Observations on the proximate cause of insanity / by James Sheppard, member of the Royal College of Surgeons.

OBSERVATIONS

ON

THE PROXIMATE CAUSE OF

INSANITY.

BY

JAMES SHEPPARD,

Member of the Royal College of Surgeons.

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TO

MARSHALL HALL, M.D. F.R.S. L. AND E. &c. &c.

DEAR SIR,

Honoured by your permission, I dedicate, with feelings of the most profound respect, this little treatise to you, sincerely trusting that you may long live to enjoy your well-earned reputation.

Believe me to remain,

Dear Sir,

Your's very gratefully obliged,

JAMES SHEPPARD.

27, Union-Street, Stonehouse Devon,
November, 1843.

PREFACE.

Although the ideas that I have ventured to promulgate, in this treatise, may be esteemed as purely theoretical and speculative, still, I offer no apology in introducing them to the notice of the profession, inasmuch as they involve considerations of great interest, an enquiry of momentous consequence, and are calculated to elicit practical information.

I trust, that what is advanced in the following pages, will be the means of inducing medical men having the charge of asylums, &c. to institute minute chemical and microscopic examinations, for the purpose of ascertaining if any appreciable deviation of the constituent particles of the

blood from the natural standard takes place in any, or in every case of mental derangement. I have at least adduced presumptive evidence that insanity may be more connected with the condition of the blood than has been heretofore considered.

The principal points to which I seek to direct the attention of the profession are—

1st. Is the mind capable of acting on the blood so as to alter its constitution?

2nd. Can any morbid conditions of the blood so act on the mind as to interfere with its perfect development?

3rdly. Can the blood in certain morbid conditions so interfere with the development of the mind as to cause insanity?

Daily observation convinces me that the "Humoral Pathology" is rapidly regaining ground, and that "the blood in which is the life," is the structure that is primarily affected in every disease. With the conviction that no investigation can take place without science being thereby benefited, I leave this little work in the hands of the profession, awaiting their verdict.

27, *Union-Street, Stonehouse, Devon,*
November, 1843.

OBSERVATIONS ON THE PROXIMATE CAUSE OF INSANITY.

CHAPTER I.

Many and elaborate treatises have been compiled on the subject of insanity, with the design of shewing in what it consists, and by what means it is immediately produced. Yet, strange as it may appear, in none that have fallen under my notice, is any allusion made to the relation that evidently exists between this disease and the condition of the blood. This relation has been either overlooked, or passed by as unworthy of consideration.

No experiments appear to have been insti-

tuted with the view of discovering what relation there is between the state of the blood and the perfect and imperfect development of the mind.

It is my object, in this treatise, not only *to prove* that a connexion does *frequently* exist between insanity and the condition of the blood, but also to raise *presumptive evidence* that that connexion is essential ; that is, that insanity does invariably depend on a morbid condition of the circulating fluid. This, so far as I am aware, has never been asserted, and, if so, cannot have been disproved.

This is the more remarkable, since analogy alone would lead us to infer that there must necessarily be some connexion between the vital fluid which is supplied to the brain, and the mind which is developed through the medium of that organ. I say, that analogy alone would lead us to presume, that the

whole functions* of the brain must be influenced by the condition of the blood, seeing that the due performance of the functions of every organ of the body is influenced by the condition of the circulating fluid. Indeed, when the nature of the alliance between the blood, the brain, and the mind, is fairly weighed, no one will, I think, doubt, that morbid conditions of the blood must interfere with the perfect development of the mind.

Hitherto, when the blood has been considered in relation to insanity, the unequal circulation, or the abnormal quantity of that fluid in the cranium, and not *the quality*, has been the object of remark.

That imperfectly arterialized blood, and

* By the mind being the function of the brain, I do not mean that the mind is secreted by the brain, which monstrous idea has been advocated by some authors, but simply, that the brain is the organ through which the mind is developed.

blood impregnated with alcohol, &c. convey to the brain elements that disturb the mental faculties, has, not unfrequently, been noticed. But, in the treatises on insanity that are extant, can anything be found to justify our believing, that their authors *duly* appreciated the relation which I believe to exist between the condition of the blood and the development of the mind?

Before entering on the immediate subject of this treatise, I consider it advisable to allude to the opinions which have been hitherto held as to the *organic* cause of insanity; passing by, for the present, the idea of the possibility of insanity resulting from disease, either of the entire mind, or of what is termed its *powers and faculties*, which is advocated by Sir H. Halford, Dr. Mason Good, &c.

The following extracts will, I think, prove,

that their authors either attributed insanity to disease of the brain, or of its membranes, or to malformation of the cranium; or that they knew not whether to ascribe the mental derangement to unappreciable lesion of structure, or candidly to admit their entire ignorance of the pathology of this disease.

Dr. Mason Good remarks, "Concerning the remote or proximate cause of the disease, we have yet much to learn. From the view we have taken in the Proem of the close connexion between the mind and the brain, it seems reasonable to conceive, that the remote cause is, ordinarily, dependent upon some misconstruction, or misaffection, of the cerebral organs; and, hence, every part of them has been scrutinized for proofs of so plausible an hypothesis; *but, hitherto, to no purpose whatever.* The form of the cranium, its thickness, and other qualities; the me-

ninges, and structure of the brain; the ventricles, the pineal gland, the commissures, the cerebellum, have all been analized, in turn, by the most dexterous and prying anatomists of England, France, Germany, and Italy; *but with no satisfactory result.* The shape, or thickness of the scull, has been stated, indeed, as a cause, by many anatomists of high and established reputation; but the conjecture has been completely disproved by others, who have found the very structures supposed to be most certain of producing madness, exist, in numerous instances, with perfect soundness of intellect. A particular shape of the skull seems, indeed, to be often connected with idiotism from birth, or soon after birth; but with no other species of derangement whatever."

Dr. Sutherland, in his second Lecture in the *Lancet* for the current year, says, "The

shape of the cranium does not appear to have any connexion either with the production or species of disease. Many of our uncured patients have very well formed heads; some, on the contrary, with badly formed heads, have got well."

Georget says, "One encounters among madmen the same formation of the head as among those of a sound mind."

The following remarks of Dr. Pritchard, are extracted from *The Library of Medicine* —"As insanity, uncomplicated with other diseases, is not fatal in any great proportion of cases, maniacs generally fall victims to complaints remotely, or not at all, connected with mental derangement. Some live to an advanced age, and wear out the vitality of the bodily fabric just like those who have maintained their reason to the last period of life." "Maniacs," says M. Esquirol, "do

not die in consequence of the cerebral affection which was the immediate cause of insanity. They perish "in typhoid, or ataxico-cerebral fevers, phthisis pulmonalis, epilepsiform convulsions, and accidental complaints." Maniacs who have died accidentally, have furnished no indications of disease. M. Esquirol says, "We had, at the Saltpêtrière, a young woman, 24 years of age, who was in a state of recent furious madness, free from all complication of disease: she was killed by one of her companions. The pupils who assisted at the opening of the body, were equally surprised with myself not to find any lesion of the brain, or of the meninges." It happens that the brain and the meninges are without lesion, although patients have lived maniacs for many years. It is certain that there have been maniacs in whom no cerebral lesion has

been found. To what conclusion do we then arrive? That pathological anatomy, notwithstanding the very important works of M. M. Foville, Calmiel, Bayle, and Guislain, has not yet made us acquainted with the organic cause of insanity."

M. Esquirol found, that, at the Saltpêtrière, *secondary organic lesions of the thoracic and abdominal viscera, were the most frequent phenomena discovered after death, and that, out of* 176 *patients, only six exhibited any cerebral disease.*

Dr. Copland says, "Most writers, and observing practitioners, have remarked the great number of instances in which the death of insane persons was owing to tubercular consumption and inflammation of the pleura. M. Greding found that 60, out of 125 insane persons, had more or less effusion into the thorax."

Doctor Copland also remarks, that "The development of serious disease of vital organs, seated in either the thoracic or abdominal cavity, and even of the system generally, seems to be favoured by insanity."

M. Esquirol states, that, of upwards of 600 examinations after death, three-eighths died of diseases of the abdomen, two-eighths of diseases of the chest, and three-eighths of alteration of the brain and its membranes.

Dr. Copland observes, "All we know is, that a certain degree of soundness of the brain is, usually, necessary to mental sanity; and that the mind shall be, in one case, severely affected by a slight change of structure; in a second case, but slightly disordered by most extensive disorganization; in a third, unaffected by very remarkable lesions of structure; and, in a fourth, most violently affected without any appreciable alteration."

M. Leuret remarks, that, "if it be true that insanity always depends upon, or is connected with, some lesion of the encephalon, it must surely be admitted that, as yet, *we are completely ignorant* either of the nature, or of the exact seat of the lesion." He also remarks, that "Every writer on the subject, without exception, admits, that, in some cases of insanity, no traces whatever of any alteration in the brain, or its appendages, are discoverable on the minutest examination."

M. Heinroth even maintains, "that the brain is a stranger to the production of insanity."

Dr. Graves, in his Clinical Medicine, after relating a case of puerperal fever, in which there was no phenomena capable, in the *remotest degree*, of explaining the occurrence of delirium, or death, remarks, that "the

results obtained *militate strongly* against the opinion, that delirium, especially when violent and uninterupted, always depends on changes in the brain, capable of being appreciated after death."

Dr. Haslam appears to consider madness to be always connected with disease of the brain, or of the membranes.

Dr. Conolly says, "Medical authorities agree in ascribing mental disorders to corporeal disease; not to any specific corporeal disease, but to any disease capable of disturbing the functions, or impairing the structure, of the brain. I fully concur in this belief; but we do not find in insanity, as in consumption, such invariable disorganization, or impairment, as would account for the long continuance of the malady, or for the small proportion of cures effected."

Dr. Uwins, in his work on the diseases

of the nervous system, as if at once, and for ever settling the question, asks, "Who shall pronounce upon the precise nature of that change in the sentient organization, when unexpected intelligence instantaneously destroys a keen appetite? When madness occurs as the immediate result of some heart-rending disappointment? When the whole man is thoroughly, and in a moment, revolutionized by a change of scene, or of circumstance? Or when faith in a physician at once breaks down the strong hold of hitherto confirmed disease?"

M. Pinel maintains, that the affection, not only of the intellectual faculties, but of the brain also, is subsequent to, and dependent on, some affection of the abdominal organs; especially on displacement of the transverse colon.

Sir A. Crichton states, that insanity arises,

always, from a diseased state of the brain, or nerves, or both.

M. Calmeil, observes, that "the anomalies of structure observed in the bodies of the insane, are not, in themselves, sufficient to account for the state of the alienation, because we sometimes meet with the same appearances in those who have never shown any symptom of it."

M. Leuret remarks—"1st. That physicians have, without any spirit of discrimination, accumulated, or huddled together, all the morbid changes which they have found, or believed to have found, in the brain of persons who have died insane. 2nd. That they have been in the habit of, much too hastily, attributing the disturbance of the intellectual and moral faculties to these real or supposed changes of structure. 3rd. *That they have too much neglected to take account of the*

changes which are compatible with the integrity of the mental faculties; and, 4th. That, as regards the changes said to be peculiar to the insane, the distinction between the symptoms which are of a physical, and those which are of a psychical, or mental nature, during the life of a patient, has not been duly attended to." Again, he says, "As to the nature of the alteration which is the immediate cause of insanity, I assert, that, hitherto, no one has been able to point it out."

M. Esquirol states that, "even in the most protracted cases of insanity, no organic changes whatever have been traced, either in the brain or in its membranes; that Pathological Anatomy is yet silent as to the seat of this disease; and that it has not yet been demonstrated what is the precise alteration in the encephalon, which gives rise to the disease."

Dr. Copland states his belief, "that changes in the mind, or vital manifestations of the brain, do not result uniformly, or even generally, from the disturbance of the molecular arrangements of this organ."

I think I have adduced sufficient evidence to prove, that insanity is often developed without any change of the structure of the brain, of the membranes, or of the cranium, discoverable after death.

If these premises be admitted, we must conclude—

1st—That insanity may result either from a disease, or an impairment, of the entire mind, or of what is termed its powers and faculties.

2nd—Or, that unappreciable lesions of structure are equal to the production of insanity.

3rd—Or, that morbid conditions of the

nervous system, *generally*, can produce insanity.

4th—Or, that insanity, when developed, results from the action of a morbid condition of the circulating fluid.

Let us now proceed to the examination of each of those propositions.

Prop. 1st.—That insanity may result either from a disease, or an impairment, of the entire mind, or of what is termed its powers and faculties.

It may here be objected, that I am arguing from false premises; that no author maintains, that the mind, or its faculties, can be diseased. But what do the following extracts convey to the mind? Surely, that their authors either believed that such might be the case, or that they wrote that which they did not mean.

Dr. Mason Good says, "We have already

had occasion to observe that the various faculties of the mind are just as liable *to be separately diseased* as those of the body; for as the faculty of digestion may be impaired, while that of respiration or secretion remains in perfect health, so may the perception or the judgment be injured, while the memory or the imagination continues in its former activity."

Sir H. Halford remarks, that "of an insane person, there is not, necessarily, more than one faculty of the mind affected—the judgment. The mind, if I may trust my own experience, is not less instinctively disposed than the body to exert itself to throw off *disease.*"

That the immortal soul has an existence essentially, and absolutely, independent of organization, is a truth which is established on a broad and immoveable basis.

I view the mind as the *sentient* principle, the sum of the faculties of the soul, the medium by which that immaterial existence can manifest itself, through organization, to man.

That which is characterized as insanity, is produced by some specific disturbance of the relation that naturally exists between the soul and its allied organization. Whether those gentlemen who view insanity as a disease of the mind, hold the opinion that mind and soul are identical, is of little consequence; in either case, they must, I apprehend, maintain, that, as the soul or the mind can be diseased when connected with organization, they can remain diseased when their connexion with matter is altogether dissolved.

No one can for an instant doubt, that insane persons do, at times, lose the power

of perceiving correctly, of judging correctly, and of comparing correctly; but it appears to me to admit of very considerable doubt, as to whether the power of perceiving, of judging, and of comparing, &c. are powers *appended* to the mind. Indeed, I apprehend, that to speak or to think of perception, comparison, judgment, &c. as powers and faculties of the mind—even admitting mind and soul to be identical—in the same sense as we speak or think of the eyes, ears, &c. as members of the body, is decidedly erroneous. These powers and faculties, so called, I believe to be nothing more than the mind exerting itself in particular ways and manners; so that it is the mind that conceives, that compares, and that judges, and not these fancied powers and faculties. Conception, comparison, judgment, &c. do not constitute the mind, but are rather its actings.

A believer in the science of phrenology may ask, may not abnormal conditions of those portions of the organic structure of the brain, which are essentially connected with the development of the individual faculties of the mind, be the occasion of the imperfect manifestation of those faculties?* If it could be proved, that certain portions of the brain possess the power of developing particular faculties of the mind, I might feel some hesitation in replying; but, as no conclusive evidence can be adduced to support such an hypothesis, I answer, most decidedly, in the negative.

Allowing the truth of what has been advanced in relation to the mind—that is,

* At the Mechanics' Institute, Plymouth, a gentleman lecturing on phrenology, asserted, in my hearing, that he was once acquainted with a person who continually imagined himself to be at the distance of twelve miles from his home, which illusion he accounted for by the existence of an abcess in the brain, in the organ of *locality*, that was discovered in a *post mortem* examination.

allowing that the mind itself cannot be diseased—we must admit, that when the organization of the brain is perfect—that is to say, when the vital equilibrium of that organ is maintained—a perfectly healthy function must be the result; and that when unhealthy function is manifest, diseased structure must be pre-existent; or, in opposition to this, we must maintain, that healthy structure* can produce unhealthy function, which every one must feel to be a palpable absurdity.

Ignorance, or the oversight of this fact, that in all cases of insanity, the organization, and not the mind itself, is affected, is, I conceive, the principal reason why the nature and cause of this disease have been hitherto involved in such profound mystery. In general, when any one reflected on the

* By structure, I mean the organ and its immediate vital relations.

subject of insanity, his attention was principally directed to the mind, which he conceived to be affected in some undefinable and inexplicable manner. But modern pathologists are, I think, generally agreed as to the organic cause of insanity.

Prop. 2nd.—That unappreciable lesions of structure are equal to the production of insanity.

I think most pathologists acknowledge the fact, that almost every portion of the brain has been discovered, in *post mortem* examinations, to be diseased, while during life no lesion of the intellectual faculties was perceptible. I extract the following interesting cases from Dr. Abercrombie's valuable work on the brain, to which I beg to refer.

The brain of a gentleman, whose understanding, so far as Dr. A. could judge, *was*

entire, but who had lost his speech, presented, after death, the following appearances :—" The left hemisphere of the brain was diseased throughout, in a very singular manner. Some parts of the mass were indurated, others softened, and it presented a variety of colours, chiefly a rose-colour, grey, and yellow ; the more diseased portions were highly vascular. These rose coloured portions were chiefly in the parts nearest the surface ; in the centre, this passed into the yellow or grey. Many portions were in a state of ramollissement. The whole hemisphere presented little else than a mass of concretions, indurations, and softenings, of the various colours which have been mentioned."

In the brain of a boy, aged seven years, who exhibited no symptom of insanity, was found, after death, effusion into the ventricles

to some extent, and ramollissement of the cerebral substance in several places. A large, firm tumour also adhered, by its base, to the middle of the falx, on the right side. It was nearly five inches in circumference at the broadest part, and about an inch and a-half in thickness. It was imbedded in the substance of the right hemisphere, where it had formed a depression for itself.

In another case, in which the *understanding seemed entire*, the left hemisphere felt soft and fluctuating *throughout its whole extent*, like a bag of fluid, and there was only half an inch of sound cerebral substance in it.

"A girl, aged eleven years, *was quite sensible* till a short time previous to her death; after which there were found two distinctly-defined abscesses, containing together from six to eight ounces of fœtid pus,

in the left hemisphere; in the posterior part of the right hemisphere there was a small abscess, containing about half an ounce of pus."

In another case, in which the patient "when spoken to, *was quite intelligent*," the brain, after death, exhibited the following disease: —"In the upper and anterior part of the right hemisphere, very near the surface, there was an abscess containing about one ounce of fœtid pus. In the posterior part of the same hemisphere, there was another abscess, rather smaller. In the anterior part of the left hemisphere, immediately under the surface, and at the very angle of it which lies over the orbit, there was a small abscess containing from one to two drams of pus, and another rather larger in the posterior part of the hemisphere."

In another case, in which the evening before

the patient's death was spent *cheerfully* with a party, in the house of a friend, the brain presented the following wonderful phenomena—"When a thin section was cut from the upper part of the left hemisphere, a cavity was exposed, through which a probe passed in every direction, through nearly the whole extent of the hemisphere. This, upon farther examination, was found to arise from the whole hemisphere being in such a remarkable state of decomposition, or softening, that it formed one great cyst full of soft, pultaceous matter, enclosed in a very thin covering, formed by healthy cerebral matter on its surface. It appeared to every one who witnessed the dissection, that the left hemisphere had been considerably enlarged, and the right diminished in the same proportion."

With these and other cases of a similar nature before us, how we can *ever* attribute

insanity to unappreciable lesions of structure, I am at a loss to imagine.

Many writers on insanity have expatiated largely on the production of this disease by unappreciable lesion in the structure of the brain; but little is said of such alteration in the structure of the other organs; nor is any notice taken of unappreciable lesions in them producing any equally serious results. Some cases of indigestion, and of painful affections in the stomach, have sometimes been attributed to unappreciable alterations in the coats of the stomach; and chlorosis is said to be occasioned, at times, by some invisible affection of the capillaries of the liver; but I consider that these diseases depend on affections of the blood, which, consequently, produces disordered secretions.

If these alterations in the structure of the brain are unappreciable, they cannot be

demonstrated; and if they cannot be proved by demonstration, what other proof of their existence is offered?

If the functions of the lungs, of the liver, or of the kidneys, be disordered, the cause is often, if not generally, attributed to the quality or condition of the blood; but if the functions of the brain be interfered with, even to the total subversion of the mind, and no organic disease is discoverable after death, the cause of the affection is referred, without hesitation, to invisible, and, consequently, unappreciable alterations of structure.

I would ask, if it be true that unappreciable alterations of the structure of the brain can produce insanity, how is it that appreciable alterations, to such a considerable extent as is before described, can exist, without producing any symptoms of mental derangement?

PROP. 3rd.—That morbid conditions of the nervous system *generally* can produce insanity.

The very nature of this proposition is such as almost to preclude controversy; sudden emotions of the mind are supposed to produce a shock to the nervous system, and so to cause insanity; but if we are able to prove—

1st—That serious disease of the grand centre of the nervous system may exist, without producing insanity.

2nd—That no conclusive evidence can be adduced in support of the position, that insanity can be produced by morbid conditions of the nervous system.

3rd—That mental emotions can and do alter, not only the circulation, but also the constitution of the blood.

4th—That some disturbance of the relation that naturally exists between the nervous system and the blood, can deteriorate that fluid.

5th—That some morbid conditions of the blood can produce insanity—we may, I think, safely pass over, without farther comment, the idea of insanity resulting from morbid conditions of the nervous system.

I know that some authors have considered, that a deteriorated condition of the substance of the brain and nerves is, at times, the cause of insanity ; but I consider, that, if they are unable to prove, that *seriously diseased conditions* of the brain are equal to produce this disease, they must also fail to make it evident, that insanity can be *dependent* on a *deteriorated* condition of the substance of the brain and nerves.

It would appear, from the experiments of Messrs. Morgan, Addison, and others, that poisons may be applied to the cut surface of the brain, and of the cerebro-spinal nerves, *without producing any effect ;* which, I think

corroborates the idea, that insanity does not depend on morbid conditions of the brain.

Dr. Christison, in the third edition of his *Essays on Poisons*, says, "The experiments of Emmert, Coullon, and Krimur, shew that dilute hydrocyanic acid *has no effect* when applied to the trunks, or to the cut extremities of the nerves; or to a fissure made in the brain, or in the spinal marrow; and that its action is not prevented by previously dividing the nerves." In another place, the same writer remarks, "It is a singular fact and well worthy of mention, that the poisons which appear to act on the sentient extremities of the nerves of the brain and spine, do not act at all on the cut surface of the brain or nerves, or upon any part of the course of the latter. This has been proved with respect to hydrocyanic acid, opium, strychnia, and all active narcotics."

Messrs. Morgan and Addison state that, "The brain of a rabbit was laid bare, and a small portion of the cerebrum sliced off horizontally; in the surface thus exposed, a portion of woorara was inserted, the greatest care being taken to prevent its contact with any part except the brain itself. After an interval of three-quarters of an hour had elapsed from the time of the innoculation, the animal was, from motives of humanity, destroyed; but, during the whole of that time, not the slightest symptom of the effect of the poison upon the system was observed, the animal, under excitement, leaping about the room as usual."

I have, I hope, made it appear in the preceding pages—

1st—That insanity does not *depend* on disease of the brain.

2nd—That insanity cannot consist either in

a disease, or an impairment of the entire mind, or of what is termed its powers and faculties.

3rd—That insanity cannot result from unappreciable lesions of structure.

4th—That no conclusive evidence can be advanced in support of the position, that insanity can result from morbid conditions of the nervous system.

We must now extend the enquiry to *what relation exists between insanity and morbid conditions of the circulating fluid;* and shall endeavour to prove that insanity, when developed, results *manifestly*, at times, from a morbid condition of the blood, and that there is, at least, *presumptive evidence*, that insanity may *always depend* on a morbid condition of the circulating fluid.

CHAPTER II.

While reflecting on the phenomena exhibited by man in a state of intoxication, my mind was first impressed with the idea, that insanity is, at times, connected with morbid conditions of the blood. Further reflection and observation strengthened that impression, and raised in my mind *presumptive evidence*, not only that insanity is intimately connected with some morbid conditions of the blood, and is often dependent thereon, —but that insanity is *universally* and *essentially* dependent on morbid conditions of the blood.

Let it be observed, that the insanity which is especially the subject of my consideration,

is not that which results — or, rather, which is supposed to result — from congenital malformation of the brain, or of the cranium; but such as occurs in one whose previous sanity demonstrates the pre-existence of a perfectly organized structure.

Even if insanity does result from congenital malformation *alone*, I do not consider that it affects my conjecture, that this disease is dependent on certain morbid conditions of the blood, in cases where the brain is, or has been, perfectly organized.

It is, in my apprehension, an anomaly to suppose that an organ, imperfect, either in relation to itself, or to its immediate vital relations, can produce perfect functions; though I do not pretend to decide on the degree of malformation, &c. which is requisite to produce such a lesion of the intellectual faculties as may be fairly termed insanity, or

as to whether any degree of malformation *at all* is equal to its production.*

Let me remind those who, without hesitation, refer the insanity of malformed idiots *solely* to their malformation, that, in many persons who have died without any symptoms of insanity, there has been found such extensive disease of the brain, as must be allowed to constitute a much greater departure from the perfect condition of that organ than is ever found in congenital malformation, with this distinction, that, in the latter case, the malformation generally exists on both sides of the head, while the disorganization, &c. is for the most part, but not always, confined to one side.

In malformed idiots, may not a morbid

* What is the cause of the malformation? There must have been some absolute physical cause, otherwise there could, of course, be no malformation. May not the malformation be dependent on some morbid conditions of the blood?

condition of the blood exist, in addition to the imperfection of the cerebral and cranial development?

If a certain perfection in the development of an organ, and of its immediate vital relations be requisite in order to a perfect development of its functions, it necessarily follows, that, should nature, from any cause, fail to produce this perfection, some imperfection of the functions of the organ must ensue.

Let him who maintains, that insanity is *dependent* on disease of the brain, or of its membranes, or of the cranium, reflect on the phenomena exhibited in those cases commonly called brain fever; or, indeed, on those symptoms which are exhibited in many other fevers, in which we frequently find furious madness that passes off as the fever recedes, the effect disappearing with the cause.

Should the patient die, there is, commonly, no lesion of the brain discoverable after death. It may be said, that, in these cases, the brain is congested, and that the congestion gives rise to the delirium; but why should the brain, in these cases, be so frequently congested, if there did not exist some condition of the blood peculiarly obnoxious to that organ? Are there always physical signs of congestion in cases of fever accompanied by delirium? If not, why should it be affirmed that there is congestion in them? Moreover we frequently have physical signs of congestion without insanity.

Now it would require no great effort of the imagination to conceive, that, if the functions of almost all the organs of the body are so disturbed as to yield morbid secretions, the functions of the brain may be disturbed also. Though that condition of the blood

that is essential to produce fevers, inflammations, &c. is not sufficient, *per se*, to cause insanity, yet, from their frequent contemporaneous existence, it would appear, that the blood is, by the existence of these diseases, more prone to take on such a morbid condition as is equal to the production of insanity.

In relation to the delirium in fevers, Dr. Graves, in his *Clinical Medicine*, says, "A man in fever exhibits all the symptoms of cerebral inflammation; the cerebral affection runs on to a fatal termination with great rapidity; he dies comatose, and what do we find on dissection? Doubtful signs of congestion, and no distinct evidence of inflammation; a slight opacity of the arachnoid, at the base of the brain, and about a teaspoonful of clear subarachnoid effusion. Now this is a point to which I

would earnestly call the attention of every enquiring student. A patient, during the course of typhus, is seized with symptoms which are generally regarded as characteristic of congestion and inflammation of the brain; he dies, to all appearance, in consequence of the intensity and violence of these symptoms; and, on dissection, little or no trace of cerebral disease is found." A demonstrative proof, I apprehend, that the symptoms observed in cases of cerebral inflammation, do not *depend* on the organic lesions discovered after death.

Now has the condition of the blood nothing to do with the production of the delirium in these cases? That the blood is diseased* is

* M. Andral's observations on the changes which the different constituent particles of the blood undergo, in different classes of disease, are most important. He states—

1st—That the quantity of fibrine is constantly increased in the phlegmasiæ, and in phthisis.

2nd—That the fibrine is in a normal, or in a diminished quantity,

incontrovertibly established; but, if the mental faculties be not affected through the medium of the blood, how is the delirium to be accounted for ?

This morbid condition of the blood, which I consider frequently to exist in maniacs, and to be the cause of their insanity, is, decidedly, not sufficient, *per se*, to interfere *materially** with the due performance of the *animal* functions, or to produce disease in any organ, or part of the body ; yet this morbid condition is a departure from the healthy standard ; and, inasmuch as this condition is a departure from health, in the same proportion is it less able to resist disease, and to afford that

while that of the globules is either normal or increased, in the pyrexiæ, and in many hæmorrhages and congestions.

3rd—That the quantity of globules is always diminished in chlorosis, in various dropsies, &c.

4th—That there is a diminution in the quantity of albumen in albuminaria.

* I think the fact of the long lives of some maniacs, is a strong argument against the opinion of their insanity resulting from disease of the brain, or from any other *serious* organic change.

vital stimulus to the various organs which a perfect performance of their functions demands.

May not the morbid conditions of the blood that gives rise to insanity, produce organic lesions in a brain predisposed to take on diseased action? In relation to the morbid anatomy of mania, Dr. Marshall Hall asks, whether the appearances discovered are *the cause*, or *the effect* of the mania? And then states, that he believes them to be, frequently, *the effect.* May not that which this celebrated physiologist views as the effect of the mania, be the effect of the condition of the blood? The more likely does this appear, when we consider that the various diseases which are frequently found in the bodies of persons dying insane, seem to prove a *general* cause. We could not, indeed, be surprised, if the brain,

in mania, took on diseased action more frequently than any other organ, as it is exposed to a double irritation, viz. the morbid condition of the blood, and the agitated mind reacting on the circulation.

A writer in the *British and Foreign Medical Review*, says, "we grant that the mental malady may often be but the first sign of that total impairment of the frame, which phthisis, or hydrothorax, or scorbutus, or paralysis, or marasmus, afterwards most plainly declare."

Dr. Sutherland, in the lectures before alluded to, affirms that out of fifty cases taken from his note book, thirty-one had disease of the lungs. In many there were two or more co-existent diseases.

If insanity be dependent on morbid conditions of the blood, how easy is its transmission by hereditary descent to be understood.

When we consider the results I have before alluded to, which prove that in cases of insanity other diseases frequently co-exist with organic lesions of the brain, proving a *general* cause ; and take in conjunction with this the fact of the very frequent hereditary transmission of many of those diseases -- diseases which are universally believed to descend through the medium of the blood—I do think, that every reflecting mind must allow, that it is more easy to comprehend how insanity, if it be dependent on morbid conditions of the blood, can be transmitted hereditarily, than if it be the result of diseased organization, whether that disease be appreciable or unappreciable.

May not the luxurious habits, &c. of civilized nations, be the cause of their being

more frequently the subjects of insanity than savages ?*

May not those habits give rise, as it were, to a national predisposition in the blood to assume the condition that is equal to the production of insanity ?

When tumours, disorganization, &c. of the brain, are accompanied with insanity, may not that disease be produced by these tumours, &c. inducing a certain morbid condition of the blood ?

Dr. Copland remarks, that, "when the mental faculties are deranged in consequence of alterations of the fabric of the brain, *the disorder is owing to the disturbance which such alteration produces either in the general or local vital endowment, or both.*"

* Out of 12,780,000 inhabitants in England it is estimated that there are 17,200 insane.

In this remark, we find this learned gentleman searching for *something:* his extensive knowledge of the principles of pathology prevented his attributing insanity to the disease of the organic structure of the brain; and, not knowing what portion of the organism is affected, he ascribed the cause of the disease to some disturbance of the *vital endowment** of the body. This is an approximation to my idea, so far as we both agree, that the organic lesions are not sufficient, *per se*, to produce insanity; only Dr. Copland lays the fault to the vital endowment, while I consider the cause may exist in the morbid condition of the blood.

If insanity *depends solely* on the disease

* Speaking of the vital endowment of the body, reminds me of a definition of metaphysics, which I remember to have heard, viz. talking about what we know nothing of, to one who knows nothing of what we are talking about; though, in the present state of medical science, such language can, perhaps, scarcely be avoided.

of the brain, how can we account for the lucid intervals that have been frequently exhibited by those subjects of insanity, in whose brain, after death, serious organic lesion has been discovered ?

Now it is evident that in the lucid intervals, the *organic* disease is no degree improved ; the insanity, therefore, cannot be *dependent* thereon.

Dr Holland, in his *Medical Reflections,* says, " I recollect a case of mental derangement, where the *post mortem* examination shewed *great organic changes* in the brain, many of them, from their nature, of long-standing, and upon which it was next to certain the symptoms depended. Yet, in this instance, there occurred, not long before death, *a lucid interval,* so far complete as to afford hopes of recovery where none had before existed, and where the event proved that none could reasonably be entertained."

Why disease of the brain does not produce insanity in all cases, I do not know, unless it be that a predisposition to that morbid condition of the blood, on which I conceive insanity may depend, exists in some individuals and not in others.

Independent of the blood, or of any other consideration, a certain degree of integrity of the performance of the vital actions of the brain is requisite for the development of the mind, as that development cannot be made when the vital actions of the capillaries are so materially interfered with as they are in some cases of concussion, in apoplexy, &c.

I now proceed to establish and to illustrate the following proposition, viz.—

That in perfect health such an equilibrium is maintained between the mind and the condition of the blood, that whatever mate-

rially interferes with the one, affects the other in an equal degree.

There are few morbid conditions of the system with which the brain does not, more or less, sympathize ; and there are few diseases that have not frequently been accompanied with delirium, of which they are to be regarded as the cause.

Whether the morbid condition of the blood—which I consider it is not unlikely may hereafter be *proved* to be necessary to the production of insanity—be immediately occasioned by any existing disease, by general causes, or, by the agency of the nervous system, alters not the argument. Indeed, I believe, that the morbid condition of the blood that produces insanity, is frequently caused through the agency of the nervous system.

To illustrate the preceding proposition, I shall endeavour to show—

1st—That the mind, through the medium of the nervous system, possesses a certain influence over the condition of the blood.

2nd—That the condition of the blood, through the medium of the brain, possesses a certain influence over the mind, in relation to its development.

1st—That the mind, through the medium of the nervous system, possesses a certain influence over the condition of the blood.

In illustrating this proposition, let us consider the two extremes of mental manifestation, viz. emotion and placidity. In emotion, the circulation of the vital fluid is in an excited state ; in placidity, it is in its natural and normal condition. If the mind be excited by passion, or agitated by sudden terror, not only the circulation within the cranium, but

the circulation throughout the system is affected, in a ratio corresponding with the impression made on the mind. In the phenomena of fainting, occasioned by intense joy, &c. or in that of congestion, or of inflammation of the brain from any sudden or continued excitement or depression, of the mind, this is undeniably evident.

No one who admits that there is any cogency in the arguments that I have advanced, will, I presume, for one moment contend, that insanity can be produced by emotions of the mind, unless it be by those emotions acting on the material organization.

No question can arise as to the capability of mental emotions acting on the organization, when we find, that by an effort of volition *alone* we move a limb; that an increased secretion of saliva can result from a savoury smell; and, that weeping follows the expe-

rience of grief. The mind cannot communicate with external things, excepting through a medium; nor can external things communicate with the mind, excepting through a medium. In the one case, the mind communicates with matter; in the other, matter communicates with the mind—*ergo*, matter can act on the mind, and the mind on matter.

Anxiety, grief, disappointment, &c. produce head-ache, palpitation, diarrhœa, increased secretion of urine, profuse perspiration, &c. In how many instances have they so affected the general constitution as to bring down the grey hairs of the afflicted parent with sorrow to the grave? Thousands of tongues, now silent in their narrow cells, could they speak, would bear witness to this mournful truth. But there is no need of appealing to the dead: daily do we behold numbers, even in the very spring of life, whose appearance

proclaims, too plainly to be misunderstood, that grief is effectually, though silently and slowly, accomplishing its deadly work.

Dr. Carpenter, in his *Principles of Physiology*, relates the following cases:—"A carpenter fell into a quarrel with a soldier billeted in his house, and was set upon by the latter, with his drawn sword. The wife of the carpenter first trembled from fear and terror, and then suddenly threw herself furiously between the combatants, wrested the sword from the soldier's hand, broke it, and threw it away; during the tumult, some of the neighbours came in and separated the men. While in this stage of strong excitement, the mother took up her child from the cradle, where it lay playing, and, in the most perfect health, never having had a moment's illness; she gave it the breast, and, in so doing, sealed its fate. In a few minutes the infant

left off sucking, became restless, panted, and sank dead on its mother's bosom."

"A lady, having several children, of which none had manifested any particular tendency to cerebral disease, and of which the youngest was a healthy infant, a few months old, heard of the death (from acute hydrocephalus) of the infant child of a friend, residing at a distance, with whom she had been on terms of close intimacy, and whose family had increased almost contemporaneously with her own. The circumstance naturally made a strong impression on her mind, and she dwelt upon it the more, perhaps, as she happened at that period to be separated from the rest of her family, and to be much alone with her babe. One morning, shortly after having nursed it, she laid the infant in its cradle, asleep, and apparently in perfect health; her attention was shortly attracted to it by a

noise, and, on going to the cradle, she found her infant in a convulsion, which lasted for a few moments, and then left it dead."

"A mother had lost several children, in early infancy, from a convulsive disorder; one infant, however, survived the usually fatal period, and, whilst nursing him one morning, she had been strongly dwelling on the fear of losing him also, although he appeared a very healthy child. In a few minutes after the child had been transferred to the arms of the nurse, and whilst she was urging her mistress to take a more cheerful view, directing her attention to his thriving appearance, he was seized with a convulsive fit, and died almost instantly."

We daily prove that the state of the mother's mind greatly affects the secretion of her milk; so that when she is much agitated or depressed, the infant invariably suffers. A

case occurred in my own family, where I attribute the non-secretion of milk entirely to a fright, which brought on labour.

M. Andral relates the following case :— "A miller's wife was delivered of a child, which she suckled herself. On the eighth day after her confinement, while in perfect health, the crash occasioned by the fall of a mill-wheel frightened her so much that her milk was totally suppressed. A state of constant febrile excitement ensued, which degenerated into a tertian ague, during the course of which her legs became ædematous, and at the end of three weeks she became affected with anasarca and ascites."

Dr. Carpenter remarks also, that Mr. Wardrop relates the case of a mother from behind whose ear he removed a small tumour : all went on well until she fell into a violent passion, when the child, being suckled

soon afterwards, died in convulsions. He was sent for hastily to see another child in convulsions after taking the breast of a nurse who had just been severely reprimanded. He was informed by Sir Richard Croft, that he had seen many similar instances.

Three other cases are recorded by Burdack. In one of them, "the infant was seized with convulsions on the right side, and hemiphlegia on the left, on sucking immediately after its mother had met with some distressing occurrence. Another case was that of a puppy, which was seized with epilepsy on sucking its mother after a fit of rage."

A medical friend of mine assures me that, when he came out from passing his examination, his flannel shirt smelt quite disgustingly, in consequence of a morbid secretion from the skin, resulting from severe mental emotion.

Dr. Bateman relates two cases of impetigo, occurring immediately subsequent to severe mental emotions; and one case, in which a woman became anasarcous, immediately on hearing of the loss of her little property.

It may be argued, that these cases prove nothing; or, at most, they can but prove, that the blood is merely altered in its constitution, *as a consequence* of the imperfect performance of the secreting organs.

M. Andral appears to inculcate this opinion, when he observes, that "there are cases where the modification of the blood is only *secondary* to a modification of a nervous system. If, for instance, under the influence of a strong mental emotion, the nervous system be suddenly deranged in its functions, and cease to exert its proper influence over the different organs in which the blood is

elaborated, deposited, and receives new materials, must not that fluid become altered in its turn? If so, there must then arise a number of organic and functional derangements, varying greatly, according to the mode, and intensity of the primitive alteration of the enervation."

But, I ask, may not mental emotions cause such a sudden abstraction of nervous influence, or subversion of nervous power, that the constitution of the blood may be immediately altered? Does not the fact of the blood being found fluid after sudden death, consequent on powerful mental emotions, prove the possibility of this?* And may not mental emotions produce a deterioration of the blood, through the agency of the nervous system, analogous to

* J. Hunter states that he found the blood fluid, after death, resulting from a violent fit of passion.

the way in which tying the pneumo-gastric nerves produces a diseased condition of the circulating fluid?

I extract the following from M. Andral's work on the *Pathology of the Blood*:—" M. Dupuytren proved, long ago, that cutting the pneumo-gastric nerves prevents the venous from being converted into arterial blood in the lungs. Dr. Mayer, from an experiment of his own, maintains, that the nervous system has an influence over the blood, *not only in the capillaries*, but even in the large vessels. He observed, that whenever he tied both pneumo-gastric nerves in animals, the blood, in the whole pulmonary system, coagulated, and the colouring matter separated from the fibrine; and he took care to ascertain, that these were not the consequences of death, by opening the animals the very moment they expired. The learned and indefatigable

Professor at Alford, M. Dupuy, having lately tried upon horses the experiment of cutting the pneumo-gastric nerves in the cervical region, has ascertained, that, under such circumstances, the quantity of fibrine in the arterial blood, drawn from the carotids, was notably diminished."

Indeed, M. Dupuy not only asserts, that he found the blood *entirely dissolved* in the animal whose pneumo-gastric nerves he had cut, but he also states, that, by injecting this dissolved blood into the jugular veins of another horse, he produced a gangrenous affection.

Now, whether mental emotions are capable of *immediately* altering the constitution of the blood, or whether the blood is altered only *secondarily*, does not *materially* affect my position; inasmuch, as though the alteration may possibly be only secondarily, still it is

almost instantaneous; for, when the mind experiences any adequate emotion, the impression on the nervous system is instantaneous, and, consequently, the impression made on the secreting organs is instantaneous; therefore the blood is altered in its character *almost* instantaneously, and circulates, so altered, *almost* instantaneously through the brain; but, I apprehend, that mental emotions act, not only on the secreting organs, but that they are also equal to the arrest of *universal nutrition*; and, if so, the time that elapses between the original emotion, and the moment when vitiated blood commences to circulate through the brain, cannot be long.

Haller, in his article on the blood, remarks, "Nor does the blood always contain the same, or a like proportion of those elements or principles above mentioned,

(the elementary particles of the blood); for an increased celerity, whether by laborious and strong exercise,* a full age, fever, or otherwise, augments the crassamentum with the redness, congealing force and cohesion of the particles; and the hardness and weight of the concreted serum, with the alkaline particles are, by the same means, increased."

That the mind possesses an influence over the blood, so powerful as to alter at times its quality, and to cause it to yield morbid secretions, the above evidence, I think, fully proves.

Dr. Marshall Hall asks, "Why is it so important to procure quiet, composed sleep?

* I cannot here refrain from alluding to the case, recorded by Duhamel, of a butcher putting into his mouth his knife, with which he had slaughtered an *over-driven ox;* in consequence of which, his tongue swelled, his breathing became difficult, and blackish pustules broke out all over his body; at the end of four days he died. An innkeeper, who wounded himself with a bone of the same ox, died from mortification of his arm, &c. in a few days. Two women, who received some drops of the blood of the same animal, suffered also severely.

Obviously, for the same reason: sleeplessness, like mental effort, and the maniacal paroxysm, may induce morbid actions in the encephalon, and there may lead to morbid changes"

If it be so agreed, that mental efforts are equal to the production of morbid changes in the *brain*, surely, they are equal also to the production of morbid alterations of the *blood*.

Calling one day on a gentleman, just after he had breakfasted, I found him greatly enraged on account of some news which he had received from abroad. I endeavoured, but in vain, to pacify him: he would go and be revenged. His morbid imagination heightened all the unpleasantness of the circumstances, and, at length, such was the violence of his passion, that he absolutely began to feel symptoms premonitory of apo-

plexy. I recommended that he should be bled, and he consented. When I had taken a considerable quantity of blood from him, he told me that he was greatly relieved, and had *no longer any intention of going abroad.*

By no means do I assert, that powerful emotions of the mind invariably produce that condition of the blood which may be essential to the production of insanity; but, I am endeavouring to prove that emotions of the mind can and do alter the constitution of the blood. If I were unable to prove that mental emotions can alter the constitution of the blood, while it is evident that they frequently produce insanity, a link of my chain of evidence would be wanting to support the *probability* of insanity *depending* on morbid conditions of the vital fluid.

If emotions of the mind be capable of

producing any change in the condition of the blood, is it not very probable, especially if the cause continue, that the deteriorated blood will cease to be the appropriate vital stimulus to the brain; and that an imperfect, or even an insane, development of the mind, will be the result?

I will here define the ideas that I attach to a "perfect" and to an "imperfect" development of the mind. By a perfect mind, or a perfect development of the mind, I mean, a mind developed through a perfect brain. No metaphysician can describe the requisites of a perfect mind; he may speak of what is termed, the faculties, being properly regulated, and duly balanced: he may attempt to distinguish between regular and irregular ideas; but accurately to define the *elements* of a perfect mind, is beyond the bounds of possibility. By an imperfect

development of the mind, I do not necessarily mean insanity; for, though every departure from health is an approximation to disease, yet, such is the length of the chain, and so innumerable are the links which separate sanity from insanity, that it is beyond our power to shew where sanity terminates, and where insanity begins. Whenever I speak of an imperfect mind, I mean, that there is some deviation from the perfect mind, although that deviation be not perceptible to observers, nor to the patient himself.

Now, though I am certain that we can neither point out the link that separates sanity from insanity, nor accurately distinguish between eccentricity and insanity; yet I firmly believe, that these are not only opposite states, but that they are also *essentially different*, *totally distinct*, and

results of *opposite conditions*: that there is, in point of fact, a wall interposed between them, so that, however they may *appear* to pass into each other by insensible degrees, this wall must be demolished, some specific change must be wrought, ere insanity be produced. I doubt not, that there is as essential a difference between the elements of sanity, and those of insanity, as there is between the cause of the plague and the cause of the small pox.*

I could as easily conceive that health may pass into disease, without some organic change, or without *any* imperfection in the entire organization of the human frame, as that sanity may pass into insanity, without

* If it be true, that an organic barrier must be destroyed ere sanity can pass into insanity, then it may be considered that all diseases, &c. which are not equal to the demolishing of this barrier, can *only* render the development of the mind *imperfect*; but if they are equal to the entire removal of this barrier, the man is necessarily insane.

some essential alteration being effected, some organic barrier being removed.

I now proceed to shew—

2ndly—That the condition of the blood, through the medium of the brain, possesses a certain influence over the mind, in relation to its development.

The truth of this proposition will not, I apprehend, be called in question. The condition of the mind, in almost every disease, demonstrates its truth. Indeed, whether we refer to quantity, to deficiency,* or to quality, we shall have no difficulty in substantiating the assertion, that the manifestation of the mind bears some relation to the condition of the blood.

Although both abnormal quantity and deficiency of blood frequently interfere with

* Dr. Graves remarks, you perceive facts are not wanting to show that opposite states of the cerebral circulation, a super-abundance or deficiency of pressure on the brain, may give rise to similar phenomena.

the development of the mind, yet, I entertain considerable doubt as to the power which either of these abnormal conditions possess, *per se*, of producing insanity: that insanity is often co-existent with them, we can demonstrate; but that neither abnormal quantity, nor deficiency of blood, can exist to any extent without producing *abnormal quality* of this fluid, is, I think, equally certain.

Dr. Carpenter states, that "the amount of globules seems to be subject to greater variation, within the limits of ordinary health than is that of fibrine. In the condition whic h is ordinarily termed a *highly sanguineous temperament, or plethora*, it is chiefly the former that undergoes an increase."

And is there ever *deficiency* of blood without consequent deterioration of the quality of the vital fluid? I think universal experience replies in the negative.

To set the subject in as clear a light as I am able, I shall now endeavour to support the following propositions.

1st—That a morbid *quantity* of blood is frequently the exciting cause of insanity.

2nd—That *deficiency* of blood is frequently the exciting cause of insanity.

3rd—That a morbid *quality* of the blood is, undeniably, *at times*, the cause of insanity; and that there is, at least, *presumptive evidence*, that insanity may *always be dependent thereon.*

Prop. 1st.—That a morbid quantity of blood is frequently the exciting cause of insanity.

That it is quite possible for an abnormal quantity of blood to exist in the cavity of the cranium, is proved by the experiments of Dr. Burrows; besides which, I think that the phenomena of hypertrophy of the brain, with-

out increased cranial development, stand diametrically opposed to the idea, that the contents of the cranium are *invariably* the same.

Dr. Marshall Hall, in his *Principles of Medicine*, relates the following case—" A. B. æt 40, became ruined in character and in fortune; and, when in the midst of his difficulties, experienced a sense of heaviness and pressure in his head, and passed restless nights. After several days, he attempted suicide, by dividing the blood-vessels and muscles of the arm. He lost a large quantity of blood, and became faint. On recovering from this state, he said to his medical friend, 'Had you bled me a few days ago, I should not have done this act; my feelings are altered, and I regard suicide with abhorrence.'"

A case, bearing some resemblance to this, occurred in my own practice. A gentleman,

who had been disappointed in some mercantile affairs, being oppressed with painful feelings of melancholy, sent for me to attend him. The despondency of his mind was such, that I felt very apprehensive of the consequences that might ensue from his remaining alone. I bled him, and he soon recovered. He afterwards told me, in professional confidence, that, some time before he called me in, he was about to commit suicide, by jumping over the quay at Liverpool; but, as he was on the point of so doing, a friend tapped him on the shoulder, making some jocose obversation, which had the effect of diverting him from his purpose. May not my bleeding him have prevented some similar attempt?

If insanity be not dependent on a morbid condition of the blood, I contess that I am at a loss to know how bleeding, or revulsive treatment, can relieve it.

May not such treatment act by enabling the vital power to restore the vital equilibrium of the blood ?*

How congestion of the brain can exist, in some cases, to such an extent as to cause its pathognomonic signs, without producing mental derangement, while in another case a much smaller quantity of blood appears sufficient to call insanity into existence, I do not know, unless it be, that when quantity of blood is the exciting cause of insanity, it acts by inducing a *morbid quality* of that fluid.

If insanity be dependent on quantity *alone*, I think we should, *cæteris paribus*, have insanity in every instance in which there exists a *certain* morbid quantity; whereas, I can easily imagine that the vital power

* When I use the term, "vital equilibrium of the blood," or the "equilibrium of the circulation," I do not only mean, the equilibrium of the circulation in relation to a normal and natural quantity of blood in every part, but, especially, and pre-eminently, the equilibrium that ought to exist in the natural elementary composition of the blood.

can, by exciting the secreting organs, or by exerting itself in some undefinable manner to maintain a certain equilibrium, counteract, at times, the tendency of a diseased quality of the blood to produce insanity.

That an abnormal quantity of blood in the brain can disturb the vital relations of the capillaries of that organ; that it can seriously nterfere with nutrition and secretion, and, consequently, alter the condition of the blood, admits of no reasonable doubt.

In inflammation of the brain there are, I think, four exciting causes of delirium.

1st—The presence of that peculiar condition of the blood that universally exists in inflammation.

2nd—That specific state of the blood that renders it obnoxious to the brain, and causes this organ to be inflamed in preference to any other.

3rd—An abnormal quantity of blood.

4th—Inflammation of the brain itself, by the existence of which disease, the vital actions of the capillaries are materially interfered with, and the blood, as a consequence, altered in its character.

Either of these, or all, conjointly, may, I apprehend, induce the requisite morbid quality of the blood. But is it not singular, that the delirium accompanying inflammation of the brain itself, is not so severe as that accompanying inflammation of the meninges? Can the reason of this be, that the meninges are more intimately connected with the condition of the circulation within the cranium, than the brain itself is? M. Andral states, that M. Magendie has seen the symptoms of meningitis diminished by injecting water into the veins of a patient. Now, if the delirium were entirely dependent

on the quantity of the blood, would not injecting water into the veins have increased the quantity, and consequently, the delirium? I think it could only have acted by diluting the blood, and thereby preventing the *full influence* of the diseased blood on the brain.

PROP. 2nd.—That deficiency of blood, is frequently the exciting cause of insanity.

Dr. Marshall Hall, who has so ably directed the attention of the profession to the effects consequent on the loss of blood, relates the following case, in his invaluable work, entitled *Researches on the effects of the loss of blood.*

"Mrs. —— miscarried on the third month of her pregnancy. There was considerable flooding, on unthinkingly getting out of bed for some purpose, there was a sudden profuse gush of blood. She turned pale, and nearly fainted. She was promptly carried and laid

upon the bed, but soon became affected with convulsion. This was succeeded by delirium that continued for two hours. As might have been anticipated, delirium frequently occurs as an immediate effect of hœmorrhage during parturition. Still more frequently mania occurs as a remote effect of loss of blood."

Dr. Abercrombie says, "I have several times seen a state resembling mania take place after large bleeding in inflammatory diseases, and subside gradually as the patients recover strength. The most remarkable of these that I recollect at present were after pneumonia and acute rheumatism. I am persuaded that loss of blood, is by far the most frequent and influential cause of delirium or mania occurring in the puerperal states."

Dr. Marshall Hall, in his work, *On Puerperal Mania*, and Dr. Gooch, subsequently, in his work, *On Disorders of the Mind in Lying-in-Women*, refer to mania resulting from exhaustion in consequence of loss of blood, and from undue lactation. Dr. Gooch relates the following cases. "A pale delicate lady, nursing an infant four months old, told me she scarcely knew what was the matter with her, her sight was so much impaired that she could not read; her powers of attention were so much impaired that her household accounts were burthensome to her, that she often rang for the footman, and when he came she had forgotten what she rang for. She said she had a good husband, sweet children, and ample property; everything to make her happy; yet she felt no interest in life. She

added that, if she went on this way, she should lose her senses. She had lost flesh, and had little milk. After a short time she took it into her head that she had a fatal disease, and I was called out of my bed several nights to see her die. She told me that I was quite mistaken about her case that she was sure she was dying, and if I would sit down for five minutes I should see her expire. She next began to accuse her friends, especially her husband, whom she charged with infidelity and an intention to poison her; and it became necessary to separate her from her family, and place her in that state of seclusion and control usually employed under such circumstances."

After relating a number of cases, Dr. Gooch thus sums up his remarks. "In No. 1, the disease (puerperal mania) occurred in a pale lady without any heat of skin or much

quickness of pulse, and was not relieved by the loss of blood. In No. 3, it occurred in one whose constitution was drained and enfeebled by nursing. In No. 4, it occurred in a pale woman habitually hysterical, and subject to bear dead children for want of power to afford them life for nine months. In No. 5, it occurred in one who had been drained by flooding. In No. 6, in one whom for urgent reasons the circulation had been reduced to the lowest ebb consistent with life. In No. 7, in one who had been living very low for a week, with such marked symptoms of the irritation of debility, that, at first sight, I thought it was the close of some disease that had been overlooked. In No. 8, the disease was treated, though with all possible prudence and moderation, as an inflammatory state of the brain, by leeches, cupping, purging, and low diet; yet the

patient died, not with symptoms of an oppressed brain, but with those of exhaustion; and on examining the body, the whole venous system was found extraordinarily empty of blood. In No. 10, the patient fell, as if shot, under the stroke of the lancet, and on examining the head there was found effusion and empty blood vessels. In No. 11, the disease came on after puerperal convulsions, a disease generally, but not always, depending on cerebral congestion, and after one of those enormous bleedings commonly practised in these cases, and no morbid appearances were discovered, after death, in the brain. These cases, if fair specimens of puerperal insanity, lead straight to the conclusion, that the disease is not one of congestion or inflammation, but one of excitement without power."

Dr. Marshall Hall, some time since,

published, in the *Lancet*, a case of insanity, arising from bleeding a chlorotic patient.

The cases and opinions which I have quoted, are, I think, quite sufficient to prove this proposition, without any arguments of my own. Indeed, cases illustrative of the fact, that insanity, at times, results from loss of blood, from undue lactation, and from exhaustion, occur daily in practice.

PROP. 3rd.—That a morbid quality of the blood is, undeniably, *at times*, the cause of insanity; and that there is, at least, *presumptive* evidence, that insanity may always be dependent thereon.

Every individual molecule of the brain, the mass of which makes up the entire organ, is secreted from the blood; and, when we consider the wonderful laboratory that exists within the cranium, the vital actions that are perpetually going on, old materials being

removed, and new material deposited, we need not, I think, be surprised that a morbid quality of the blood should interfere with the development of the mind.

In relation to the alteration in the constitution of the blood in disease, Dr. Carpenter quotes the following remarks from M. Andral :—"The more extended are our enquiries, the more easy does it become to refer to general principles the causes of all those changes in the constitution of the blood, which, from the *frequency* and *rapidity* with which they occur, seem, at first sight, to baffle all rule, and take place, as it were, at random."*

Morbid conditions of the blood, indepen-

* Insanity may, I imagine, depend on some existing disproportion in the elementary particles of the blood; but in what that disproportion consists, or whether it be possible for some sudden or continued emotion of the mind so to act on the constitution of the blood, as to interfere with the chemical attractions, by which interference the elements may unite in other proportions than natural, I am not prepared to determine.

dent of lesions of the brain, produce, not only temporary, but abiding insanity: such are the temporary madness of delirium tremens; and that confirmed state of mania in which habitual drunkenness, and the excessive use of opium, not unfrequently terminate.

When we see morbid conditions of the blood giving rise to insanity, which disease is removed as soon as the cause ceases to exist—as in the case of insanity occasioned by intoxication, opium, laughing gas, &c.; when we see it again occurring during fevers, inflammations, &c. in which a diseased condition of the blood is certain; and when we reflect on the phenomena exhibited by hydrophobia, asphyxia, &c. and on those cases in which elements that ought to be removed by the lungs, by the liver,* or by

* The complication of jaundice with severe cerebral symptoms, has often been the subject of remark.

the kidneys, exist in the general circulation, —and then remember, in opposition to these facts, that disease of the brain is often not perceptible in the bodies of insane persons after death; that diseases of one or more of the other organs of the body are found almost as frequently as lesions of the brain, (*proving a general cause*); I say, when these facts are fully considered, can the existence of *some intimate relation* between the condition of the blood and insanity be denied?

Let us look into the history of that exanthematous disease, the small pox, in which the universality of the eruption demonstrates, in my view, the fact of the blood being affected.* Delirium and convulsions often exist at the commencement of

* M. Gendrin, in his *Histoire des Inflammations*, relates some experiments, in which he injected into animals the blood of persons labouring under confluent small-pox: very severe symptoms, which rapidly proved fatal, ensued, and, on opening the bodies, several organs were found in a high state of inflammation.

this disease, before the appearance of the eruption, and, in general, disappear when it is perfectly developed. Indeed, all the symptoms, but especially those of the head, are relieved on the appearance of the eruption.

Dr. Copland states, that he found albumen to exist, in large quantities, in the blood prior to the full development of this disease. Now, although albumen cannot cause insanity, still, its presence proves, that the blood is altered in its constitution. If such important changes take place in the constitution of the blood in disease; and, if a morbid condition of the blood will, at times, cause insanity; is it not worth while to determine if insanity be *dependent* on a morbid condition of the blood, and if it be possible, to ascertain, with accuracy, the precise nature of the alteration?

Magendie states, in his *Physiology*, that Denys and Emerez introduced into the veins of a young man, who was an idiot, the blood of a calf, in greater quantity than that which had been drawn from him, *when he appeared to recover his reason.** A short time after the experiment, he again became mad, and being subjected a second time to the transfusion, he was immediately seized with a hematuria, and died in a state of sleepiness and torpor.

Müller states, that the injection of blood, with circular corpuscles, into the vessels of a bird, in which the corpuscles are elliptic, and of a larger size, produces violent symptoms, similar to those of the strongest poison.

* It is not unlikely, that the transfusion of the blood of a person in robust health into the veins of a maniac, after depletion, may be effectual in the restoration of his sanity; that such is far from being impossible, appears by the case stated above. This remedy would, of course, be useless, should the exciting cause be organic disease of the brain.

If insanity be not dependent on the condition of the blood, in what manner is it produced by the suppression of accustomed discharges? How is it relieved by the establishment of a discharge? How is it produced by undue lactation? And how can we explain this fact, which Dr. Good and M. Esquirol insist on, that insanity is sometimes terminated by *critical* discharges?*

But how are we to account for sudden madness, if insanity be dependent on some morbid condition of the blood? Or how are we to account for maniacs being more violent at one time than at another? Instead of replying directly to this question (after referring to M. Andral's remark, before quoted, concerning the rapidity with which

* Dr. Good states, that a spontaneous diarrhœa has been known, in various cases, to carry off the disease (insanity) as if by a charm; and the use of purgatives is the more necessary, as the bowels of maniacal patients are apt to be extremely costive.

changes take place in the constitution of the blood) I would enquire, in what way are we to account for a sudden attack of epilepsy, and for its sudden departure? Whether it be dependent on a morbid condition of the blood, or of the nervous system, alters not the question, although, I believe, we shall find epilepsy to be sometimes dependent on the condition of the blood. Some definite cause for the epiletic fit, and for its continuance, must, without doubt, exist, and as it is certain that the disease can last no longer than its cause, we may conclude, that the fit and the immediate cause of its existence cease at the same moment, however speedily that cause may re-appear. In like manner, the paroxysms of the maniac must be produced by some definite cause, and when the paroxysm is at an end, we may certainly consider that the cause has ceased to exist.

May not the convulsive action of the epileptic fit, and the maniacal paroxysm, in some inexplicable and indefinable manner, cause, at times, the restoration of the vital equilibrium of the blood? May not the blood, influenced either by the imagination, or by some general cause, acting, through the medium of the brain, on the mind, be the cause of the maniacal paroxysm that sometimes suddenly occurs in a previously sane individual, or of that paroxysm of determined and continued rage that is daily observed in lunatic asylums.

It appears to me, that the maniacal paroxysm is, at times, the effort of the vital power to rid the system of certain causes of disease; that is to say, I believe that the maniacal paroxysm is at times critical. A patient of mine has often suffered from delirium tremens, which, having lasted for a few

days, has always passed after some critical paroxysm, succeeded by a sleep of many hours, out of which he has awaked perfectly sane: this has been the case in three successive attacks, during the continuance of which he had not one lucid interval; to such a state of exhaustion was he reduced by the critical paroxysm of the last attack, that I thought it would have terminated fatally.

Let us now consider the case of a man who, having drunk intoxicating liquors, exhibits the phenomena of insanity. It has generally been supposed, that in this peculiar condition of the system, the brain is over stimulated; but the idea of insanity resulting from over stimulation is gratuitous.

Dr. Prout remarks, that alcohol, and all liquors that he tried, had the remarkable effect of diminishing the quantity of carbonic acid in the expired air.

Liebig says, "Neither the expired air, nor the perspiration, nor the urine, contains any trace of alcohol. And there can be no doubt but that the elements of alcohol combine with oxygen in the body, and that its carbon and hydrogen escape as carbonic acid and water. It appears, moreover, that when alcohol is absorbed into the blood, it combines, very readily and rapidly, with the oxygen of this fluid. The reciprocal action between its elements and oxygen is greater than that exercised between the elements of the metamorphosed tissue and oxygen, and, accordingly, alcohol prevents the action of the supporter of combustion, not only upon the products of the change of matter, but upon the tissues themselves. This explains many phenomena resulting from the use of alcohol. Alcohol thus puts an end to change of matter in certain parts of the body, and it

has the effect of converting arterial into venous blood, without the proper effect of the former upon the tissues being produced. Weariness, feebleness in the limbs, and drowsiness, show that the force available for mechanical purposes, or, in other words, that the change of matter has been diminished."

These remarks appear to prove, that alcohol does not long continue to circulate through the brain as alcohol, but, that it is resolved into some other compound, by which *arterial is converted into venous blood*, and a limit is put to change of matter.*

When the effects of the alcohol have passed, the man is again sane; now the alcohol could not have affected the mind excepting through the medium of the blood, or of the nervous system. That the blood is

* If the blood of an insane person, and of a drunken man, were subjected to a chemical and microscopic examination, and the results compared, some light might be thrown on this subject.

diseased is certain; while there is no proof that morbid conditions of the nervous system *can* produce such symptoms.

The connexion between hydrocephalus and precocity, is a fact that is universally admitted. In precocious children, we see an evident relation between an excited circulation and brilliant talents; as, also, between these and disease of the brain, especially inflammation and effusion. I have little doubt but that effusion, ramollissement, &c. are frequently the effect of a morbid condition of the blood.

Some patients, in the last stage of phthisis, and other chronic diseases, possess a clear and unclouded mind, while others are delirious and incoherent. Does not this result from the more perfectly arterialized blood in the one than in the other?

That blood conveying narcotics, &c.

exercises some morbid influence on the development of the mind, we are assured; but we have no certain data to determine how that effect is produced. If narcotics do not alter the constitution of the blood, how do they affect the secreting organs? The peculiar effect of the action of opium on children, is well known; it often produces in them great excitement and convulsions, which I apprehend to be a state of things not very far removed from insanity.

The use of opium, and of alcohol, will produce both intoxication and delirium tremens; we may, therefore, presume that they similarly affect the constitution. In the *post mortem* examinations of the bodies of those who have died from the disease produced by either of these causes, lesion of the brain is rarely discovered, though opacity, &c. of the arachnoid, has sometimes been apparent. In this, and in cases of

death resulting from inflammation of other serous membranes, I have often felt astonished at hearing the cause of death ascribed to the slight disorganization. I view the inflammation rather as a symptom, attributing the *cause* of the disease, and death, entirely to the condition of the blood.

Dr. Marshall Hall, on the subject of morbid appearances, remarks, "It is sad to observe, how a little effusion, or a slight layer of lymph, is the cause of everything, in the minds of some of these gentlemen of one idea"

Mr. Ancell, in his review of Liebig's *Chemistry*, in the *Lancet*, has the following curious remarks:—"Equally extraordinary is the fact, that those chemical principles which act chiefly on the brain and nerves, have a composition analagous to that of the substance of the brain and nerves. The cerebral and nervous structures may be

deteriorated by disease, or the power of forming the matter of them may be diminished, or the power in them of resisting the action of the chemical agencies may be lessened."

If a morbid condition of the blood can produce an insane development of the mind, we can easily understand how low spirits and hypochondriasis is so often connected with indigestion, and with derangement of the chylo-poietic viscera; for, if chymification and assimilation are not rightly performed, the blood must necessarily be deteriorated.

I do not mean to affirm, that in the present state of our knowledge, there is nothing which *seems* to militate against my hypothesis concerning the cause of insanity; but, how any one, with an unprejudiced mind, can see less difficulty in connecting insanity with disease of the mind, or of the brain, or of the membranes, or of the cranium, or of

the nervous system generally, than with a diseased condition of the blood, I cannot imagine.

When I see the same symptoms, without any appreciable difference, resulting from that insanity that occurs without any *apparent* cause, and from that insanity that depends, *evidently*, on poisons circulating in the vital fluid, I cannot refrain from adopting the language of M. Andral, when referring to some similar subject—"If these phenomena are perfectly identical with those which are evidently produced by vitiated blood; if, on examining the body, we cannot detect any *constant lesion of the solids;* and, if we always observe a certain number of fundamental symptoms, whether *these lesions exist or not*, what is the conclusion which we ought to draw, consistent with true logic and sound physiology? Certainly, this; that here it appears that the primary cause

of the disease should be referred to the blood, which has altered its nature, under the influence of unknown causes, as it has in the other cases, in consequence of the commixture of various foreign substances."

In conclusion, I would desire to make a few remarks on the condition of the blood in reference to apoplexy and epilepsy.

No doubt can, I think, reasonably exist, of apoplexy being *generally* dependent on an increased quantity of blood within the cranium, inasmuch as extreme vascularity is generally found in persons who have died of this disease, and I believe, in most of those cases of apoplexy in which no vascularity is found, the blood has escaped from the head by gravitation, after death; but, I am convinced, there are also some cases of apoplexy that are entirely dependent on the *quality* of the blood.

In some cases of congestion, of typhus, of

extreme cold, and of poisoning, death occurs in a state that closely resembles apoplexy; in all of which cases we may fairly presume the cause of the symptoms to be a morbid condition of the blood. I believe, moreover, that certain, though undefinable causes, are equal to the generation of such a morbid condition of the blood, as can render this fluid unequal to the maintenance of the vital actions, or of the vital equilibrium of the brain, or of the *general* vital equilibrium, and, consequently, equal to the production of sudden dissolution.

M. Velpeau recites the case of a man who died almost suddenly, after having some symptoms of cerebral congestion, and in whom, upon examination, there was found, throughout the whole extent of the circulating system, a blood of a pultaceous consistence, and blackish red colour, resembling the matter of certain abscesses of the liver.

Dr. Carpenter, in his *Principles of Physiology*, makes this remark, "It would seem from the great change in the character of the blood which was noticed in this and in other instances (of apoplexy), that the want of due proportion between the fibrin and the globules, was the *cause* rather than the *effect* of the apoplectic attack."

Dr. Abercrombie also remarks, "It is probable that the cases of the first modification (apoplexy without any morbid appearances) depend upon a cause which is entirely referable to a *derangement of the circulation* in the brain, distinct from inflammation. It is also probable that the cases of the second modification (apoplexy with effusion) are, at their commencement, of the same nature with those of the first."

I believe, also, that that apoplexy which results from intoxication, and from violent

mental emotions, &c. depends on a morbid condition of the blood.

I am fully aware that epilepsy is produced in numberless cases by other causes than a morbid condition of the blood, but I allude to the connexion between epilepsy and diseased conditions of the blood, expressly for the purpose of eliciting enquiry.

The connexion between epilepsy and mania is proved by their frequent contemporaneous existence. May not that which produces the one produce the other also, in a person predisposed? Of course they are essentially different and distinct diseases.

The relation that exists between apoplexy, epilepsy, paralysis, convulsions, hydrocephalus, hysteria, chorea, catalepsy, and mania, demands patient investigation, and promises abundantly to repay the assiduous enquirer.

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ERRATA.

Page 11, line 3 from bottom, for "was" read *were.*

Page 67, line 13, for "brain" read *organization.*