Voice* still leads with increasing vigor the war against saloons, and the effort to banish alcohol as a beverage. This journal recognizes the value of agitation, in its great problems of spirit drinking. Opposition, battling, movement, excitement, all mean progress in the course of years.

The *American Journal of Psychology*, edited by G. Stanley Hall, Clark University, Worcester, Mass., discusses with great ability those various departments of psychology which are attracting so much attention in the scientific institutions of the world at the present day. The subject matter includes the results of experimental investigations in psycho-physic laboratories, studies in abnormal psychology, including the insane, criminals, idiotic, blind, deaf or other defections or degenerations, the anthropology of myth, custom, religious belief, symbols, etc., among savages, and ethnic shocks, studies of animal psychology, neurological researches, the psychology of philosophy, ethics, æsthetics, theology, etc. It

will be seen that the *Journal* discusses questions of great interest from a philosophical standpoint.

The *January* and *February* numbers of the *Popular Science Monthly*, contain some excellent papers, and altogether this journal is superior to all other science journals in the English language.

The *Homeletic Review* published by Funk & Wagnalls, New York city, would make an excellent present to a clergyman, also be a most instructive magazine to every thinking reader.

The *Magazine Romance*, which has heretofore been devoted to fiction entirely, has undergone a complete change, and is issued as a five-cent magazine, filled with illustrations of a popular kind. The magazine is a novelty, the idea being to emphasize the illustrated side of it rather than the text. There are 48 pages containing not less than 60 illustrations, printed from the best of plates on the best of paper. There are pictures of noted painters, of people of the day, of actors and actresses, of literary individuals at home. Scientific matters are treated and amateur photography is given a generous space. Altogether the design has met with a cordial reception wherever spoken of, and readers will be sure to profit by purchasing the early numbers, which will form a perfect little picture-book of genuine, contemporary interest.

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## Editorial.

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### JOURNAL FOR 1896.

The eighteenth volume begins with this number, and it is a source of much pleasure to look back over the seventy-two issues of this JOURNAL and trace the direction and progress of the scientific literature of the subject.

The intention expressed in the first number, of grouping and giving form and shape to the many facts of this, the most complex neurosis known to science, has been accomplished to a far greater degree than anticipated. The JOURNAL has attained an eminence that is unmistakable, and the demand for issues and complete sets from the great libraries of Europe and this country is evidence of this fact.

The lofty contempt of some critics, and the sneering pity of others at the folly or the theory of disease in inebriety, is most significantly answered in the papers of this number.

Again we present a portrait and sketch of one whose life work was devoted to this cause, who has dropped out of the ranks of the living. We send to all our friends and readers the warmest greetings and congratulations for the coming year.

The progress of research and the mass of facts which are accumulating far exceed the capacity of this JOURNAL, and point to the necessity of a larger number of pages or more frequent issues to keep up with the demands of the subject.

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### CLINICAL STUDY OF INEBRIETY.

Some carping critics have expressed harsh contempt for the work of students of inebriety, because it lacks physiological research. These critics imagine that all advance in medicine must be along lines of physiological and pathological work.



Literally, the real knowledge gained from a physiological and pathological study is very small compared with the facts which a clinical study has revealed, and almost infinitesimal compared with our ignorance of the vital processes, and the means of controlling them. Every one feels the need of new facts and the absolute certainty that they exist, only awaiting the discoverer and pioneer worker. So far, inebriety has been studied clinically. The aim has been to observe symptoms and trace them back to some final causes. The physiologists would study the organism and seek to ascertain its functional activities by an exact knowledge of its structure. This is carried on by experiment, while the clinician follows the line of observed facts.

The work of the clinicists is more difficult than the experimenter. The latter can control the conditions, and vary them with circumstances at will. The former is called on to unravel and analyze an assemblage of phenomena of the most complex character. When he succeeds in differentiating groups of related symptoms, and traces their connection to some morbid process or lesion, he has advanced physiological and pathological knowledge as positively as any laboratory experiments. The experimenter should realize that he *needs* the proof of clinician to complete the value of his work.

The solution of problems of inebriety that depend entirely on the laboratory experience are open to many sources of error. The same is true of grouping of observed facts and efforts to find out what their true meaning may be. The clinical study of inebriety must of necessity precede all other methods. The experimenter may inquire into the conclusions taught by this method, and seek to prove them by exact laboratory work. It would seem doubtful to discover many facts that are positive by physiological research. The clinician may err in his analysis, the experimenter may obtain different results at different times from the same data by similar methods. Both will fail to arrive at a degree of certainty and completeness of facts. But together, both methods will bring out conclusions and facts that can be relied

upon. These critics are narrow and do not realize the scope of the subject, or the vast field of research which must be examined by clinical grouping and study of symptoms. The pressing need is trained men who will study the facts above all prejudice, and with no other motive except to arrive at the truth.

The clinician and experimenter are both needed, and carping criticism of each other is only a measure of the extent of the ignorance of the critic.

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#### MORAL INSANITY IN INEBRIETY.

While the term moral insanity is disputed, there is no other name which describes so clearly many cases that are obviously defective.

The inebriate whose mind seems unimpaired, but whose conduct is wild unreasoning and insane in every sense, is an example.

The man who is a model of uprightness, wisdom, and good judgment, who suddenly drinks to excess in the lowest company is clearly wrong. The usual terms, vice, wickedness, and depravity, convey no rational idea of the condition of which such conduct is a symptom.

A number of persons are to all general observation free from the common signs of mental defects or disorders that attract attention as strange or unusual. Yet at intervals they display the most insane conduct, in the use of alcohol and other drugs. Many examples are familiar to all our readers. Usually such cases after a short time of alcoholic excesses display intellectual unsoundness along certain lines.

How shall we express this insanity of conduct, which appears not to be complicated with unsoundness of mind?

Disorders of the mind appear in which the physical condition of the body seems unimpaired. Disorders of conduct are noted in which the average intellectual capacity and ability for mental work remains the same.

If the term moral insanity is used, it expresses in a general way disorders of the higher moral centers manifest in conduct more than in thought.

Secret alcoholics or inebriates who lead double lives, appearing in public as exemplary, judicious people, and in private by act and conduct as the most idiotic and insane, are clearly of this class.

The disorders which manifest themselves in conduct are local and no doubt limited to certain brain centers, and functions, and do not extend to other parts of the brain.

Why these disorders should be limited to conduct to a large degree is unknown.

Many serious mental diseases pass away and leave only disorders of conduct as the lasting entailment. Yet a fair degree of intelligence remains and most of the time rational conduct follows. At intervals the behavior is clearly insane.

The sudden unusual change of conduct is to be referred always to the motor side of a higher reflex act, and no doubt is a reaction from some stimuli either within or without.

The alcoholic impulse which drives the victim to the lowest surroundings for its gratification and displays the most insane conduct, is disease. It may spring from concealed delusions as sudden imperative ideas which dominate the mind to the exclusion of all other thoughts.

To the general reader insanity in all its forms manifests itself in mental changes. The cases in which changes of conduct only are manifest have not received the attention they deserve. The inebriate more than any other class displays insanity of conduct, particularly in the first stages. Later failures of mind and defects of judgment follow. A certain class of inebriates manifest more insanity of conduct than of mental disturbances.

A large mass of facts await study and formulation in this direction. Every asylum for inebriates furnishes striking examples of this form of insanity which may be most aptly called moral insanity. We refer to this topic again to give emphasis to the fact that inebriety is always insanity, not as

understood by the common or legal definitions of the present time.

Inebriety is an insanity in the sense that every disorder of the mind and conduct reflects a physical condition of the body as a whole. No sharp distinctions of causations can be drawn. Disorders of mind and conduct are alike physical states. Moral insanity describes disorders of regions at present unknown but clearly outlined by a mass of ever accumulating facts.

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ACTION OF MORPHINE AND CHLOROFORM UPON LEUCOCYTOSIS. — A. Popoff, from experiments on 38 dogs, concludes (*Inaug. Diss.*, St. Petersburg, 1895) that morphine causes gradual though slight increase of the white corpuscles without previously diminishing them. For this reason it is a suitable hypnotic for animals. The action of chloroform is similar, but more pronounced. Diminution of the white corpuscles begins only on the third day, the number of leucocytes of all shapes increasing until the third day, when the number of multinuclear cells diminishes and that of the young cells increases. Under inhalations of chloroform the activity of the white corpuscles is disturbed and slackened, but on awakening from narcosis the number is increased. Transfusion of blood from a narcotized into a normal animal always increases the number of white corpuscles in the latter.

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## Clinical Notes and Comments.

### CLINICAL REPORTS ON TRIONAL.\*

BY DR. F. A. A. BOUDEAU, OF PARIS.

The following cases observed by me in the service of Dr. Gaillard at the Hospital de Tenon, serve to illustrate the various uses of trional as a hypnotic and sedative :

#### I. INSOMNIA DUE TO PAINFUL AFFECTIONS.

CASE I. Henri D., butcher, 40 years old, suppurating hydatid cyst, with very violent pain, which, at the time of his admission to the hospital, supposed to be due to hepatic colic.

*March 23, 1895.* Four hours' sleep from a hypodermic injection of a moderate dose of morphine.

*March 24.* Took one gm. of trional at seven o'clock in the evening and slept from half past eight till one o'clock. One half an hour later fell into a sleep which lasted till six o'clock in the morning. The sleep was quiet without nightmare, and the patient awoke feeling well.

*March 25.* Did not take trional. Sleep lasted about three hours, restless and suffering a good deal of pain.

*March 26.* Took one gm. of trional at seven o'clock. Slept from half past seven until five in the morning, the sleep being sound without nightmare. On waking the patient felt rested, and had no disagreeable sensations.

*March 27, 28, 29, 30.* Continues to take one gm. of trional and sleep on an average, eight hours.

*April 1.* Did not take trional. Suffered a good deal and could not sleep.

*April 2.* Took one gm. of trional and slept nine hours.

*April 3.* The patient was transferred to the surgical service. Each time that the patient took one gram of trional

\* Thesis presented to the Faculty of Medicine of the University of Paris, 1895.

he slept from eight to nine hours on an average, and was more comfortable during the daytime. On the contrary, when he did not take it, he suffered a good deal and was not able to sleep. No inconvenience was ever noted from the medication.

CASE 2. Ferdinand D., tinsmith, 17 years old, attack of lead colic, which prevented the patient from getting any sleep whatever.

*March 25.* One gm. of trional at seven o'clock. Slept from nine till eleven and again from two till four. The sleep was disturbed by nightmare. Pulse 70.

*March 26.* One gm. of trional at seven o'clock. Fell asleep at eight o'clock and woke at four. The sleep was profound, but broken by nightmares. Lumbar pains on waking. Pulse 95.

*March 27.* One gm. of trional at seven o'clock. Slept from eight till six. He woke once during the night, but went to sleep again immediately. Pulse 96.

*March 28.* Did not take any trional. Slept well for eight hours.

*March 29.* Did not take any trional. Slept for two hours, restless.

In this case an average sleep of eight hours was obtained from trional, without causing any secondary disturbances.

CASE 3. Claire B., 40 years old, domestic, attacks of mild hepatic colic which have prevented sleep for fifteen days. From time to time she was able to obtain a nap for half an hour or so, but was soon waked by the pain. Bromide of potassium was given in doses of 2 grams for several days without effect.

On June 20, she took one gm. of trional at seven o'clock and slept from nine o'clock until five in the morning, waking only once and then going to sleep again immediately. From that time she continued to take one gram of trional, obtaining an average sleep of seven hours. No disturbances were noted, except that during the last few days there was a little diarrhoea.

CASE 4. N., 45 years old, suffering from a neuralgia of the diaphragm, which prevented her from sleeping more than one or two hours each night. For several days, two gms. of bromide of potassium was given without success. On June 18, at seven o'clock, was given one gram of trional. She fell asleep at ten o'clock and rested till three o'clock, when she woke and immediately fell asleep again until five

o'clock. Some nightmare. On awaking there was malaise, her head was heavy, and she staggered a little, but these symptoms disappeared. June 19, took one gram of trional at seven o'clock. Slept from half past seven until five o'clock, rising once to pass water, but fell asleep again immediately. On waking, the same disturbances as the day previous, so that she was obliged to lie down again for a few minutes, but the symptoms soon disappeared. The hypnotic action continued throughout the day, during which she slept pretty soundly. The pains are less violent even during the daytime, than they were the day before yesterday.

*June 20.* Took one gm. trional at seven o'clock. Slept from nine o'clock until midnight, when she was waked by colicky pains, having taken on the previous morning a purgative which had up to this time failed to act. She subsequently slept from three till five o'clock. On waking, no further unpleasant symptoms.

CASE 5. N., suffering from lymphangitis of the arm, which caused a good deal of pain and prevented him from sleeping. Took one gram of trional for two nights in succession and slept for nine hours the first night and seven the second.

## 2. IMSOMNIA IN CARDIAC DISEASES.

CASE 6. Joseph M., metal cutter, 69 years old, with aortic insufficiency, and albuminuria, œdema of the legs, and oedematous rales at the base of the lungs; sleep impossible on account of the marked dyspnoea. Pulse 110.

*March 24.* Took one gm. trional at seven o'clock. Did not actually sleep, but there was a little drowsiness for two hours. The general condition remained bad, but was not aggravated. Pulse 120.

*March 25.* Took the same dose with the same lack of result.

*March 26.* Did not take any trional. Slept soundly from a hypodermic injection of a moderate dose of morphine. Pulse 92.

In this case trional was shown to be inferior to morphine. It had, however, no bad effect upon the heart.

CASE 7. Yvonne M., day laborer, 54 years old, mitral insufficiency with enlarged liver; several attacks of jaundice. Usually sleeps about five hours each night, restless and wakes two or three times to pass water. Her first experience with trional was on the 5th and 6th of February, when

she took one gm. each evening, sleeping about eight and twelve hours respectively. The sleep was profound and accompanied by nightmare.

*March 17.* Took one gm. of trional at eight o'clock. Up to ten o'clock there was no special effect. At this time her vision became disturbed, the head felt heavy, and there was a ringing in her ears. At ten o'clock the patient yielded to an irresistible drowsiness and slept until four o'clock. The sleep was heavy but without nightmare. On waking she had pain in the loins, headache, a little drowsiness, noises in the ears with pretty marked deafness, and a little uncertainty in walking.

*March 18.* Refuses to take trional on account of the disturbances just mentioned. The disturbances of vision, hearing and the headache gradually diminished, but did not disappear for several days.

**CASE 8.** N., 45 years old, mitral insufficiency. Has not slept for some time on account of the feeling of oppression. Took one gm. of trional for five days in succession. Sleep came on after an average interval of two and one-half hours and lasted six hours. It was somewhat restless. No disturbance nor any bad effect upon the heart.

**CASE 9.** N., 30 years old, mitral insufficiency, compensation well established. Does not sleep at all. During eight days took one gm. trional each evening and slept on an average two to four hours each night. The sleep was intermittent, but the patient was very much relieved by it. No disturbances and no injurious action upon the circulation.

### 3. INSOMNIA DUE TO FEBRILE AFFECTIONS.

**CASE 10.** Francois P., day laborer, 57 years old, left lobar pneumonia, with frequent cough and abundant expectoration. Sleep impossible. Pulse 95.

*March 24.* Took one gm. of trional at seven o'clock. Fell asleep at nine o'clock and woke at five o'clock in the morning, feeling very tired. He was awake two or three times during the night, but only for a short period. He had a good deal of nightmare. Pulse 90.

*March 25.* Took one gm. of trional at seven o'clock and slept from half-past seven till one o'clock only. The sleep was disturbed by nightmares. General condition very bad. Pulse 140.



*March 26.* The trional was stopped on account of the seriousness of his condition. Pulse 140 and thready. No sleep.

*March 27.* The patient died.

In this case the trional gave an average of six to seven hours of sleep.

4. INSOMNIA DUE TO A NON-FEBRILE PULMONARY AFFECTION.

CASE II. Madeline T., 64 years old, attack of pulmonary congestion without fever. Insomnia due to frequent coughing. The patient has only slept on an average five hours each night for the past week. No nightmare.

*March 11.* Took one gm. of trional. After two hours had a continuous sleep of six hours, but it was broken by nightmares. Awoke feeling somewhat tired and with a tendency to drowsiness.

*March 12.* Sleep of the same character coming on one hour after the administration of the drug and lasting seven hours.

*From March 13 to March 17.* Did not take any trional, and slept on an average five hours each night.

*March 17.* Took one gm. of trional at seven o'clock. Slept from nine o'clock till five o'clock in the morning, with nightmares. On waking the head was heavy, there was headache, nausea, no staggering.

*March 18.* Trional stopped. Slept soundly from nine o'clock till four, no nightmare, felt rested on waking.

*March 19.* Slept soundly from eight o'clock till four, without nightmare.

CASE 12. Jean C., carriage cleaner, 43 years old, bacillary phthisis. His cough was so constant that he could only obtain one or two hours' sleep each night, and it was disturbed by nightmare.

*March 19.* Took one gm. of trional at seven o'clock. Slept from nine o'clock till midnight and again from one till four o'clock. The sleep was interrupted by nightmare, and the patient awoke tired and with a tendency to sleep.

*March 20.* Took no trional, and was awake the entire night.

*March 21.* Took one gm. of trional at seven o'clock. Slept continuously from ten o'clock in the evening till four in the morning. Some nightmare; a little tired on waking.

*March 22.* Took one gm. of trional at seven o'clock. Slept soundly from nine o'clock in the evening till five in the morning, followed by a little pain in the lumbar region.

*March 23 and 24.* The same result as on the previous day.

*March 25.* Left for Vincennes.

The average amount of sleep has been seven to eight hours. The only comment is that the restful effect was not as great as would have been obtained from a natural sleep of the same duration.

CASE 13. L. M., bronze founder, 25 years old, pyo-pneumo thorax, general condition very bad, night sweats. Complete insomnia, notwithstanding the administration of pills containing opium and hyoscyamus.

*March 25.* Took one gm. of trional at seven o'clock. Slept from eight o'clock until two in the morning. The sleep which had been somewhat restless, was not resumed. Nevertheless the patient felt rested on waking.

*March 26.* Took one gm. of trional at seven o'clock. Slept from half-past seven until four o'clock. Sleep restless, and had pain in back on waking.

*March 27.* Trional stopped.

CASE 14. Leon L., jeweler, tuberculosis. Remains in a drowsy condition throughout the entire night without actually sleeping. The cough is frequent.

*March 12.* Took one gm. of trional. Half an hour afterward he fell into a good sleep lasting eight hours, with two or three interruptions. No nightmare. Cough a little less frequent. Awoke rested and comfortable.

*March 13.* Took one gm. trional. Two hours later slept for six hours, but not continuously. Woke with nausea, headache, and then two hours later fell asleep for two hours, waking rested, the various disturbances having disappeared.

During the week following the same results were obtained; the action of the drug continuing for one night after its administration was stopped. The average duration of sleep was eight hours.

CASE 15. N., 25 years old, tuberculosis, with pneumo-thorax, very cachectic. Sleeps only about two hours each night. Spends the rest of the time in coughing. Has taken chloral, sulphonal, and opium without the least result. For about a month he took 50 centigrams of trional and fell into sleep on an average three hours later, the effects lasting about four hours. Although the sleep was disturbed the

patient was somewhat rested by it. In this case the trional never caused any unpleasant symptoms.

CASE 16. N., emphysema. Sleeps only about one hour each night, coughing the rest of the time. Has taken opium without any advantage. For twenty days, took one gm. of trional and on an average, one and a half hours later experienced a quiet sleep, lasting four to five hours. Never any unpleasant symptoms.

CASE 17. Abel A., 19 years old, pasteboard maker, suffering from pleurisy on the left side. Does not sleep more than one hour each night. During the remainder of the time he is so restless that he cannot remain in bed on account of the severity of the pain at one point in his side.

June 19. Took one gm. of trional at eight o'clock. Slept from half-past eleven until four o'clock, the sleep being sound and quiet. On waking felt rested and had less headache than usual.

June 20. Took one gm. of trional at eight o'clock. Slept very well from midnight until eight o'clock. No disagreeable symptoms on waking.

The same medication was continued for five days, the sleep lasting on an average seven hours, without any bad effects.

##### 5. NERVOUS INSOMNIA.

CASE 18. Louis V., sculptor, cerebral softening. Patient is very restless, and walks about the room in the middle of the night.

March 18. One gm. trional at seven o'clock. Was quite as restless and sleepless as on the preceding nights.

March 19. Two gms. of trional at seven o'clock. Slept from ten o'clock till four in the morning, waking several times. He was less restless, although still somewhat talkative during his wakeful moments, but was quieter during the daytime.

March 20. Two gms. of trional at seven o'clock. Slept from nine o'clock till five. He was a little more quiet than last night.

March 21. Two gms. of trional at seven o'clock. Slept from nine o'clock till six. The patient was very quiet and did not wake at all. He was much rested in the morning and remained quiet during the entire day.

March 22. Took only one gm. of trional. Still very quiet.

*March 23.* Took one gm. of trional. The patient was a little more restless than the previous evening, as well as during the following day.

*March 24.* Took the same dose. The restlessness increased and the sleep was reduced to three or four hours.

The administration of Trional was then stopped. In this case there were never any bad symptoms following the remedy, but it was manifest that the dose of one gm. was quite insufficient to give any result.

CASE 19. Marie G., burnisher, 21 years old, subject to attacks of minor hysteria, without loss of consciousness, coming on almost every morning and evening. She wakes almost every morning with a headache which persists in a diminishing degree throughout the entire day. When there are no evening attacks she sleeps calmly for nine hours. After an evening attack she has a very restless sleep for seven to eight hours, which is interrupted by sudden startings. No nightmare.

*March 16.* She has had a slight attack at four o'clock and is very excited. The taking of one gm. of trional at eight o'clock was followed immediately by nausea. She slept continuously from half-past eight till five o'clock and was restless but had no nightmare. On waking, felt rested, with no tendency to drowsiness and no more headache than usual. During the following day there were none of the usual attacks.

*March 17.* No trional. Had six hours of quiet sleep. But four hours after waking had a slight attack, the only one during that day.

*March 18.* Took one gm. of trional at half-past seven. Only slept about one hour, beginning at two o'clock, and woke with lumbar pains. Nevertheless, the day following was quiet and free from attacks.

*March 19.* Took one gm. of trional at half-past seven. Slept from eight o'clock till one. The sleep was light, the patient awaking at the least sound, but falling asleep again immediately. When she woke at one o'clock, she was restless, felt compelled to walk about, and had a peculiar sensation of heat with urgent thirst. Although the patient was tired, she was more quiet during the next day, and there were no attacks.

The trional was then continued for six days with the same result. The average amount of sleep was about six hours, but it was somewhat disturbed and did not give very much

rest; on the other hand, although the trional was given in small doses, it seemed to exercise a very favorable influence on the number of attacks.

CASE 20. Louise H., day-laborer, 43 years old, slight attack of rheumatism, neurasthenia. For the past three or four weeks she has only had, at the most, two hours of restless sleep each night.

*March 18.* One gm. of trional at eight o'clock. Slept well and quietly from nine o'clock till eleven, but not after that time.

*March 19.* One gm. of trional at eight o'clock. Slept lightly from half-past eight till midnight, and felt somewhat rested on waking. As the trional did not seem to give much result its use was abandoned in this case.

CASE 21. Adelaide B., jeweler, 39 years old, chronic alcoholism in a neurasthenic subject. For a long time she has only slept three or four hours each night. Sometimes this sleep was continuous and sometimes broken, but it was always restless and disturbed by nightmare. Has profuse perspirations. There is always a sensation of marked fatigue on waking.

*March 5.* Took one gm. of trional. Three hours later, slept for six hours. This sleep was sound, without nightmare. On waking there was some nausea and a little headache with some giddiness.

*March 6.* Took one gm. of trional. Went to sleep four hours afterwards and slept for two hours only. There was nightmare and nausea and headache on waking.

*March 6-11.* No trional given. There was a complete absence of sleep.

*March 11.* The patient took one gm. of trional, and three hours afterward had only two and a half hours sleep, interrupted by nightmare. There was profuse perspiration, nausea, and headache.

*March 12.* Took one gm. of trional. Two hours afterward fell asleep for two and a half hours only. The sleep was broken by nightmare. There was a little perspiration but no headache or nausea on waking.

*March 13.* Took the same dose. Four hours afterward, slept for five hours, but she was restless and woke frequently.

*March 14.* The same dose. Three hours of restless sleep.

*March 15.* Took one and one-half gms. of trional at half-past eight o'clock. One-half hour later there was a sensation of torpor and weakness, and at half-past nine an irresistible desire to sleep. She slept lightly until ten o'clock, hearing every sound, and the same light sleep interrupted by nightmare was renewed from eleven o'clock until three in the morning. On waking there was lassitude and heaviness of the head lasting all day.

*March 16.* Took one gm. and one-half gm. at half-past eight o'clock. Began to sleep one hour afterward; woke at eleven o'clock, and immediately went to sleep again, waking finally at three o'clock in the morning.

*March 17.* Took one and one-half gms. at eight o'clock. Slept well from eleven o'clock till one, and immediately after fell asleep again until four o'clock. On waking, there was fatigue, nausea, and headache, the latter symptom, which was not a constant one before the administration of the drug, has become so since then.

*March 18.* Two gms. of trional at half-past seven. From half-past eight till eleven there was pretty intense headache, great weakness, and profuse sweating. At eleven o'clock the tendency to sleep was irresistible, and she slept from that time until half-past three, but very lightly, hearing all that was going on about her.

*March 19.* Two gms. of trional at seven o'clock. Slept from half-past eight till three o'clock in the morning. The sleep was light and restless; she woke two or three times, but went to sleep again immediately. On waking was very tired, but had no headache.

*March 20.* Took two gms. and had a broken sleep, lasting from quarter past eight till four o'clock in the morning.

*March 21.* The trional was stopped. During the next two nights the patient slept for a few hours, and afterward relapsed to her former condition of insomnia.

In the case of this patient, a dose of one gm. of trional produced a sleep of three to four hours; with one and one-half gms. an average of five hours, and with two gms. about seven hours. The size of the dose did not seem to influence the rapidity of the action.

CASE 22. N., 56 years old, neurasthenia. Very restless, sleeps about one hour each night. A dose of two gms. of chloral hydrate produces about three hours sleep.

*May 17.* Took one gm. of trional at half-past seven o'clock. Had a good, quiet sleep from eight o'clock till half-past one.

Was not restless during the remainder of the night. Awoke quite rested.

*May 18.* One gm. at eight o'clock. Slept well without nightmare from nine o'clock till half-past four. At half-past one o'clock arose to pass urine, but fell asleep again immediately.

From *May 18* until *May 28* continued to take one gm. of trional, and fell asleep on an average three-quarters of an hour after the administration, the effect lasting about seven hours. The sleep was quiet and the patient awoke feeling rested, having only a slight dull feeling in the head, and a tendency to sleep during the daytime. With chloral the condition on waking was more disagreeable, the patient continued in a condition of drowsiness and felt less rested.

CASE 23. L. P., 19 years old, shop-girl, major hysteria, with attacks about every other day. Sleeps only about two hours each night, is restless, and has frequent nightmare. In the daytime she is very agitated and complains of violent palpitations. She has never taken any hypnotic.

*June 19.* On account of the extreme agitation of this patient, she was given a gm. of trional at the outset, — one gm. at seven o'clock and another at eight o'clock in milk. She slept from half-past ten till two o'clock, then set up on the edge of her bed and soon fell asleep again until half-past five, when she awoke quite rested, having only a slight dull sensation in the head. The sleep was very quiet. The palpitations were less violent, and there were no attacks of hysteria during the day. On the following day she received two gms. each evening with the result of obtaining, on an average, eight hours of sleep, a calmer condition during the day, and some diminution in the frequency of the crises. Nevertheless, as the condition of excitability was still quite marked, and as she could not receive the necessary attention in a general hospital, she was transferred to Saint Anne on June 27th.

#### 6. INSOMNIA DUE TO VARIOUS CHRONIC AFFECTIONS.

CASE 24. Eugenie B., cook, 37 years old, had undergone a laparotomy, thirteen days before, for a fibroma which the surgeons were not able to remove, and which has been the cause of a very profound anæmia from repeated metrorrhagias. For a month she has not had any continuous sleep. She falls into a doze from time to time, and then, after a short nap, will lie awake for an hour or more. No restlessness.

*March 16.* Took one gm. of trional at six o'clock. Slept from eight till nine o'clock, and again from ten to twelve, and then immediately fell asleep again till four o'clock. But the sleep was very light, the patient hearing everything which took place about her. No nightmare. Nevertheless she felt on waking more refreshed than usual.

*March 17.* One gm. of trional at half-past six o'clock. The same light sleep as before from half-past eight till eleven o'clock, and again after an interval of a few minutes until four o'clock.

*March 18.* One gm. of trional at seven o'clock. Slept from nine o'clock till half-past ten, and again after a brief interval until two o'clock, but the sleep was very light, interrupted by frequent waking, and was followed by a sensation of fatigue.

*March 19.* Took one gm. of trional at half-past seven o'clock. Slept from nine o'clock until midnight very quietly, and again from half-past twelve until four o'clock, but during this latter period was very restless. Felt somewhat refreshed on waking.

*March 20.* The trional was stopped. Sleep continued to be broken in character. Never any unpleasant symptoms. The average amount of sleep obtained was about six hours, but it was light and very broken.

**CASE 25.** Catharine A., 42 years old, cyst of the ovary. For a long time the patient has not slept more than two hours each night.

*April 23.* Took one gm. of trional at half-past six o'clock in the evening. Slept from seven till five o'clock in the morning, quietly and without any interruptions. Awoke feeling comfortable and refreshed.

*April 24.* One gm. trional at one-quarter past eight o'clock. Slept from half-past nine o'clock till midnight. Fell asleep again, waking for a few minutes towards three o'clock, after which she slept continuously until six o'clock, well rested. The use of trional was continued for eight days longer at the same dose. The average result was eight hours of quiet sleep. After the drug was stopped, the patient slept a little longer than she had previously.

**CASE 26.** Amelie A., 18 years old, florist; chlorosis with phlegmasia alba dolens of the right leg. Has slept about half an hour each night for about a month, and is very restless during the rest of the night. At the first trial, with one gm. of trional, she slept eight hours on the first night



and two hours on the succeeding ones. At the second trial, March 13th, she took one gm. of trional at seven o'clock in the evening. Beginning five hours later, she had six hours of continuous sleep without nightmare and was much refreshed on waking.

*March 14.* One gm. of trional at seven o'clock. Fell asleep, two hours later, for five hours.

*March 14 to March 17.* An average sleep of five hours.

*March 17.* One gm. trional at six o'clock. Two hours later she slept for three hours, the sleep being restless. There was drowsiness and lassitude, which passed off during the day.

*March 18.* At the patient's request the trional was replaced by the same dose of sulfonal, taken at half-past six o'clock. She slept from nine o'clock till half-past one, and again from three o'clock till six, the sleep being quiet, refreshing, and not followed by heaviness in the head. The same results were obtained on March 19th and subsequent days, the average sleep being about nine hours, and coming on two and one-half to three hours after the administration of the drug. Sulfonal in this case proved to be superior to trional which only gave an average of five hours sleep. There was not much difference in the rapidity of the action, sleep coming on two hours after the trional, and two and one-half hours after the sulfonal.

CASE 27. Alphonsine A., housewife, 61 years old, cancer of the stomach, can hardly be said to sleep at all during the night. From time to time has a nap of a few minutes.

*March 18.* One gm. of trional at seven o'clock. Slept from half-past seven till ten o'clock, and again from eleven o'clock till three, the sleep being sound without nightmare.

*March 19.* One gm. trional at seven o'clock. Slept from half-past seven till half-past ten, and again from eleven till five o'clock, waking, however, several times. On waking the patient was much refreshed, felt better and was more hungry than she had been for a long time. During the night she perspired profusely, which had not occurred previously.

On six other days the same results were observed, the mean duration of sleep being seven hours. No unpleasant symptoms except the unaccustomed perspirations. The trional seemed to have a good effect upon the appetite.

## 7. INSOMNIA IN DYSPEPTIC PATIENTS.

CASE 28. Louise L., housewife, 34 years old, dilatation of the stomach. For the past six weeks has only had one or two hours sleep each night, and this has been broken by nightmare.

From *April 6* to *April 11*. Took one gm. trional each evening at seven o'clock. Falls asleep toward nine o'clock on an average and sleeps till midnight. Does not rest well, and has more severe headache than before the administration of the trional. Has profuse night-sweats which were not present previously. No influence on the gastric condition.

CASE 29. N., 35 years old, dilatation of the stomach. Has only two or three hours of heavy sleep interrupted by nightmare.

*May 20*. Took one gm. of trional at half-past seven. From eight o'clock until five, had a sound and quiet sleep, without nightmare, and awoke feeling very much refreshed.

*May 21*. Took one gm. trional at eight o'clock and slept very well from half-past eight till half-past four o'clock.

*May 22*. Took no trional and did not sleep.

From *May 22* to *May 28*. Took one gm. trional each evening, and, after an average interval of half an hour, sleep came on, lasting six or seven hours. No bad symptoms.

## 8. INSOMNIA IN A MORPHINE HABITUE.

CASE 30. Renee L., 32 years old, morphine habitue. Has been in the habit of taking daily, twelve prayaz syringefuls of a 1-40 solution of morphine.

The patient is extremely emaciated, vomits frequently, has palpitation and profuse sweating. Menses are regular but very scanty. She came to the hospital on March 8th, having already taken eight syringefuls during the day. She was given two more during the evening of a solution of 1-50.

*March 9*. She received injections of four syringefuls of 1-50 with one gm. of trional after the evening hypodermic. One hour later had a sleep lasting six hours. Pulse 80.

*March 10*. Four syringefuls of 1-50 and one gm. of trional. After two hours, slept well for six hours without nightmare. Pulse 76.

*March 11*. Three syringefuls of 1-50 and one of 1-100 with one gm. of trional. After an interval of five hours, had a quiet sleep lasting six hours. Pulse 82.

*March 12.* The same dosage. Nine hours of calm and refreshing sleep, coming on one hour after.

*March 13.* Three syringefuls of morphine 1-50 and one gm. of trional. One hour later, slept for eight hours.

*March 14.* The same dosage. Two hours later slept for nine hours.

*March 15.* The patient asked for an increase in the quantity of trional to make up for the diminution of the morphine. The dose was raised to one and one-half gms. She was more restless than on the previous nights.

*March 16.* The dose of trional was increased to two gms. and one of the hypodermic injections was made with a solution of only 1-100. One hour later the patient had a very good sleep lasting about ten hours. No discomfort on waking.

*March 17.* The same doses were given with the same result.

*March 18.* Two and one-half syringefuls of 1-100 solution of morphine and two gms. trional at half-past eight o'clock.

Slept from nine o'clock until six in the morning, but woke frequently.

From *March 19* to *March 23*. Patient menstruated normally except that the flow was not very abundant. The medication was continued as before with an average result of seven hours sleep, coming on one and one-quarter hours after taking the drug.

*March 24.* The injections were reduced to only two of morphine 1-100 with two gms. of trional at eight o'clock; slept quietly from nine o'clock until six.

*March 25* and *26.* The same result obtained.

*March 27.* The dose of trional was raised to  $2\frac{1}{2}$  gms.

From *March 27* until *April 20*. When the patient voluntarily left the hospital, the same medication was continued, resulting in an average sleep of nine hours, coming on from one to one and one-half hours after taking the dose.

The urine was examined every day with reference to albumen glucose and hæmatoporphyrine. Nothing abnormal was found at any time. According to our observation, trional did not seem to check perspiration. No disturbance of any of the bodily functions was noted at any time during the treatment.

In all of these cases the urine was examined at frequent intervals and neither sugar nor albumen was found at any

time, nor have they ever shown the dull red tinge which indicates the presence of hæmatoporphyrine.

The average amount of sleep obtained has been about seven hours, and it has followed after an interval of three-quarters of an hour to one hour after the administration of the drug, given in wafers and followed by a hot draught.

The time required for the drug to act has, however, varied between the extremes of fifteen minutes and six hours. The patient is easily aroused from the sleep, but it is resumed immediately.

In some of the cases Nos. 2, 4, 11, 12, trional has seemed to cause nightmare. Gaillard has also reported a case in which the patient refused to take it on account of the frightful nightmares which it caused her.

We observed one case of failure in a case of cardiac disease with defective compensation (No. 6) in which the insomnia yielded to morphine. In our two hysterical cases (Nos. 19 and 22), it had a quite marked sedative action. In four cases (Nos. 4, 7, 11, 21), there were some transitory disturbances on waking; nausea, headache, vertigo, uncertainty of gait and noises in the ears. In case 21 the headache was, however, persistent. In case 15, trional was shown to be superior to chloral, sulfonal, and opium; but in case 25, on the contrary, it was inferior to sulfonal given in the same dose. In two cases (Nos. 27 and 28) there was noted sweating which had not been present previously, and for which there was no other explanation. In the first of these cases last mentioned, a very decided improvement occurred in the appetite.

In nearly all the cases the temperature was taken in the evening before the medicine was taken, and on waking in the morning. There was no difference that could be attributed to the drug. The pulse was taken every morning and showed no changes after trional. Neither have we observed any action upon the respiratory apparatus. A case of favorable influence upon the digestive organs was mentioned above, in addition to which we find note of a little diarrhœa in case 3.

#### INDICATIONS FOR THE USE OF TRIONAL.

Trional is indicated in insomnias of every variety. It succeeds particularly well in those which are purely nervous, with little excitement; on the other hand it is less efficacious when the sleeplessness is caused by a violent cough, as in a

case of tuberculosis, for example. Its action is much more reliable in melancholia than in conditions of well-marked excitement. In delirium tremens it has seemed to give good results, although this opinion is not shared by all the authors. In morphinomania very good results have been obtained with it. In general paresis the results are less favorable. Speaking broadly it may be said that trional is better suited to the cases of those who go to sleep with difficulty, than it is to those who find no trouble in getting to sleep but who wake too easily. (Vogt.)

In surgical practice, it is indicated in the insomnia of exhaustion from chronic surgical ailments, because it does not depress the heart action like chloral, or is the wakefulness, not associated with much pain, which is met with after operations (Van Schaick.) However, we believe that pain is not a contra-indication for the use of trional, which often relieves, not the pain itself, but the conditions of nervous hyper-excitation resulting from it.

It gives good results in the night terrors of childhood.

#### DOSAGE.

Trional may be administered in single or in divided doses. In single doses, small doses, below one gm. usually give no result. Moderate doses, from one to two gms., act chiefly as hypnotics in all cases of insomnia without too much excitement; but their active sedative effect is not marked. The method of Pelanda and Cainer seems very advisable. They recommend giving a dose of one and one-half to two gms. at the start, and then reducing the dose to one gm. on the following days, in order to keep up the hypnotic effect without any cumulative action. Large doses, from two to four gms. should be reserved for conditions of violent excitement. Their sedative action is especially pronounced.

#### IN DIVIDED DOSES.

By giving wafers containing 50 centigrams two or three times per day a pretty marked sedative effect is obtained with relatively small doses, but without hypnotic action. It is especially in such cases and when trional is given for a long time continuously, that its use should be suspended at frequent intervals, and the freedom of the bowels assured if necessary by purgatives. As in the cases in which hæmatorporphyrinuria has appeared, the urine has always been

found strongly acid. Prof. Muller of Gratz advises that this symptom be met by the use of large doses of bicarbonate of soda. As a preventive measure, the alkaline mineral waters should be given along with the trional. The dose of trional for women should be, on an average, 50 centigrams less than that for a man, as it has been noticed that accidents are more common in their case.

The following, according to Claus, are the doses for children :

From 1 month to 1 year, . . . . .	2 to 4 centigrams.
From 1 year to 2 years, . . . . .	4 to 8 " "
From 2 years to 6 years, . . . . .	8 centigrams. to 1-2 gms.
From 6 years to 10 years, . . . . .	1.2 gms. to 1.5 gms.

When the insomnia is associated with pain, it is desirable to combine the trional with one centigram of morphia, or two or three centigrams of codeia, or perhaps with phenacetine or acetanilide. Good results may thus be obtained, which could not be secured by either drug alone.

#### METHODS OF ADMINISTRATION.

Trional may be given :

1. Suspended in cold milk, tea, or a mucilage.
2. In a hot liquid such as milk, wine or punch, in which it is partly dissolved and partly held in suspension.
3. When the patients refuse liquids, out of suspicious motives, it may be mixed with finely divided food or with broth ; in the case of children, it may be given in honey or sweetmeats.
4. By enema, the effect follows as promptly as when given by the mouth.

But the best way is to give it in unleavened bread, followed immediately by a drink of 200 cc. of some hot liquid. This should be given about a quarter of an hour before bedtime.

#### CONCLUSION.

1. Trional is a good hypnotic in mental disorders as well as in the insomnias of miscellaneous origin. Its effects is produced in from three-quarters of an hour to one hour, and the average amount of sleep is about seven hours. The patient sleeps quietly, is easily aroused, and falls asleep again promptly.

2. It seems to act upon the cerebral cortex, perhaps by inducing a condition of ischæmia.

3. It succeeds most uniformly in the insomnias attended by pain. When the pain is too severe, the addition of morphine or phenacetine will secure a good result.

4. It will be found to be less efficacious when there is a condition of violent excitement, or when there is severe cough.

5. Compared with sulfonal and chloral, it seems to equal the former in effect and to be inferior to the latter; but it excels sulfonal in rapidity of action (it acts in from 3-4 to 1 hour) and has an advantage over chloral in that it does not set up a drug habit, and that it is not depressing when given with any degree of caution.

6. It will, therefore, be particularly useful in those patients in whom chloral has lost its effect from long habituation, and in patients whose condition is already one of marked depression.

7. Small doses (1-2 gms.) seems hypnotic chiefly, and large doses (2-4 gms.) sedative in cases showing excitement. Divided doses are also sedative in action. The former should therefore be given in all cases of insomnia without much excitement, and the latter when that condition is very pronounced.

8. Trional is not an analgesic.

9. At least in therapeutic doses, it has no action upon the circulation, the respiration or the digestion. The secretions and the heat function are only affected to an insignificant degree.

10. Slight symptoms of intoxication (vertigo, headache, and unsteady gait), may follow the first dose, even though it be a small one (1 gm.) Such symptoms usually pass away of themselves, and do not contra-indicate the use of trional, but merely call for care in its further administration.

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DR JAMES A. BLANCHARD, who for fifteen years was superintendent of the Inebriates' Home, died Jan. 8, 1896, of heart disease, at the institution. Dr. Blanchard was born in Norwich, Conn., fifty-five years ago and studied in the schools of his native town until 1858, when he took up the study of medicine and surgery at the College of Physicians and Surgeons, in New York city, from which he graduated in 1867.

He then practiced his profession in this city until 1878 and in that year received the appointment of medical superintendent of the asylum for the insane at Flatbush. In 1881 he was made superintendent of the Inebriates' Home, at Fort Hamilton, a position which he held with signal success, linking his name so thoroughly with the institution that one was as well known as the other.

During the war of the rebellion he enlisted in the Twenty-third New York regiment and for valuable services rendered was promoted to the medical corps.

He was a man of rare qualities of heart and mind and his circle of friends was very large. His wife and a little girl nine years of age survive him.

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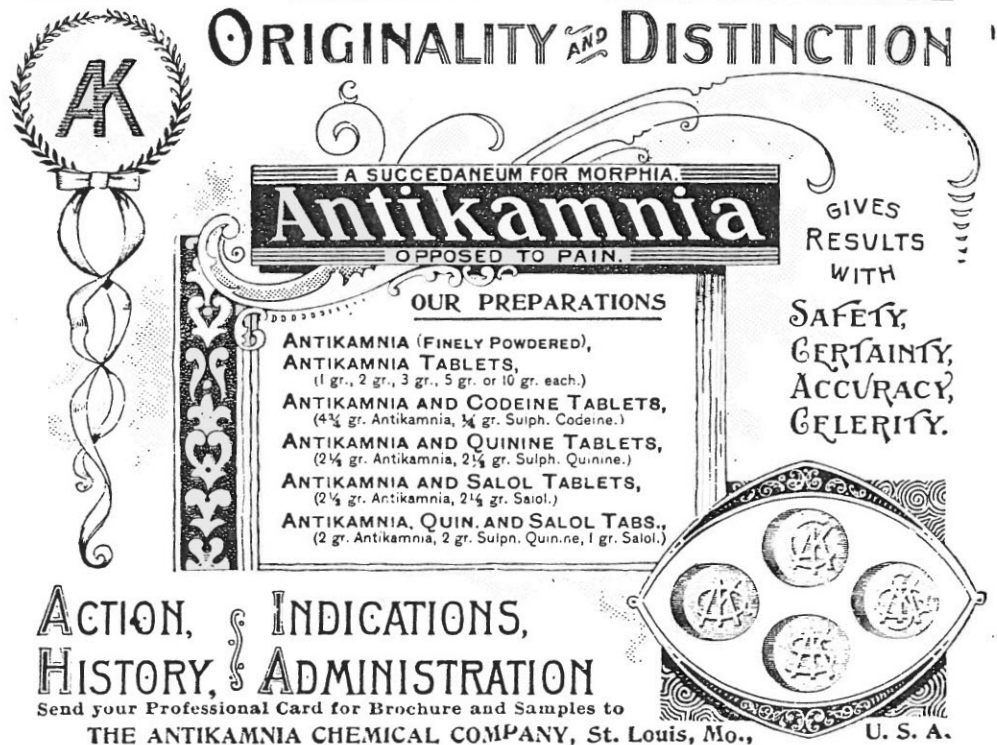
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