INSANITY:

Its Dependence

ON

PHYSICAL DISEASE.

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Since my connection with the Asylum, now over twenty years, I have endeavored to direct my attention and study, as far as possible, to the investigation of the causes of insanity, and the observation of the progress of the disease while under treatment. I early observed that in those cases of which full and reliable information could be obtained, the physical cause was generally found: that some change in some part or parts of the organism preceded the earliest manifestations of mental disturbance: that in those cases, some diseased condition of the body, outside of the brain, generally preceded the cerebral symptoms and the consequent insanity. In my official report for 1863, I presented this subject, with the intention of showing, from the recorded cases in this institution the relation, numerically, where moral and physical causes had been attributed as the influence determining the insanity. I there presented a tabulated statement embracing the assigned causation, in all cases admitted up to to that date, with comments,—assigning as moral causes those acting through the emotions, sentiments, passions, and affections; as physical, those producing their effects through

physical impairment, diseases or injuries. In 1843, Dr. Brigham says, "with Pinel, Esquirol, and Georget, we believe that moral causes are far more operative than physical." In his first report he assigns moral causes in 128 cases; physical causes in 93 cases; unknown and doubtful in 55 cases.

Of the moral causes 50 are attributed to religious anxiety. I then expressed my conviction that more careful observation would reveal physical causes as productive of more insanity than moral causes, and that religious excitement and anxiety had but slight influence in this direction. The annexed table embraces the analysis of causation, moral and physical, in all cases admitted up to this date.

I then expressed the following views on this subject:

"Here we have a gradual and marked decrease in moral, and increase in physical causes. This is neither accident nor design. It results from experience and recorded facts. Insanity, for many centuries, was not recognized as a disease; but as a moral state, and in some a spiritual or demoniacal possession, and influenced by the moon. Many of the older medical authorities refer to and describe demonomania as a form of mental disease. The disenthrallment of the professional, as well as the public mind, on this subject, has been slow and gradual. However, we have similar ignorance and superstition in other fields of medical research.

"The question of the causation of insanity, is one of the most important with which we have to deal. If insanity is immediately developed from religious anxiety, excessive application to study, or giving way to the

emotions of grief or joy, from the intoxication of success or from disappointed ambition, society must be guarded and admonished in those directions, and the treatment of persons insane from these causes must be such as to meet successfully the ever present causative influence. If, however, those apparently suffering from profound religious depression, or from the other moral causes named, are ascertained to be so affected because of certain bodily conditions, the successful means of treatment will be very different. If we find that insanity is dependent on causes which tend to depress the vital forces, and we discover these causes, we approach the question of the control of the disease and its limitation. If we find these causes, instead of subtle, moral influences, mainly physical, we advance still further toward control and limitation, as the latter are more within the power of individuals and of the profession, than the former. Think of having, within a single year, fifty persons whom you believe to be insane from religious anxiety, and those from all Christian denominations. What a store of theological knowledge the physician must possess, and what subtlety of reasoning to meet all these cases. This number was attributed to this cause the first year, twelve to excessive study, and fourteen to fright, disappointed ambition, political excitement, and jealousy.

These and kindred causes were recognized less and less as efficient influences in the production of disease, in the lifetime of Dr. Brigham, under the light of experience. The first year religious anxiety represented, in the table of causes, eighteen and 15-100 per cent., the second year nine and 81-100 per cent., the third

year eight and 15-100 per cent., the fourth year five and 92-100 per cent., the fifth year seven and 22-100 per cent., and the sixth year (the last report made by Dr. Brigham,) six and 40-100 per cent. There was also equally marked diminution in other supposed moral causes, and increase in physical. Thus we perceive that more extended experience, and more careful observation of these cases, revealed the existence of disordered physical health as the efficient cause of insanity, and the religious depression, or other moral manifestations, as only exciting causes, or as incidental effects. This established, was an important advance. Rest, nutrition, medication, could then be presented, in truth, as the relief of sorrow. The decrease of religious anxiety, as an attributed cause of insanity, has therefore not been because people have been more or less religious at one period than another, or that new religious views have in the meantime been advanced. It is simply because of the steady progress of medical knowledge, deduced from patient investigation, intelligent observation, and careful analysis of facts. Upon this point, then, what have we practically gained? These cases, thus understood, may be properly inquired into by spiritual as well as medical advisers, through their physical condition, and the sufferers themselves, especially in the earlier stages of melancholia, (the form of mental disease of which religious depression is so often an accompaniment,) will, when assured that their supreme unhappiness is but reflected from their physical depression, be more likely to understand their condition, and to appreciate and acquiesce in the necessary remedies for their restoration. Again, what an amount of

anguish among friends is removed by the knowledge that this depressed state and awful sense of sin and guilt, of being forsaken of God and man, is indeed only a cloud without wind or rain—a weary, darkened spirit from weakness of the flesh—a shadow which will be dissipated on returning health, as the sun chases away the night by his coming.

The solution of cases, under this cause, is the solution of causation in melancholia in general, and of many cases, under other forms of mental disease, supposed to be dependent on moral causes, especially jealousy, suspicion, grief, excessive study, and kindred influences. I have too frequently witnessed these supposed troubles vanish under returning health to doubt on this matter. To discover, then, under such supposed moral causes, that the true source of disease lies in physical disorders, is equivalent to substituting rest, sleep, food and medication for moral reasonings and difficult and vexed theological problems, and thus to bring the case within the range of medical skill. If these means will dispel the delusion of having committed the unpardonable sin, or of being turned into beasts or demons, and relieve and remove that general sense of intolerable misery which impels so many to attempt self-destruction, as the only possible means of relief, then the physician will feel hopeful in the labor before him. We indeed think it is safe to infer that religious anxiety is rarely if ever a cause of insanity. The sublime faith of Christianity is rather a safeguard against it, and is unquestionably a support under its scourging. We do not believe that insanity is produced by this cause directly, by a profound impression made through the

sentiments and emotions upon the nervous system; or indirectly by gradually undermining the general health. It will hardly be argued that depression is a phase of religious experience. As a general thing, the most wretched melancholics are members of churches, and often are the most humble and exemplary. However, a full answer in our experience is in the fact that this class of patients are gradually relieved of all depression and anxiety as health returns, and free from it on its full restoration."

Investigation and clinical observation constantly strengthen the conviction that more careful inquiry into this subject, by a more searching examination in each case on admission, and more patient and exhaustive inquiry of friends, with more thorough record and sifting of clinical facts while the patient is under treatment, would reveal, in a larger number of cases, the real operative causes inducing insanity. Such inquiry must also tend to place study and treatment on a true foundation,—that is, of disease. Unfortunately, superstition and ignorance long prevented calm investigation, and stamped the disease, in general estimation, and, in a large measure, in the view of medical men, as one but little amenable to treatment, and as mainly a condition demanding custody for safety. And this state of things unhappily still exists to such a degree as greatly to embarrass inquiry, and can only be dissipated by such investigations as will place insanity in the category of nervous diseases, to be studied and treated as other bodily diseases.

The history of hospitals for the insane for many years past is an invincible argument in this direction.

Their transfer to the exclusive care and control of medical men; the increase of the medical staff of hospitals; the disuse of harsh and cruel means of restraint; the greater attention to medication, diet, ventilation, and all hygienic means; all indicate the subordination of custodial to medical considerations in the conduct of such establishments. *Post mortem* examinations have, in many cases, verified the assumed patholical causation, and revealed the consecutive changes in the progress of the disease and the relations of symptoms observed to these changes, in a sufficient number of cases, to justify and encourage more careful and exhaustive investigation. Besides, the advance in physiological and pathological anatomy, in the progress of medical science, offers constantly increased and more reliable means of prosecuting such inquiries. The special attention now given to the nervous system, by the most able observers, is a further inducement to push inquiry in every possible direction, but especially toward changes in the functions or organic structure of the nervous system, that can throw any light on the subject. Again, the vast number of insane, and the possible fact of increase of the disease beyond the ratio of the increase of population, makes it all the more important and imperative that no opportunity should be neglected which promises the least light or relief.

Two years ago I recommended the appointment of a special pathologist, that such investigations might be made as are demanded by the progress of medical science. The managers of the asylum responded to this recommendation, and the results were so satisfactory, that I felt fully justified in asking that the appointment

should be made a permanent addition to the medical staff. The facts and reasons for this were contained in my last annual report. Before it was transmitted to the Legislature, the portion relating to pathological work was submitted to His Excellency, Govenor Hoffman, who, in his annual message, made the following recommendation:

"In connection with the subject of insanity, I respectfully suggest that you will give favorable consideration to the application which will be made on behalf of the State Asylum at Utica, for authority to appoint a special pathologist for the duty of making such investigations as seem to be now demanded by medical science. The reason for this will be fully stated in the report of the superintendent of that institution, which will be transmitted to the Legislature."

A bill was passed by the Legislature authorizing the appointment of a pathologist, and Dr. E. R. Hun, who had filled the place for a year, was appointed. The course I suggested last year was to embrace—

"*First.* Examination of secretions in all stages of the disease."

"*Second.* The pulse under the sphygmograph to determine its force and character, and whether any, and if so, what co-incident relations its various phases may bear to physical states and psychological manifestations."

"*Third.* The pulse under the sphygmograph to show the influence of medicines on the circulation."

"*Fourth.* Examination with the ophthalmoscope to ascertain the relations of morbid changes in the optic nerve, vessels, &c., of the eye, to pathologic conditions of the brain and its membranes."

"*Fifth.* The skin, its temperature, color, elasticity, sensibility, &c., in the several forms and stages of the disease."

"*Sixth.* *Post mortem* appearances, generally, and microscopically."

"*Seventh.* Photographic representations of morbid conditions and specimens."

The experience of another year has given no cause to change that course of investigation.

While experience shows that the morbid conditions of organs and tissues more frequently act on the brain than the converse, and thus disease of special organs, and general ill health from lowered vitality, precede and become the cause of the morbid state of the brain, ultimating in insanity; still there are cases where the general ill health and the insanity are due to an overworked brain, or the anxiety and prolonged tension and sleeplessness which are often the result of grief and pecuniary losses. Even here, however, the cause is physical, because insanity comes on only as a result of defective nutrition in the tissues, those of the brain included; the sleeplessness and deprivation of rest acting powerfully, not only against appetite and the simple ingestion of food, but also by wearying the nerve-tissues, and preventing ultimate cell nutrition. Thus some persons fail suddenly and rapidly, and die unexpectedly. We say these die of exhaustion. But they are not always emaciated, and thus exhausted. The brain gives way, fails in vital energy, and death ensues. Here the morbid action is not in the nature of shock,—of sudden arrest of heart-action by a sudden and powerful impression on the brain,—but of tension and wearing effort, steadily and powerfully depressing the vital energy.

We see constantly the influence of mental exercise and occupation on the health and growth of the brain. We recognize here the physiological law, that due exercise of an organ promotes its development and power. We recognize also a limit to this occupation, beyond which it is injurious. A child can not profitably, or consistently with health, occupy the brain beyond a certain number of hours without rest. If mental work

is pushed too far in children, growth may be arrested and cerebral development also. A development in bodily size may proceed, but the structure may be delicate. It is unquestionably true, also, that many bright children, under attempts at over-education, exhaust the vital energy, and recuperative growth in brain-tissue is lowered, while the animal functions are carried on well. The boy developes a strong, well-proportioned body, but is dull. Many parents and teachers are thus disappointed. This law, which runs through growth, applies equally to maturity; however, with this difference, that in maturity excesses bear fruit always in disease. And it may be truly said that, as a rule, the brain is the last part of the organism to yield to disease, even under its own overwork and excesses. Says Dr. Gull, "the flatulent dyspepsia of the student, the tears of the distressed, the dry mouth of the anxious, and the jaundice of fright, daily remind us how far the cerebral influence extends."

In insanity, therefore, we have the dominating organ always deranged in function if not further. Whatever the cause may be, physical or mental, or whether the brain is primarily or secondarily affected, the condition in insanity is cerebral disease. Disease is what we have to deal with. Not disease of mind, for the mind, the spiritual principle, the immortal being, can not be the subject of disease. The manifestations of the mind are disturbed and disordered when the brain, which is its organ, suffers. How mind and body exist here together in harmony in health, is quite as inexplicable as their disturbed relations in disease. Inquiry may never be able to solve the mystery of the relation between

thought and the physical organism. "This our faculties are incompetent either to decide or to discover, but this short-coming of man's intelligence affects neither his duties nor his hopes, neither his fears nor his aspirations." [*Rolleston.*]

The expression "disease of mind" should have a place in the nomenclature of modern medical science with witchcraft and demonomania. They are alike the offspring of metaphysical speculation, alike misinterpretations of phenomena. Plato and Hippocrates, in their day, respectively represented the metaphysical and medical aspects of this disorder of the brain. Plato considered insanity, on the whole, a blessing. "A sufficiently clear proof that the Deity assigned prophetic power to *human madness* is found in the fact that no one in his right senses has any concern with divinely inspired and true prophecy, which takes place only when the reasoning power is fettered by sleep, or alienated by disease or by enthusiasm." [*Timæus.*] Again: "The greatest blessings we have spring from madness, when granted by divine bounty. For the prophetess at Delphi, and the priestesses of Dodona have, when mad, done many and noble services for Greece, both privately and publicly; but in their sober senses little or nothing." [*Phædius.*] Says Hippocrates: "Men ought to know, that from nothing else but thence [the brain] come joys, despondency and lamentations. And by this, in an especial manner, we acquire wisdom and knowledge, and see and hear and know what are foul and what are fair, what are bad and what are good, what are sweet and what are unsavory; some we discriminate by habit, and some we perceive by their utility. By this we dis-

tinguish objects of relish and disrelish, according to the seasons; and the same things do not always please us. And by the same organ we become mad and delirious, and fears and terrors assail us, some by night and some by day; and dreams and untimely wanderings, and cares that are not suitable, and ignorance of present circumstances, desuetude and unskillfulness. *All these things we endure* from the brain when it is not healthy."

To the philosopher or metaphysician, insanity is what they may choose to make it. To one of the sublime faith of Plato, who referred all the phenomena of nature which he could not interpret to a divine power, it is not strange that insanity should seem to be from the gods. Others, from another stand-point, have considered it also supernatural, but have assigned the phenomena to the influence of devils. To Hippocrates, who was a patient, earnest physician, who, with wonderous success, studied morbid phenomena, insanity was from an "unhealthy" brain. To others, again, to whom faith is not given to believe more than they can see and understand, or who do not choose to believe more, mind and all mental phenomena are mere physical results: mental manifestations of whatever order, hopes, fears, joys, sorrows, immortal longings, deep affections, are, like hunger and thirst and pain, but expressions of a physical organization; the restless mind of man, instead of being all we believe of it, an immortal spirit manifesting itself in this life and in this body, preparing for a life to come, and using the brain as an organ or instrument for its purposes, is a mere secretion of the brain, depending on its existence, and sickening and dying with it. Are we to account for anger, rage,

jealousy, grief, and all the violent manifestations of the passions, as physiological states or disturbances of "brain secretions?" In physiology, causes and results must bear a uniform relation; and we should have for so much grief so many tears, for so much provocation so much anger, and the like. Instead of having varied manifestations in the same individual, as well as in different individuals, from the same causes, the manifestations should be uniform. Cabanis, who wrote nearly a century ago, expressed the materialistic theory thus:

"To obtain a true idea of the operations by which thought is eliminated, the brain must be considered as a particular organ, especially designed for its production; even as the stomach and intestines for carrying on digestion, the liver for secreting the bile, the parotid and maxillary and sublingual glands for the preparation of the salivary secretions.

"Impressions, on reaching the brain, stimulate it into activity; as aliments, being introduced into the stomach, excite it to a more abundant secretion of the gastric juices, and to those movements which favor their proper assimilation. The natural function of the one is to receive every individual impression, to attach to it certain indices, to combine the different impressions, to compare them among themselves, to draw from them certain judgments and determinations; as the function of the other is to act upon nutritive substances, whose presence stimulates it, to dissolve them, and to assimilate their juices to our nature.

"If it be said that the organic movements by which the functions of the brain are executed are unknown to us, it may be replied that the action by which the nerves of the stomach determine the different operations constituting digestion, the manner in which they impregnate the gastric juices with the most active dissolving power, do not disclose themselves more to our researches! We see the aliments pass into the viscus, with new qualities, and we conclude that it has really caused them to undergo this alteration. We equally see impressions arise to the brain through the medium of the nerves; they are then isolated and without coherence. The viscus enters into action; it acts upon them, and soon it evolves them transformed into ideas, of which the language of physiognomy and of gesture, or the signs of speech or writing, are the

outward manifestations. We conclude with the same certainty that the brain in some manner digests the impressions; that it produces organically the secretion of thought.

This, then, fully resolves the difficulty raised by those who, regarding sensation as a passive faculty, do not understand how the acts of judging, reasoning, imagining, should be nothing else but perceiving. This difficulty vanishes, when we recognize, in all these different operations, only the action of the brain upon the impressions which are transmitted to it.

"But if, moreover, we observe that the movement, of which every action of the organs presupposes the existence, is in the animal economy only a modification,—a transformation,—of sensation, we shall see that we are excused from making any changes in the doctrine of the modern analysts, and that all the physiological or moral phenomena are always brought back, in the last result, to the faculty of sensation." [Cabanis, *Rapports du Physique et du Moral de l' homme*, vol. i, p., 124.]

Recently Dr. W. A. Hammond, of New York, in a work on "*Sleep, and its Derangements*," has reasserted this old theory, and expresses his views of mind in the following language:

"Writers who contend for the doctrine of constant mental activity, regard the brain as the organ or tool of the mind; a structure which the mind makes use of in order to manifest itself. Such a theory is certain to lead them into difficulties, and is contrary to all the teaching of physiology. The full discussion of this question would be out of place here; I will, therefore, only state that this work is written from the stand-point of regarding the mind as nothing more than the result of cerebral action. Just as a good liver secretes good bile, a good candle gives good light, and good coal a good fire, so does a good brain give a good mind. When the brain is quiescent there is no mind."

It will thus be seen that the introduction of materialistic theories, even into the domain of psychology, is nothing new. Neither is Cabanis the only French writer who has pushed Locke's theory of sensation to its ultimate results of materialism and atheism But it would be a thing much to be deprecated, that the gen-

erous and catholic spirit of modern scientific investigation should be narrowed and hindered by an attempt to revive the exploded vagaries of the French materialism of the encyclopedists and the Revolution. The best writers of the present day, however, if they refuse to bend the conclusions of science in the interests of religion, on the other hand will much less consent to commit science to a purely conjectural theory, which militates against moral order and social welfare no less than against the common sense of mankind.

We do not look at mind from the stand-point of regarding it "as nothing more than the result of cerebral action," and therefore as a material substance, a mere secretion liable to disease and death. We regard the brain as the organ of the mind, and we cannot perceive that such a theory conflicts with physiology or is contrary to its teachings. If the mind is a material substance, a secretion of the brain, as bile is a secretion of the liver, then the sublime faith of the Christian religion is of little consequence to man, and they who work for the advancement of medical science truly labor in vain. If, however, this body is what Revelation declares it to be, (the temple of the mind or spirit which in it dwells, awaiting a life to come,) and what science shows it to be, a living organism, *under definite laws*, then it is worth our care, as the dwelling-place of an immortal being.

Says Dr. Acland, in an address at Oxford, before the Medical Association of Great Britain and Ireland, when taking the chair as President,—"The physician sees in the body of man the material structure by which alone the known operations of the mind of man are possible

in this world, the organs by which alone he can work his earthly work, whether it be the work which he shares in common with the beasts of the field, or the work through which he can enter into conscious relation to his unapproachable Creator: the frame by which, while bound down in an earthly charnel-house, he lifts his eyes and strains his heart with yearnings ineffable towards a higher nature, and obeys the upward-tending impulses of affections strong unto death, affections so pure and so divine as to lose in the love of others even the consciousness of self."

We do not believe that mental phenomena can be accounted for by physiology, much less that the teachings of physiology necessitate or even lead to materialism.

Professor Rolleston, who stands in the foremost rank of teachers in Physiology, uses this emphatic language:

"The Physiologist as such has nothing to do with the data of psychology, which do not admit of being weighed or measured, nor of having their force expressed in inches or ounces." Psychical manifestations, mental phenomena, he declares to be "facts in just as true a sense as any which scalpel or callipers, which weights or measures, can disclose;" and holds "that our higher and diviner life is not a mere result of the abundance of our (brain) convolutions." And again: "I believe, however, that, if men would take as much and the same care in these psychological questions as the physiologist does in his experiments and observations, to overlook none of the conditions and circumstances of the entire complex of phenomena upon which they undertake to decide, they would come to see that alone,

and often behind, but always beside and even beyond the whirl of his emotions and the smoothly fitting and rapidly playing machinery of his ratiocinative and other mental faculties, there stands for each man a single undecomposable something—to wit, himself. This something lives in his consciousness, moves in his will, and knows that for the employment and working of the entire apparatus of feelings and reasonings, it is individually and indivisibly responsible. Its utterances have but a still small voice, and the turmoil and noise of its own machinery may, even while working healthily, entirely mask and overwhelm them. But if we withdraw ourselves from time to time out of the smoke and tarnish of the furnace, we can hear plainly enough that, howsoever the engine may have come together, and with its present being, the *engineer*, at all events, is no result of any process of accretion and agglomeration. Science, business, and pleasure are but correlations of the machinery in its different applications and activities; *we* are something beside all this, manifesting ourselves to others in the decisions of our *will*, and manifesting ourselves to ourselves in our aspirations and consciousness of responsibilities."

Says Mr. Herbert Spencer: "It may be safely affirmed that physiology, which is an interpretation of the physical processes which go on in organisms in terms known to natural science, ceases to be physiology when it imports into its interpretations any psychical factor, a factor which no physical research whatever can disclose or identify, or get the remotest glimpse of."

Prof. Lionel S. Beale says: "Every one will admit that the nerve-tissue of the brain is the instrument

through which alone thinking power works and mind acts." He subsequently thus disposes of the materalistic theory of mind:

"Some have looked upon brain as a sort of gland by which thoughts and ideas are formed or secreted, as if thought, which can neither be touched, weighed, measured, or in any way physically estimated, was a thing allied to the bile, the saliva, or the gastric juice, which are material substances, and can be analyzed and otherwise experimentally studied. It would not be more unreasonable to maintain design or will to be a part of the material framework of the organism, than to assert that mind, like certain kinds of matter, is secreted. Thought is no more material than that peculiar capacity which makes living matter of a certain kind at length become oak, cabbage, dog, man, etc. Nay, it is further removed from the material, for while this property or power influences the very particles of matter, and makes them take up certain fixed and definite positions, thought only produces a sort of evanescent vibration, which results in the expression of ideas which are themselves as immaterial as the thought itself.

"Mental energy has been regarded as the *function* of the brain, but if it be so, it is a *function* of a very different order from that discharged by other organs. *Function* implies an act in which will, purpose, design, are not concerned, and in which material changes can be proved to take place. The function of a gland is to produce a secretion. Certain conditions necessitate the production of this or that particular secretion, which may vary to some extent, according as the conditions are changed. The function of a muscle is to contract and become relaxed, but the material change only occurs in definite directions, necessitated by the structure of the instrument and the force which acts upon it. The exercise of choice is neither possible nor conceivable. So, too, with reference to the function of nerves. These transmit currents. The paths which the currents are to traverse having been determined and formed, the currents are developed and transmitted along the nerves.

"But the *function* of the organ of the mind is an operation very different from any of these. Its great characteristic is choice—selective capacity. If the cells of the liver chose for themselves whether they would secrete bile or not, or determined the kind of bile to be secreted, or the bile chose for itself by which ducts it should pass, whether it should flow quickly, slowly, or not at all; if the muscle contracted now in one part and now in another, ac-

cording as it willed—if it elected to contract in one direction, and then in a different one; if the nerve cells decided among themselves which should produce current and which not; if the current chose to run along one fibre at one time and then along another, according to the object it had in view—then, but only then, as it seems to me, could mental activity be regarded as in any way analogous to the function of an organ or of a tissue. To look upon mental action as a mere function of the brain is a fundamental error, and unpardonable in those who have really studied the structure and action of secreting organs and nerve organs.

"Mental activity may rather be compared to that marvellous power, property or force, which enables the liver cell to *form* what we call bile, which renders possible that change in shape of the ultimate particles of muscle which gives rise to contraction, and determines the change in the ultimate molecules of nerve matter upon which the current depends; but this power is not the function; it is that which alone renders function possible. But even this comparison is not a true one, for the power above referred to acts as if it were of some necessity, while the remarkable characteristic of mental action is freedom of choice. Certain conditions given, the liver cell *must* form bile, the muscle *must* contract, the nerve cell *must* give rise to, and the nerve fibre *must* transmit, the current; but is it conceivable that under certain conditions actual or supposed, the brain *must* think? Is what I am now writing but the result of the distribution of a little extra proportion of certain nutrient constituents and oxygen to my nerve cells, which thereby compels me to say all these things? Have I no choice?—*must* I say all this, and in the precise way in which it is here said? All these things would surely have been said in a far better and more perfect manner if the ideas had been formed like a secretion by a gland, independently of experience and without any efforts of my own. All our glands perform their work perfectly when their formation is complete. They require no teaching, and they work without effort. There is nothing in the action of a gland which at all corresponds to the improvement in capacity resulting from exercise, which is so remarkable in the case of cerebral nervous action. The general tissues and organs at least of those persons who have reached or passed middle age, performed their functions some years ago as well as, and I fear in some respects even better than they do now. *Will* has exerted, and can exert, no direct influence. But it is very different in regard to the organ of the mind and the the tissues concerned in intellectual action. Every one knows that the degree of perfection which that has attained, or will attain, is determined in great measure by his own efforts—by his own will.

The thinking instrument of one individual is not capable of being perfected in the same degree as that of another, but it is quite certain that each may be improved and made to work more perfectly, if its possessor determines that this shall be; nay, I think I may say, if he will not interfere actively to prevent its improvement; for the natural tendency of the mind is to exercise itself, and, in doing so, the instrument, which it directs, necessarily improves. As the mechanism becomes more perfect, the pleasure afforded by its working becomes greater, and to real desire and sustained effort on the part of the mind soon succeeds improvement in the structure of the healthy instrnment by which the attainment of the end desired is rendered possible." [*Med. Times and Gazette.*]

Dr. Thomas Hun, in an article in the AMERICAN JOURNAL OF INSANITY, in 1846, on the "*Relations of Physiology to Psychology*," says: "Some have denied the existence of mind, and have made thought an attribute of the substance of matter. These are the materialists. Others have made matter only a mode of manifestation of mind. These are spiritualists. While a third class have endeavored to find a third term which should include both matter and mind." These classes have been denominated Somatists, Psychists, and Somato-Psychists. Under either theory of investigation, Dr. Hun, at that early day declared it impracticable to advance in psychology, and experience has verified this, as shown by the declarations of Rolleston, Spencer, and Beale. "We have to study," says Dr. Hun, "not the nature of the two substances, nor the nature of their relations, but this relation itself as it manifests itself to the senses and to consciousness. The great questions for us to answer are these: what nerve movements correspond to given mental acts? what is the mechanism of these movements? and how are the mental acts affected by changes in the nervous matter in the rest of the body? . . . . . Physiology

is a science of facts cognizable to the five senses, and uses the same modes of investigation as the other physical sciences. Psychology is the science of mind. It is founded on facts of consciousness which are not cognizable to the senses. It embraces all the mental operations, which are very different from changes in nervous matter, and hence psychology is not merely a chapter of physiology, but a separate and independent science."

To sum up this whole subject, there are to be observed two prominent and vitally important points, which, to our mind, demonstrate the utter falsity and even impracticability of the materialistic theory of mind. One is *spontaneity;* the other, *responsibility.* The idea or notion of spontaneity we know to be a reality of our own consciousness, as patent and demonstrable as any fact of science, and yet, to use the precise and clear-cut scientific language of Herbert Spencer, it is impossible to make this spontaneity a "factor" in any mere natural or physical process whatever. Our very conception of the material altogether forbids it. Even in that last step where physical science approaches nearest the domain of metaphysics, the attempt to arrive at some definition of Force itself, the idea of spontaneity is by no means begun to be reached, or in any way involved. When it comes to that, it comes to God himself, whatever man may choose to name Him, "Jehovah, Jove, or Lord."

The other point, which is the notion of moral responsibility, is one remove further even than spontaneity, from all conception of the material and therefore much less reducible to any physical or material process. It would be as easy to deny *in toto* intellectual phenomena as to deny the reality of our idea of moral

responsibility; but the notion of responsibility itself is a direct contradiction of the idea which arises out of such a thing as physiological secretion, or any other mere process of nature governed by definite and unchangeable laws. It would be impossible to connect the two, or in Herbert Spencer's phrase, to make them coördinate "factors" in any intelligible result whatever. Whatever the animus of such a position may be, the result must be the getting rid of the idea of moral responsibility altogether. Science of this kind, instead of being a blessing to the world, would contribute only to anarchy and moral disorder, even if it did not utterly destroy the self-respect of any one who should profess himself proficient in it.

Science needs neither doubt nor skepticism as a condition for her advancement. Her aim is to discover and read the laws and processes of nature herself, imprinted by the Creator, and she works, to use the language of Bacon, "Keeping the eye steadily fixed upon the facts of nature, and so seeing their images simply as they are." We believe that physiological science will so advance that every process in the complex phenomena of physical life, in health and disease, shall be read and revealed and understood.

The true and only method by which insanity can be studied is that followed in all other diseases. The physical lesions are the subjects of primary importance. These must be studied through physiology and pathology. The mental manifestations are here secondary and dependent. "Organs and tissues," says Dr. Gull, "have each their own life, and correlative with it, their own tendencies to disease, and their specific power and

mode of repair," and "the purpose of our study is to trace these tendencies to their source on the one hand, and to their effects on the other."

We say that insanity is a bodily disorder; that it is a disease of the brain. This does not imply that there is something to be thrown off, in the character of some morbid entity. It simply means that certain changes have taken place in the brain, or its investing membranes, which imply a departure from healthy physiological action, and that in consequence of these changes there is more or less prolonged disturbance of the mind. The physician recognizes the delirium of fever, and refers its origin to the brain. The convulsions of infancy and childhood, from the presence of worms in the intestines, or indigestible materials in the stomach, or the process of teething, he refers to the brain. In the former, he may refer the remote cause to some poison; but the immediate cause is a tissue-change. If this change is gone through with within certain limits, he looks for recovery; if not, under further tissue-change, the patient sinks and dies. The remote or predisposing cause of the latter he calls morbid irritation. If the stomach and bowels are emptied of the offending matters, and the irritation of teething relieved before tissue-changes follow the convulsions, recovery will take place. In other words, if the constitutional disturbance of the nervous system, in the one case, from poison, and the local disturbance of the nervous system in the other, from irritation, may be relieved before certain organic changes occur, recovery takes place; if not, partial recovery, or death, results.

If the carotid arteries are pressed upon by a tumor, or the circulation of the brain interfered with by aneurism, we have what is denominated a hyperæmic state of the brain; not a determination of blood to the brain, but the blood detained by the vessels dilated. Clinical study and physiology have taught us to anticipate the resulting consequences of such a state. The physician is not surprised to find insanity follow; but this is the exceptional result. He is quite as likely to find failure of the general health, from feeble action of the heart, due to the condition of the brain. Again we have an anæmic or bloodless condition of the brain from copious hemorrhage after childbirth, or from other causes, and general enfeeblement results, or convulsions, delirium, or insanity may follow. Can we, by careful clinical observation, ever be able to determine why one should result, instead of the other? or why we may have in such a case—convulsions, then delirium, and afterwards insanity? Can we hope to answer these questions, without the aid of pathological investigations, made *post mortem?* We may be satisfied to reply that convulsion follows hemorrhage, under the physiological law that muscular spasm supervenes upon sudden and copious loss of blood, because muscular irritability is thus increased, and that the pathological state is one of depressed vital energy, and here we have a clue to treatment. Delirium following convulsion, or following the hemorrhage without convulsion, we may also explain under physiological and pathological laws.

Now should we stop inquiry here, when insanity results? Can we admit that insanity is anything more or less than a pathological condition, or that it lies beyond

the boundaries of ordinary and legitimate medical study, and beyond the range of clinical observation or pathological investigation? Will not the patient study which elucidates one be likely to elucidate the other? But in the latter the mind is affected? So is it in delirium. So is it, in a degree, in its operations, in all diseases, when the brain is in any way involved. So is it, when the brain is under the influence of alcohol, or certain drugs. In all abnormal conditions of the brain, however induced, we have a degree of disturbance in mental operations. At a certain stage of intoxication, there is consciousness of the fact, and full control and direction of mental operations; at another stage, the brain, the instrument or organ of the mind, as we believe, is so overwhelmed that it cannot be used. We recognize in all these conditions simply physical disturbance, either physiological or pathological. A proper regard for the teachings of physiology does not require that, in the last condition mentioned, when the brain is "quiescent," we must conclude that "there is no mind." On the other hand, it will not be argued, that, in these conditions of mental disturbance, there can be either a physiological or pathological state of *mind* itself! We do not *treat* these mental phenomena; but we regard them simply as exponents of physical states. We hold that it is not necessary, in order to establish the physical origin and nature of insanity, or other cerebral diseases, to show that every case is of such origin and nature. If, in a single case, insanity is shown to come on as the result of well-recognized bodily disease, and the mental disturbance disappears *pari passu* with the physical restoration, the argument is invincible.

We do not treat the mental phenomena which appear, as indices of the cerebral disorder; but we point out to the patient his changed mental condition, and endeavor to show him that his delirious conceptions are delusions, and result from the morbid condition of his brain; and that with restoration to health these delusions and misconceptions will vanish. Many may be convinced of this; and though the delusions do not disappear with this conviction, yet persons may, and often do, so far keep constantly in mind their true condition, and exercise such control as largely promotes their recovery. The mind, by this effort, uses the brain; and, by the exercise of its legitimate dominating power, moderates its action in some directions, and increases it in others. The mind "exercises choice," and controls itself, and by limiting and modifying its use of its organ, the brain, aids in the restoration of that organ. In many instances people recognize the approach of insanity in themselves,—not simply from vague and unusual sensations as pains in the head, sleeplessness, etc.,—but recognize a marked change in their way of thinking, feeling, and acting; a change which not only does not commend itself to their judgment, but is also against and repugnant to their wishes and desires. Under such states of mind persons come to the asylum for advice; and since my connection with it, a number have come thus alone, and insisted on admission. I have mentioned some of these cases in my reports. In one instance, the person made application himself to the county judge, obtained an order for his admission, and brought it himself. Another case was that of a woman who came from a distant part of the State, and informed me that she had

left home in the night, without the knowledge of her family, because they did not believe she was insane, and would not assent to her coming to the asylum: asked me to telegraph her arrival to her family, and write and explain to them her case. She then stated to me how delusions developed while she was watching over an invalid mother; that she recognized the delusions, as such, but as she failed in health was unable to do so at all times, and therefore felt she must be getting insane. She remained, and after a time passed into a state of acute mania, and, when apparently recovering, committed suicide.

Another case was that of a young girl. She for some time observed in herself periods of mental depression and exaltation: after a time strong suicidal suggestions came during the periods of depression, and during those of exaltation, an idea that she was destined for some great work in the church. She thought she might be insane. Her health, never robust, was gradually failing. She left home in the night to drown herself in the canal, but on reaching it she was quite chilled, the night being cool. She then thought her changed condition might possibly after all be insanity, and not the despair of a lost soul. She therefore resolved to come to the asylum, and state her case, and then, if she were insane, try and get well; and if not considered insane, end an existence which to her seemed only an injury to the world. She first stated her case, and when told she was insane, related the circumstances above, which were verified. She actually walked into the water. She remained in the asylum, passed into deeper melancholia, and then became demented,

and finally recovered. Both these women were feeble and anæmic, the blood lessened in quantity, and depreciated in quality.

I could present, from my recorded experience, a number of such illustrations, showing the appreciation of insanity and the dominating power of mind. In the wards of the asylum this is a daily experience. Patients not only recognize that they are insane, but make every effort at control; and many take food and exercise,—to both of which they feel the extremest repugnance,—simply as a duty, and stimulated by the hope of recovery *held* out to them, and which hope they only faintly grasp. While writing I am interrupted by the admission of two cases, a man and woman. The friends and physician of the man represent the case as a recent one, dating but a few weeks back to some eccentric conduct; and declare the case as somewhat remarkable, because they can find no cause for the insanity. Yet a careful examination shows that the man has been steadily breaking down in general health for two years. That he is generally anæmic, and has cerebral anæmia to such a degree that his pupils are not only enormously dilated, but scarcely contract at all under the influence of light. He has hallucinations of sight and hearing, from this condition. He moves about the office like a man half dreaming: admits he is sick, but does not see why he should be called crazy. When asked how he reconciles certain conduct with sanity, says he never was guilty of it. When all the circumstances are related to him, he replies, "I have some recollection of that, but I do not know why I did it." He has great muscu-

lar languor, has passed the period of cerebral excitement, and is dementing.

The woman denies her insanity. Says she is a great magnetic healer; has received the baptism of the Holy Ghost, and unction from God; that her mind has been illuminated so that she understands science, because it is revealed to her; that she will let the world know this change, and intends to speak in Mechanics' Hall, in Utica, and show what true religion is, and what magnetic healing is. She admits she has not been well for months, and has suffered from intense headaches; but claims she is now well, better than she has been for years. She is incoherent in conversation, exalted in her ideas, disdainful in manner, indignant at being called insane, threatens the consequences of confining such a person as she is. Her muscles are tense. She moves about the office with great muscular firmness, and spasmodically closes her hands and compresses her lips. She is anæmic, almost colorless. Her pupils are greatly dilated; her gums and tongue are pale. Although she is indignant, angry, her emotions wrought up to a high point, and she is on the verge of maniacal raving, she does not change color. This woman's whole appearance, conduct, and manner of speech, are in direct contrast with her character in health. The anæmic state of the brain is the cause of the insanity. The muscular system is in a state of abnormal activity, "a neuropathology from the brain to the tissues." This patient has good appetite and digestion, and says she is free from all pains or uncomfortable sensations. Has this woman disease, as that term is ordinarily used and understood in medicine, or is the brain, in the language of

materialism, "secreting force"* of abnormal quality? We say, the mental phenomena are due to the anæmic condition of the brain. This woman has a large active brain, and it dominates over the whole organism, in its present state. While she is really in a state of debility, the brain exercises power over the voluntary muscles quite as fully in this state of irritation, with a pulse under 80, as it would in the vascular activity of fever delirium, with a pulse over 100. However, the cause to be truly assigned in these cases, is the generally depressed health, inducing the anæmic state of the brain, and nervous system. Both these cases are brought to the asylum as soon as the insanity is recognized, as both are surrounded by intelligent friends, and have conscientious phycicians. The former of these cases might have been treated at home, if his physician had received the same degree of instruction in regard to insanity that he did in regard to apoplexy, paralysis, and other disorders of the brain and nervous system. In contrast with this prompt action in securing treatment, is the unfortunate delay in the vast majority of cases until the period of recovery is past. Such fatal delay has characterized more than half of the 480 admitted to the State asylum this year. Many of those received have not only suffered from delay, but from injudicious, though well-intended treatment. Cases of melancholia from over-work, and the gradual failure of the tissues from age, and the consequent lowered vital energy, have been bled, blistered, setoned, and purged. Old ulcers, which nature had kindly

*The mind of man may be defined as a force developed by nervous action.—*Journal of Psychological Medicine*, July, 1870.

healed for years, re-opened afresh,—all under the vague general idea of counter-irritation, and this when irritation from deficient and impoverished blood was a persistent pathologic state. In one case,—a feeble, old, melancholic women,—"a mercurial, alterative course," was added, producing salivation.

Without raising the question as to how far we have advanced in the recognition of the physical symptoms of insanity; or how far we are able to diagnosticate the disease by physical signs; or how far we should be able to verify a state of mind, claimed as insanity by the physical indications present; or how far we should be required, in examining criminal cases, in testing possible or probable feigning, to adduce physical signs in evidence; we may truly say, that only through pathology can we hope to advance in diagnosis. It is not necessary, for success in this direction, that we should attempt the study of the manner in which the spiritual being is associated with the animal existence, or to define the mysterious mutual relation and influences between them. It is sufficient that we should study the morbid or disordered states of body which are competent to induce such changes in the brain as cause that altered or delusional mental state denominated insanity; and the physical signs which indicate the existence and progress of such brain changes.

It may be safely assumed that experience has given us some fundamental starting points:—

1st. Disease of any part of the organism may be the pathologic cause of insanity.

2d. In such cases insanity is not manifested until the brain is actually involved.

3d. Disease of the brain or its membranes may be the primary, exciting cause of insanity, and other parts of the organism subsequently become affected.

4th. Insanity more frequently has its primary origin in pathologic states outside the brain, than in primary diseases of the brain.

5th. There are physical symptoms and signs of brain diseases, which experience has enabled us to recognize as pathognostic of certain brain-changes; by knowledge of which we are able to anticipate and understand the progress of cerebral diseases.

While we may admit that, in a given morbid condition of the brain and system generally, the treatment would be the same whether the brain or other parts of the organism were first affected, it is nevertheless of the highest importance to study and discover not only the relations of symptoms and morbid conditions, but the relations as to priority and sequence, for thus alone can we construct a true pathology, and thus alone establish an intelligent system of preventive treatment. If we can know the sequence of symptoms and conditions, we can anticipate and avert, arrest or modify the ultimate result of pathologic processes. If we can, by large clinical observation, determine what disordered states of the system are most likely to act on the brain, we gain an important point. It is for us to inquire, therefore,

1st. Whether there are specific changes in the brain in insanity, and if so, whether there are any means of ascertaining positively or proximately what those changes are?

2d. Are there physical signs and symptoms indicating the presence and progress of such changes, which may be detected and relied upon, and what these are?

3d. Are there *post mortem* appearances in the brains of those who die insane, which would justify the assumption that morbid cerebral changes were the potential and only ultimate causation of insanity?

4th. Are there any sound reasons for an assumption that the mind can overthrow itself, independent of cerebral changes?

5th. Do the secretions of the skin, kidneys, &c., throw any light upon the morbid condition of the brain in insanity, either regarding its pathologic state, its nutrition, or action?

The important questions in each case are: What are the lesions? What is the physical diagnosis? The gravity of the case is by no means measured by the intensity of the mental manifestations. It constantly happens that, associated with trifling changes, there is great mental disturbance, and but little with more serious lesions. What are denominated mental symptoms have a subordinate place in diagnosis as well as in treatment. The mental manifestations, indeed, have the same relation to diagnosis and treatment that mental phenomena hold in delirium tremens, fevers, and diseases of children. They are symptoms, but only significant of conditions of the nervous system, which *conditions* are to be treated. In all the disorders of the brain, we mark carefully what symptoms or groups of symptoms given cases manifest; and by this clinical observation, and by a knowledge of physiological laws, and by *post mortem* examinations we learn to interpret

the morbid changes going on within the skull. There are no reasons why insanity should prove an exception to this rule. Until within a few years, diseases of the spinal cord were obscure, and the differential diagnosis anything but certain. But the recent investigations of Bernard, Brown-Sequard, Kussmaul, Van der Kolk, Romberg, Radcliff, Virchow, Bouchard and other neura-pathologists have solved many of the greatest difficulties, and promise the most thorough elucidation of all. Among the most important practical considerations, overlooked in insanity, is the fact that organic changes in the brain are likely to occur very soon after the first morbid functional action is set up. To the lack of recognition of this fact must be attributed the vast multitude of chronic cases. Any bodily condition which disturbs the mind is too important to be overlooked or ignored. Prolonged wakefulness,—though it may not apparently disturb the mind,—indicates a condition of the brain which is not natural, and which should be inquired into. When this is associated with depression, groundless apprehensions, suspicions, and uneasiness, the case is one of grave import, and should command medical attention. Such a condition is significant of physical disturbance, and foreshadows insanity.

TABLE showing the analysis and the percentage of moral, physical and unascertained causes as recorded in the admissions for twenty-eight years.

ANALYSIS OF CAUSES.

	1843.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.
Moral Causes,	128	108	106	110	127	116	100	88	110	117	107	96	55	45	31	63	57	47	40	33	26	21	19	12				
Physical Causes,	93	93	93	95	139	160	141	242	229	261	292	231	187	158	157	221	212	237	184	197	208	242	261	263	321	296	378	432
Unascertained Causes,	55	74	94	132	162	129	121	37	27	12	25	63	33	39	47	49	43	53	71	57	53	56	76	113	80	86	85	49

PERCENTAGE OF CAUSES.

Moral Causes,	46.38	39.27	36.18	32.64	29.67	28.64	27.62	23.98	30.05	30.	28.07	24.62	20.	18.60	13.19	18.92	18.27	13.95	13.56	11.50	9.06	6.58	5.41	3.09				8
Physical Causes,	33.70	33.82	31.74	28.19	32.48	39.51	38.95	65.94	62.57	66.92	68.87	59.23	68.	65.29	66.81	66.37	67.95	70.33	62.37	68.64	72.48	75.86	73.35	67.78	80.05	77.49	81.65	85.66
Unascertained Causes,	19.93	26.91	32.08	39.17	37.85	31.85	33.42	10.08	7.37	3.08	5.89	16.15	12.	16.11	20.	14.65	13.78	15.73	24.07	19.86	18.46	17.55	21.24	29.12	19.95	22.51	18.35	11.34