On the principles and method of a practical science of mind : a reply to a criticism / by Thomas Laycock.

ON THE

PRINCIPLES AND METHOD

OF A

PRACTICAL SCIENCE OF MIND.

A REPLY TO A CRITICISM.

BY

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"The true and legitimate goal of the Sciences is none other than this, to endow human life with new discoveries and resources."—BACON, '*Novum Organon*,' Aphor. lxxxi.

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1. *The question propounded.*—The members of the Association under whose auspices the 'Journal of Mental Science' is published, having done me the honour to elect me an honorary member of their body, I think I cannot better express my strong sense of the compliment thus paid to me, than by a cordial co-operation with them in their labours for the advancement of mental science. The subject I have ventured with this object to bring under their notice, is one of the highest importance to their professional success; it is to determine how far a mental science in the true meaning of the term science is possible, and capable of practical application to mental pathology, therapeutics and hygiène, and the needs of society in general. For more than twenty-five years, I have carefully studied mental science in these its practical relations, and have from time to time made my views public. My friend Dr. J. S. Bushnan, has questioned the value and validity of those views in the journal, on two recent occasions, with special reference to two of my latest publications.* It appears from his last communication, ('Journal of Mental Science,' October, 1861), that he has come to the conclusion that my systematic views elaborated after so much labour and thought, and carefully applied, not only to the practice, but also to the teaching of both the practice of medicine in general, and of psychiatry in particular are, "in no sense practical." This, to me, startling conclusion, has led me to examine into the mode by which my friend and critic came by the notion, and I find that either he or I must be under a singular misapprehension, both as to what is scientific and practical, and as to how it may be attained. I know of no better method for testing where the error lies, than the comparison of Dr. Bushnan's principles and method with mine, which I propose to make in reference to the objects for which the journal is established. Dr. Bushnan states his doctrine very explicitly.

"If there be any one feature in our author's system more striking than another, it is the large extent of generalisation by which it is

* 'Mind and Brain, or the Correlations of Consciousness and Organization,' 2 vols., 8vo., 1860; and 'The Scientific Place and Principles of Medical Psychology.' "An Address Introductory to a Course of Lectures on Medical Psychology and Mental Diseases," 'Edin. Med. Journ.,' June, 1861.

distinguished; nevertheless what he unceasingly dwells upon, is the improvement he expects to make in practical metaphysics. Now the way to practical improvements, in almost every department is in the opposite direction to generalisation. Thence we assert that proof is required from Dr. Laycock, beyond what he has yet afforded, that a system so characterised by extended generalisation is likely to be at once fruitful in practical results," p. 371.

2. *The uses of generalisations in mental science.*—Dr. Bushnan lays down two propositions here, namely: 1. That the way to practical improvement in almost every department of science and art, is in the opposite direction to generalisation, and 2, that the generalisations in mental science, attempted by me cannot lead, and have not been capable of application, to improvements in practical metaphysics; which term, it is clear from the context, he uses as synonymous with practical mental science.

Now as to his first proposition, I need hardly say that all our experience of the sciences contradicts it. I state, therefore, only a few illustrations of its erroneousness. 1. The large generalisations in the science of optics have enabled us to perfect the two greatest and perhaps most essential instruments of modern research, without which certain sciences would be wholly imperfect—the telescope and microscope. 2. The generalisations of Newton as to motion of masses in space upon which not only the whole science of modern astronomy rests, but also the scientific generalisations with their practical applications, included under mechanics, navigation, meterology, climatology, &c. 3. The generalisations of chemistry and the mechanico-chemical sciences with all their wonderful applications to the arts of life, and which have supplied a new basis to human society. 4. The modern development of medicine (which includes hygiène, or the prevention of disease, as well as the treatment and cure), reached by generalisations in physiology and pathology, which have only been restricted in their applications by the too narrow limits they have included hitherto. In these, and many other instances, the generalisations of science have not only extended our experience of the laws and forces of nature, so as to place them more and more under the control of man, but have also corrected many errors of experience, into which he had fallen as to those laws and forces. So that while useful knowledge has been increased, error has been dispelled. And I think it is a justifiable inference from the history of the past, that if we can attain to generalisations in mental science, as sound and as wide as those of the physical sciences proper, we shall be able to apply them with equal success to the wants of modern society.

3. *The uses of the speculative or scholastic method examined.*—But while Dr. Bushnan's doctrine is thus opposed to all our experience of the uses of generalisations in science, it appears to be wholly contrary to any reasoned view of them. For what, after all, are the

generalisations of science as distinguished from those of experience? They are nothing more than general propositions or principles which embody our knowledge of natural phenomena, arrived at by methods expressly adapted to secure accuracy of observation and generalisation. The general terms in common use, embody principles drawn from the ordinary experience of mankind, which differ from those of science only in the mode by which they are attained. The inductive method is that by which the principles of science are reached; those of experience are reached by a natural or instinctive process of induction and generalisation. Which then is "the way to practical improvements in the opposite direction to generalisation," that Dr. Bushnan hints is the better way? It can only be one of two things: 1. Either it consists in the exercise of a mere practical tact or dexterity, without a distinct perception or knowledge of general laws or principles—commonly known as the "rule of thumb,"—which science enlightens; or 2. It is to be found in the inductive or *à priori* method by which principles are reached by means of logic instead of observation and research. As this is the method in common use amongst metaphysicians and psychologists of the old school, which Dr. Bushnan follows, I infer that this is the way to practical improvements, he would recommend us to follow. Now to avoid the invidiousness of a reference to living metaphysicians, I would refer Dr. Bushnan to the greatest of the ancients for a warning example of the kind of knowledge to which such a method leads when applied to mental science; he will find it in the *Timæus*. I have given an analysis of the conclusions so reached *à priori* in my work, and ventured to say without the slightest fear of contradiction, that Plato's doctrine of the relations of body and mind, and of life in general, is nothing better than a teleological superstition, which would discredit any modern European man or woman, of ordinary education and intelligence.*

The deductive method may be nevertheless of use, and it is now admitted to be valuable in combination with the inductive. When by induction we have reached a true general principle or law, we can then apply it deductively or speculatively, to the elucidation of other phenomena, or as a guide to new observations and higher inductions. But then observations and practical testings, must still go hand-in-hand with speculation. These are the principles and the methods I have adopted, and I may be permitted to say that both have been comprehended and appreciated by a competent critic.†

* 'Mind and Brain,' vol. i, p. 213, § 94.

† "It will be seen in short, that in his [Dr. Laycock's] praiseworthy attempt to place the science of mind on a firmer basis, his chief efforts are directed to show that it must be cultivated by the same inductive method that we pursue in other branches of science, and in accordance with this principle to extend the sphere of observation and the means of accumulating available facts. * * * And these two things– observation and plain sense—are precisely what psychology at

The questions selected by Dr. Bushnan for examination, and the discussion of which leads him to the conclusion that my system "is in no sense practical," illustrate well the speculative influence of the old psychology on his mind. On my title-page, I state that my work contains "The correlations of consciousness and organization, with their applications to philosophy, zoology, physiology, mental pathology, and the practice of medicine." Dr. Bushnan had therefore an abundant choice of practical departments from which to select test questions; he limits himself however to the department of philosophy, and even selects the most speculative questions of that department. They are as follows:

1st. The doctrine of the "personality of the supreme power," or the nature of God as a being.

2nd. The notion "that there are instinctive beliefs in the progress of the development of man's mental operations."

3rd. What are the sources of our knowledge, and how far are truths and ideas necessary and intuitive? Also, what is the meaning of the word *necessary?*

4th. Whether the study of my system transcends that of the old system, as a means of mental discipline and education.

Having discussed these questions, Dr. Bushnan concludes my system is, in "no sense" practical; a conclusion not very obviously warranted by the premises, even granting he had perfectly proved, that as to every question raised, my system was a failure.

4. *The proper limits of mental science.*—Before I discuss the main problem, how far mental science cultivated in the way I both recommend and practise, can be applied to the practical objects of the psychiatrician, I will dispose of two of these four questions, because they indicate the limits of the uses of mental science. As to the first, I will admit that my chapter on "Mind considered as the first Cause" may to a certain extent, excuse the discussion of it as a branch of practical metaphysics, but I must also be permitted to add here, what I have expressly laid down there, that "the nature of the Deity, as the Creator and Governor of the World," is not within the scope of scientific investigation. My object, indeed, in that chapter, was to limit scientific inquiry in this direction, and at the same time, to guide speculation. A scientific investigation of the nature of the Deity by the method of observation and induction, is for obvious reasons, impossible.

A second point raised by Dr. Bushnan, is almost equally foreign to my system, and is expressed thus:

"This much we cannot but say, that the debate in the old manner of metaphysicians respecting the claims of these [certain stated] propositions to be intuitive or instinctive truths, has proved one of

present chiefly needs. Of reasoning, we have already had enough to drive us mad." Review of "Mind and Brain," 'Saturday Review,' August 31, 1816.

the most useful exercises ever introduced for the enlargement and strengthening of the human understanding. And this we must be allowed to add, is one of the chief uses of metaphysical studies as a preparation for those practical departments of life, in which the more refined kinds of analyses are required. It will not then, be unreasonable to require, before we consent to Dr. Laycock's method being allowed to supersede the old system, that he shall prove, not only that that method is equally conducive with the old, to the advancement of the human mind, but that it is equally suited for that kind of exercise of the mental faculties to which we have referred." pp. 377-78.

And again Dr. Bushnan, with the same convictions, observes,—

"A principal use of a course of metaphysics to a student, whether his destination be to medicine, law, or divinity, is to enable him to understand the sense in which certain words are commonly used when his professional pursuits carry him into disquisitions nearly bordering on the *metaphysical*. How would such a student fare, who had applied himself, however diligently, to Dr. Laycock's work but to none other. We fear," &c., p. 386.

Dr. Bushnan is a little unreasonable here, but I affirm the student would learn from the express teaching of my work, that a training in sound logic and metaphysics, is essential to the successful study of mental science; nevertheless, he would also learn from the quoted words of Kant, given therein, the "safe and useful warning that general logic, considered as an *organon*, must always be a logic of illusion; and, that any attempt to use it, as an instrument in order to extend and enlarge the range of our knowledge, must end in prating; any one being able to maintain or oppose with some appearance of truth any single assertion whatever."* And the student would specially learn, further, that so far from the study of metaphysics necessarily enabling him to understand the sense in which certain words are commonly used, it is a great truth of experience that the ambiguities of metaphysical terms are proverbial, have been recognised as amongst the chief causes of that chaotic state of mental philosophy, both acknowledged and lamented by Reid, Kant, Ferrier, Mill, Fraser, and others, and have been vigorously denounced as such, by such leading metaphysicians as Locke, Reid, Kant, Hamilton, and Ferrier. All this I have amply established on the evidence of these distinguished men.† I therefore feel authorised to question the accuracy of Dr. Bushnan's premiss. On the other hand I am prepared to maintain (if that were necessary) that the study of any true science whatever, whether it belong to the group of pure or of mixed sciences, will have the effect attributed by Dr. Bushnan to the study of metaphysics, which by the bye, he evidently confounds

* 'Mind and Brain,' vol. i, p. 4.

† Ibid., vol. i, ch. 3.

with the study of logic. Oxford and Cambridge have in fact introduced the modern natural sciences into the range of University studies, with this express object. I may, perhaps, be allowed to add further, that Dr. Bushnan has expressed an opinion adverse to my work in this respect, which is not confirmed by the judgment of other critics.*

5. *Practical metaphysics defined.*—Having thus confuted the two preliminary objections, I will now proceed to examine the main question, but let us in the first instance clearly determine what a practical mental science includes; as to this point, we can accept Dr. Bushnan's definition, who observes—

"What are practical metaphysics? What but a knowledge of the ordinary faculties of the mind, of the general laws under which these faculties operate, and of the modifications which these laws are apt to undergo in individuals; what but a knowledge of the appetites, desires, benevolent and malevolent affections of our human nature, of self love, of moral judgment and obligation, and of the circumstances under which these are exalted, confirmed, or subverted." (p. 386). In accepting this definition, I must observe that I admit of no limitations. A knowledge of the *ordinary* faculties, includes with me a knowledge of the *extraordinary*, if there be any: because a true notion of a mental science rigorously demands this. By general laws, I mean *all* the general laws; and by *modifications* I mean *every kind* of modification. So also with a knowledge of the appetites, desires &c., and the "circumstances" which exalt, confirm, or subvert them—I allow of no exceptions as to particular states of consciousness, and the term circumstance comprise everything whatever which operates to modify. In short, the science must be complete in its scope.

6. *The applications of some fundamental principles to method.*—Such then being the true sphere of mental science, my first principle as stated in the introductory lecture to which Dr. Bushnan refers, but never quotes,† is, that the business of medical psychology considered as a practical mental science is with "living man, that is, as he exists on earth, and not as a disembodied soul, or as speaking, willing, or feeling, independently of organization." It is, I affirm, only in reference to the living man, that we can attain to the knowledge and laws which Dr. Bushnan indicates as constituting practical metaphysics. Now this is a principle in a practical system of mental

* Thus a gentleman who is well-known for his philosophical tone of thought, and who is as well versed in the philosophy of Plato, as any man living, observes "Dr. Laycock has prefixed to his work a *Dissertation on Method*, very luminous and complete, which might stand as an admirable book of itself in a treatise of general logic." (Review of "Mind and Brain," in 'London Review,' July, 1860.) If need were, I could add other similar opinions.

† "The Scientific Place and Principles of Medical Psychology," 'Edin. Med. Journal,' June, 1861.

science of fundamental importance, not only for what it comprises but for what it excludes. While, without it, no system whatever can be practical, it excludes all those delusive or unpractical speculations, which deal with the Divinity, angels, immaterial principles, Egos, souls, spirits, and spiritual agencies in general, in entire neglect of organic forces and laws. On the contrary, it insists that man's mental states must be examined in relation to his vital states; and it maintains that all those circumstances which exalt, confirm, or subvert the appetites, desires, moral sentiments, and judgment, are not found to arise *exclusively* from external things, or the relations of man to external things, (as in ordinary metaphysics) but that they are resolved ultimately into changes in his vital states. Now it is an accurate knowledge of these latter changes in their relations to morbid changes in the consciousness of whatever kind, that can constitute the only solid foundation for practice in mental pathology, therapeutics and hygiène, to those who believe that the two classes of changes are in inseparable relation to each other in all mental states, or even in any group or groups of faculties, desires, appetites, or emotions. Dr. Bushnan may say that this is physiological psychology, or mental physiology, and if the question raised, was as to the classification of the departments into which mental science may be divided, I should not differ with him as to the name; but if he excludes it because of the name, altogether from mental science or practical metaphysics, then I object that he thereby evades his own definition and adopts the old scholastic system. That system has had a trial in one shape or another, for many ages, and the results of the trial have proved to the entire satisfaction of practical men, that the practical objects we have already marked out as the objects of a true science of mind are not attainable by it. I think I may safely assert that no superintendent of an asylum could deduce the practical principles of mental pathology, therapeutics, and hygiène, and establish rules for the prevention or cure of mental disorder by the most careful study of Plato, Locke, Kant, Reid, Hamilton, or even the Mills. I need hardly say that if we agree in the meaning of the word circumstance this capability of a practical application to mental pathology and therapeutics, is a sufficient test of a professedly practical system of mental science or metaphysics, whatever may be its foundation.

My second proposition is, that the object of a practical mental science is living man "*in all states of conciousness whatever.*" And this is founded upon the fundamental principle of the science, "that consciousness is one, whatever the conscious state may be, or however caused."* I do not admit, with Dr. Bushnan, that there is one kind of consciousness of dreaming and another of waking, one of childhood and another of manhood, one of healthy mental action

* Address, op. cit.

and another of unhealthy, one of the appetites, another of the passions, another of the reason; and that each of these has its knowledges and laws, as objects of scientific investigation, in entire independence of the other. That is the principle of the scholastic metaphysics, which avowedly considers these various states of consciousness piecemeal, with what result we psychiatricians know well. The method is very much like that a mechanician would adopt, who, wishing to be practical and know the structure and functions of a watch, examined each portion separately, without regard to its connexion with the other. This unity of all conscious states, and the need of investigating them as a whole, is very well illustrated in the nudifying, fæcivorous, destructive maniac, in whom, under circumstances demonstratively corporeal, the appetites, desires, affections, moral sense, and judgment, are all either exalted, perverted, or subverted.

It is quite true, as doubtless Dr. Bushnan will be ready to allege, that this physiological side of the inquiry is now very generally recognised by metaphysicians; the question, however, is not as to its recognition, but as to how far it has been made available by them in developing a system of practical metaphysics. As to this point, we find—1. That one class divides the states of human consciousness into mental and corporeal, as if they were not all both mental and corporeal; and then insists that they must be examined apart from each other. The physiologist, they say, must do his business, and leave the metaphysician to do his, who reciprocates the proceeding by ignoring the work of the physiologist. 2. Or, admitting fully the necessity of the conjoint inquiry, they deny the practicability of it; and omitting it wholly, proceed to establish a speculative system, of no practical value, except in so far as it contains the results of the experience and common sense of mankind. 3. Another class restricts the inquiry to man in a certain stage of development of the faculties. Thus Dr. Bushnan, examining into the origin of our intuitions and instinctive beliefs, thinks those of childhood should be omitted. He remarks: "It seems manifest, however, that the proper rule in the old system of psychology is, to take evidence solely from consciousness in the mature state of the mental faculties, and to regard, at least, all inferences from what must have occurred in childhood as belonging not to the metaphysical, but to the physiological side of the inquiry—that is, to the investigation by observation and experience." (p. 375).

Now I think a moment's reflection will convince Dr. Bushnan that this proposed method of his can never establish a system of practical metaphysics. Setting aside the obvious defect that it excludes "investigation by observation and experience," it takes no note of the mental phenomena of childhood and old age. How then

can a system so developed have any practical bearing on the education and mental hygiène of youth any more than on the cure and relief of mental disorder and weakness? Doubtless my critic is in all this true to the principles of his method, which restricts even the sphere of speculation, while it is confessedly opposed to induction and generalisation; but then he is faithless to his definition of practical metaphysics, even in the most limited sense.

Perhaps Dr. Bushnan does not mean seriously to insist that, while in every other branch of science a basis for wider generalisations is sought in a wider field of inquiry, this old restrictive method will be allowed to be the best for the development of mental science. If he do, however (as his words imply), then I take the opposite side, and maintain that mental science can only be advanced by the same method of wider generalisation from a broader field of inquiry, and that if the metaphysician will restrict his researches to man, he must at least take man as a whole. But even a science of mind established on such wider basis as the whole of human nature, would be wholly insufficient for the practical purposes we have set forth, if it were limited to that absolutely. Man is endowed with conciousness in common with other vertebrate animals; nor as to the higher of the group are even his intellectual faculties different in kind.* Hence, there is a comparative mental science, just as there is a comparative physiology, practically available to the training and hygiène of domestic animals on the one hand, and on the other to the generalisations of human mental science. Doubtless Dr. Bushnan will say, and very truly, that he includes this in his "metaphysical psychology," under the term "eneo-psychology;" but he will not affirm that it is a part of it in the same sense, and with the same results, as comparative physiology is a part of general or human physiology. On the contrary, the Cartesians denied that the lower animals had any consciousness at all; they were, according to that speculative system of metaphysics, insentient machines.† Probably a comparative psychology, thus used, will throw more light on the true nature of many forms of insanity, imbecility, and idiotcy, than any other extension of the inquiry, because so many of them are really degradations of the man in the direction of lower creatures.

There is, however, another important aspect of the question. When once the practical principle is admitted, that conscious states must be examined in their relation with vital conditions, on the ground that human thought is inseparable on earth from life, the inquiry must consist in a conjoined observation of the two in all organisms endowed with consciousness, however simple. Now, while we have comparatively no difficulty in noting the order of suc-

* Reid, Hamilton, and Mill, in 'Mind and Brain,' vol. i, p. 71.

† See the evidence of this, and of the practical neglect, by Reid, and others, of comparative psychology, in 'Mind and Brain,' vol. i, p. 67.

cession of our own mental states, we cannot penetrate into the consciousness of lower animals—we can only conclude, in fact, as to the nature of their actions by a fallacious method of drawing analogies which has led to fundamental errors in the hands of careless or incompetent inquirers. We find that we perform certain acts leading to certain ends consciously, *i. e.*, with feeling, or desire, or will; and we infer that when lower animals perform similar acts they are in similar conscious states. But the whole doctrine of reflex action (extended by me from the spinal cord and medulla oblongata to the encephalic ganglia on the one hand, and to the sympathetic ganglia and tissues of plants and animals devoid of nervous system, on the other), proves that these and multitudes of similarly adapted actions either probably or actually take place without consciousness. Hence the data of consciousness are only immediately available to the inquirer, as to our own actions, or to those of the lower animals most closely allied to us; so that some naturalists have doubted whether insects feel. But we can compare the *adapted* acts of lower organisms, whether plant or animal, with our own consciously adapted acts, and then we can compare the vital changes under which these latter occur with the corresponding states of consciousness in us, because they are presented as immediately to our inner sense as external objects are to our outer sense. Now this process, the insuperable difficulty of the old school, which despairs of ever proving any connexion between states of consciousness and vital changes, becomes the best available starting-point for inquiries in mental science, for we observe what are the ends attained by living things, and formularise the order of attainment as a law, and then compare the ends we attain with these and with the laws of succession of our own consciousness which coincide with them. We thus develop a method which enables us to combine biological with mental laws, and so not only include plants and animals in our inquiry, but extend our generalisations to the relations of all living tissues, whether nerve or not; finally arriving at the most general laws of the vital forces in their relations with the teleological phenomena of organisms. These general laws are the first principles of a mental science to be used deductively. Dr. Bushnan will find this method not only carefully marked out in my work, but systematically developed and applied so as to illustrate specially the nature and laws of the appetites and desires of man, and the circumstances which modify them.* These, then, are the reasons why I conclude a wider generalisation than the old psychology affords or attempts is necessary to the development of a practical mental science, and the proofs of its uses.

* 'Mind and Brain,' part v, vol. ii, chaps. iv to xi inclusive.

7. *The generalisation of a directive or teleological force applied.*—What we will now ask is the most fundamental or general principle of a mental science, cultivated after this method? this, that there is a directive force or power universally operative in creation, in virtue of which, mechanical force is transmitted and made active to ends (*vis viva*), according to a law of design. It is in virtue of this directive force, that living things display all those various adaptations to ends, whether consciously or unconsciously, which are essential to our notion of life, and without which there would be no life; and it is on the same force operating according to biological laws in the development and functional activity of the encephalon, that man's mental phenomena depend. Dr. Bushnan has given a lucid and able summary of the arguments in favour of this my first general principle, and admits their validity as to organic nature. He states, however, that additional evidence is required to prove that mind in the sense of an agent or force, ever adjusting means to ends, determines the arrangements of the physical universe. The uniformity and stability of these arrangements constitute the strongest proofs it is possible to adduce, of design, so that "an undevout astronomer is mad," has become a proverb. Hence Sir Isaac Newton observes, "Tam *miram uniformitatem* in planetarum systemate necessario fatendum est intelligentia et consilio fuisse affectam." La Place's profound mathematical calculations as to the adaptation of these arrangements to secure stability have supplied a kind of proof, which ought to be at least as convincing as the argument of Newton. He has shewn as to this stability that while the probability of the sun's rising again on the morrow of any given day is more than one million eight hundred thousand to one, it is above two million times more probable than this, that the motions in our system were designed by one first cause, or above four millions to one. If Dr. Bushnan can, however, direct me to any method by which stronger proof can be reached, I shall be grateful; but I confess I do not conceive it possible to arrive at evidence more complete or conclusive. It is true a certain physiological school rejects this and all other evidence of design whether in organic or inorganic nature, but that cannot be helped. And it is certain that by so doing, they render any true mental science impossible, for they must of necessity exclude from their system, a consideration of the fundamental phenomena of human consciousness; as for example, the intuitions of designing and of acting to the attainment of ends. Nor do I see in their system, any room for even the sensational phenomena of human nature. Now I advance in favour of my fundamental doctrine, that all the phenomena of created things can be brought under it.

There are some bearings of this principle, however, as to which explanation is necessary. The critic of the Saturday Review already referred to considers my directive force to be essentially the same as

the *anima* of Stahl's system; yet I have no where in my work discussed, the soul or its nature, but on the contrary, expressly repudiated any such procedure as unscientific. I always speak of the man; and my sole object is man, as he exists on earth. Mind in the abstract, is not considered to be a personal entity, such as it *renders* man, but an ordering force as universal as the force of gravity. And just as the latter is the immediate cause of planetary motions, so this directive force is the immediate cause of all those adjustments of the operation of the motor forces of the universe, which strike us so forcibly, whether they be mechanical, mechanico-chemical, (heat, light, electricity, &c.,) chemical, or vital forces. As an illustration of my doctrine, let me take the formation of the blubber or layer of fatty matter found in the whale, and other hot-blooded animals of the Arctic Ocean. The metaphysical or speculative teleologist would explain the deposit by the doctrine of final causes, and would argue that the fat is deposited in virtue of the will of the Creator, whose object is that these hot-blooded animals shall be able to exist in these cold regions, and who has to that end provided that their bodies shall be protected by a warm or non-conducting material. If, however, he be a Stahlian, he will substitute the *anima* for the Creator as the immediate or proximate cause of the deposit. In either case, the theory will be strengthened by the fact that downy and woolly coverings are supplied to Arctic *land* animals, under analogous circumstances; while in hot countries on the contrary, the body is bare, or the wool changes to thin hair. Now while I recognise the end, I say that like all other ends in living things, it is attained by the mutual operation to certain results, of physical and vital forces. The vital forces upon which the subcutaneous deposit of fat depends, are so modified by the low temperature of the air or water, in which they are placed that carbonaceous products result from their action in the form of oil, hair, and feathers; and whenever from any other cause, the vital forces are modified in the same way (as in disease,) the same result will take place. In like manner, a lower temperature not only predisposes to fat deposit, but to torpor of the nervous system in certain animals, or hybernation. Perhaps one of the most striking examples of this self-adjusting operation of the teleological force, is in the supply of food to London. No personal direction of a public officer or board of officials could undertake the production and supply to its 3,000,000 inhabitants of their daily food, and whatever is necessary to their comfort and happiness, without the greatest risk of failure and at incalculable labour; yet so admirable are the self-adjustments of that great social mass in virtue of those social forces, which (according to my system), are the derivatives of the teleological force, that all goes on as regularly as the movements of the planetary system, or the functions of individual organisms. But the planetary

system is equally maintained by a similar series of self-adjustments; while these have been so clearly manifested in animals and plants, as to have originated the medical theory of a *vis medicatrix* and *conservatrix*. That a knowledge of the latter and of the laws by which they are brought about, is necessary to a rational system of practice of medicine is so obvious, that the tendency of safe modern practice as it was of the ancient, is to guide rather than disturb the natural processes. Another illustration of this kind is afforded by what has been termed the balance of animated nature, in which there are such adjustments as to the reproduction and destruction of animals and plants of various genera and species, and such a supply of what is necessary to continued and healthy existence secured, that a stable and harmonious whole results. Of late years, this principle has been applied to legislation, and the old meddlesome interference with the self-adjusting forces of society deprecated, like meddlesome physic; because their free operation judiciously guided, has been found to be the surest guarantee for national health and stability. I mention these illustrations as constituting the most decisive proofs of both the truth and practical value (which must go together,) of my general principle. Just as the law of gravity applies equally to a grain of sand as to the countless masses of the universe, so this general law upon which I rest my system of mental science, applies equally to the needs of an infusorial animalcule, as of civilized society, and regulates the adjustments of the universe as surely as those of the smallest organism.

There is one other point to be borne in mind as to this law (and which is obviously suggested by the preceding considerations), viz., that the forces of nature acting thus under the influence of a law of design or directing force, do not attain one end exclusively by any one series of changes, but many. Thus for example, the deposit of fat in arctic marine animals probably subserves other purposes in the economy, and so maintains them in life and in health, than that obvious one of keeping the body at a temperature of 96°-100° Fahr. These purposes must be ascertained by experiment and observation; *à priori* speculation can only develop theories at the best, to be confirmed by research before they can be accepted as a true statement of facts. In other words, before we can say what ends are attained, they must be *discovered*.

This teleiotic or directive force being thus in my system, the proximate cause of the vital or teleorganic changes which go on in the encephalon (as the organ of consciousness,) in common with all other living tissues, it is necessary to determine its general laws and their modifications, accordingly as various functions are required to be performed by either the encephalic or other tissues. Now the first law is that of incessant change in the tissue; no change whatever arises in the consciousness, without a corresponding change or series

of changes, in the encephalon. Ceaseless change is the law of mental life, as it is of life simply, or of the whole creation. But these changes are due to motive forces which are supplied to the encephalon, and which operate for the attainment of ends according to certain fixed laws, termed vital or physiological. The supply of them to the encephalon, implies a means and method of continuous supply, otherwise the changes would cease. These means are the blood-making, blood-transmitting organs, which again imply other organs, for the supply of material to them, and these again others, so that the incessant changes on which life and thought depend, require a system of organs or things acting in harmonious relation to each other, so that the one result is attained. This system is, in man, the *person* or *individual*, the end thus attained is the *union* of many things into a harmonious whole, and the *law*, is the law of unity. Hence the law of unity, is the first or fundamental law of life. What then, we now inquire, is the correlative and equally fundamental law of consciousness? The correlative of this primary biological law, is the equally primary mental law, the intuition of *being* one; the "Ego" or "I" of the metaphysician. Now this intuition is not so simple in an act of thought, as it is in feeling; nor is it identical with the intuition of personal identity. In its simplest, *i. e.*, its sensational form, it is strictly to be limited to the Present; but in thought, the Present instantly yields to the To-come, and thereby becomes the Past; now the intuition of personal identity includes not only that of being one in time present, but that of having been the same one in time past, and of to-be the same, in time to-come.

These fundamental intuitions are worthy of the most careful study of the practitioner, whether as a specialist or generally, for there are hardly any morbid mental states in which they are not modified more or less, being either exalted, subverted or perverted. Hallucinations as to personal identity, are highly characteristic of all forms of dreaming, delirium, and maniacal raving; and of several forms of melancholia and monomania. Varieties of double, triple, and alternating consciousness, are also common in various morbid states of the encephalon. It is not difficult to explain the majority of these. The encephalon is a double organ, and when one half is exclusively morbid, or more morbid than the other, if both be affected, we have very much the same kind of condition of the whole organ of consciousness, as we have of that portion of it which subserves to vision, when the phenomena of double vision are manifested.

These principles bear mainly upon our sources of knowledge, but the same laws explain the relations of feeling, desire, emotion, and effort or will, to fundamental biological laws. In the address already referred to, I observe,—

"But let us inquire, to what fundamental biological law, can we

refer pain, and pleasure, and desire? We discover, when observing the functional activity of living organs, that if their machinery works perfectly, there is no pain experienced; but usually, on the contrary, a sense of pleasurable enjoyment of life. But if their functions be disordered, then suffering and disease arise. Now, it is for the exercise of these functions, that, according to physiology, they are constructed and undergo never-ceasing change, or in other words, they are both formed and act for certain ends; we, therefore, formularise the results of our experience and observation, and say that pleasure arises when the results of the operation of the vital forces accord with the ends aimed at; pain is felt when the results are imperfectly attained, or not attained at all. As to desire, it is felt when the man seeks after these ends; or in other words, is that state of consciousness which accompanies the effort of the organism to attain to the ends for which it is constructed, in whole or in part. The state of the consciousness which coincides with the effort or act of energy, is what Sir W. Hamilton terms a 'conation' and is that which is commonly known as an act of the will. But the 'conation' may be without a knowledge of the ends, or of the means for their attainment, in which case it is instinct; or there may be full knowledge of both, when it is reason. Between these two extremes there is every conceivable degree of knowledge and desire."*

Now Dr. Bushnan will discover after a very brief consideration and inquiry, that these principles include not only a knowledge of the appetites, desires, sentiments, emotions, passions, and will, in a psychological sense, but also a knowledge of these states of consciousness in their relations to the structure and functions of the encephalon. But this is not all; the encephalon is not other than living tissue; its development, construction, and functional activity, are consequently in accordance with those vital laws which are common to all living tissues. If, therefore, you discover what those laws are as to other tissues than the encephalic, you discover also those of the encephalic, and *vice versâ*. For illustrations of the manner in which these fundamental principles of my system are made practically available to mental pathology, I must again refer Dr. Bushnan to my published work, as to state them here, however briefly, would be impossible, they are so numerous.†

To the psychiatrician, the modifications of the consciousness as to self, in reference to the desires are of fundamental importance, because of the general fact, that some form or other of self-ness (to coin a word distinct in meaning from selfishness) is a predominant characteristic of almost all forms of mental derangement, and selfishness, and self-seeking are so common, and so strongly exhibited, that a

* 'Edin. Med. Journ.,' June, 1861.

† 'Mind and Brain,' vol. ii, part v, "Mental Physiology;" part vi, "Mental Organology."

community of insane persons is a very sorrowful sight, morally. If Dr. Bushnan had selected any one of the appetites or desires which I have discussed, both as to their psychology, physiology, and pathology, and examined whether my practical applications of the principles I have developed, were of any value, I could have conceded his right to express so decided an opinion as to their practical merits; but this he has wholly neglected, although any one of the leading appetites would have afforded him a suitable subject.

8. *The nature and origin of experience practically discussed.*—The principles I have set forth and illustrated sufficiently show how in my system intuitions and instinctive beliefs arise. It would be a useless labour to follow Dr. Bushnan through his devious criticism of these—if criticism it can be rightly termed; but there is one subject mooted by him, which he discusses according to the old *à priori* method, of so great practical importance, that I shall notice it,—namely, the nature and origin of knowledge as experience. The practical bearings of such a question are both numerous and important. The alienist, who has to deal with the delusions and hallucinations of the insane, will be interested in the laws of morbid perception and thought which such a topic would explain; the physiologist would find in them a solution of the laws of dreaming; the physician an explanation of various forms of delirium, and of the modus operandi of drugs, like haschisch and belladonna, which excite hallucinations of so varied a character; and would also expect to be taught how the curious psychal phenomena of hallucinations and delusions arise in the electro-biologized, mesmerized, &c. These, and other matters of a practical character, involved in the questions mooted by Dr. Bushnan, should have been discussed by him as elucidated by my system, before he had given his verdict that it is "in no sense practical." Now the fundamental proposition with me as to all our knowledge is, that "consciousness itself is experience—an experience of the vital changes in or by which we feel, think, and know."* Here is a plain, distinct, general law, applicable to all modes of feeling, thought, and knowledge; but Dr. Bushnan only discusses it to introduce a desultory series of arguments ranging over a variety of highly speculative topics developed according to the old speculative method, and without, of course, the slightest practical result. The only statement of facts which I can get hold of, in the mist, is the following quotation from Mr. J. S. Mill's 'Logic,' and of which Dr. Bushnan seems to approve, as explaining the mode in which we attain to experience or a knowledge of things.

"Whatever is known to us by consciousness is known beyond possibility of question. What one sees or feels, whether bodily or mentally, one cannot but be sure that one sees or feels. No science is required for the purpose of establishing such truths, no rules of

* 'Mind and Brain,' vol. ii, p. 81, § 447; and also vol. i, p. 290, § 167.

art can render our knowledge of them more certain than it is in itself. There is no logic for this portion of our knowledge."

The first sentence, "whatever is known to us by consciousness is known beyond the possibility of question" is a generalisation of our experience of consciousness in regard to knowledge, and the remainder of the paragraph is an amplification of the generalisation. It is not said that if we are conscious we must *believe* we are conscious; no one doubts this necessity of *belief;* but the proposition is, that whatever we necessarily *believe* to be seen is truly seen — or whatever is *known* immediately to our consciousness, is *known* to us beyond the possibility of question. It is plainly just the common generalisation of experience, that in acquiring knowledge a man is bound to take the evidence of his senses. Let us apply the generalisation, however, as it stands to the hallucinations of the insane. These are known by consciousness exclusively, and in no other way, of whatever kind they may be. They may be of subjective origin, that is, be dependent wholly upon morbid encephalic changes, or they may be partly objective, that is, the impressions of an object may be the exciting causes of the internal changes upon which the hallucinations depend, yet the object itself appears to be something else—is so transformed as to be presented to the consciousness as a thing wholly different. In any case the individual may either accept or question the data of consciousness as to "what he sees or feels, bodily or mentally;" not unfrequently, in the early stage of the mental disease they are questioned—are known to be false or impossible. It is only as the disease advances that he at last ceases to doubt them, and eventually affirms that what is so known to him by consciousness must be beyond the possibility of question. Of course the pure logician, inexperienced in such cases, thinks he will make short work of the patient's hallucinations, and immediately bombards him with a series of the most unanswerable syllogisms; but the hallucinated pooh-poohs them all with, "There is no logic for this portion of my knowledge; *I* am sure of what *I* see and feel and know." Now what practical end does the old *à priori* method serve in cases of this kind? Doubtless the bystander will be enabled thereby to prove that the data of this man's consciousness are erroneous, or absurdly contrary to facts and the order of nature, but that is a poor practical result of a large system, for common sense will do all that. As for the cure of these hallucinations, or any principle to help us therein, it tells nothing.

But there is a much more important question than this to be considered. Many persons have hallucinations as to their experience of what they have felt and seen which differ from those of the insane in the important circumstance, that they are *not* absurd, fantastic, or opposed to our experience of the order of nature. As to such, it is to be carefully observed that they do not carry with them their own contradiction; they can only be proved to be erroneous by witnesses. Now when such hallucinations are presented as evidence in courts of

law in support, *e.g.*, of a prosecution for adultery, robbery, or murder (and the frequency of such an occurrence is certainly greater than the recorded cases seem to imply), the question is too serious to be left for solution to vague speculation. We want precise information as to the morbid conditions of the encephalon under which such hallucinations arise, so that the probability of their being given by a witness as evidence of facts may be estimated. Now it is generally found that the less the hallucinations diverge from the ordinary course of nature the more difficult it is to detect their true character, or discover the morbid conditions on which they depend. Does the old method help us here?

Dr. Bushnan will doubtless object in common with his school, that this kind of doctrine is subversive of all knowledge and all belief. He will ask if a man cannot believe his own senses and his own consciousness, what is there left for him to trust to? Such, indeed, is the argument of every mysticist. In all the voluminous writings of the spiritualists, we are clamorously called upon to admit that the illusions, hallucinations, and delusions upon which their doctrines rest, are facts, because testified in this manner. Indeed, there is no kind of experience, the truths of which are not more or less vitiated in this way. The religious experiences in particular, of every sect abound with such facts; nor is science exempt from these errors. For many ages, astronomical science was based upon certain visual illusions, the chief of which is the apparent motion of the sun round the earth, and which was a part of the creed of christendom until within the last three centuries. Now science recognising the imperfections of man's nature in this respect is essentially sceptical. It thus teaches him the first lesson of all greatness, namely humility, and enables him to bow to the majesty of facts.

What then is the scientific method of deducing the amount of truth contained in our intuitions? Let us take for inquiry, the most fundamental intuition of all, namely that by which we know we are one, and one and the same. According to my principle, every intuitive act of thought has its correlative vital or biological law. We have already seen that the correlative vital law of the intuition of mental unity—the ego—is the physiological or vital unity of the body, as determined by observation; now it is in the agreement of the two laws or generalisations that we have the proof of the truth of both. This unity of the body has certainly been denied, (by Virchow, I think amongst others), but the exceptional instances brought forward do not destroy the generalisation as to a *concrete* ego, any more than the intuition of a duplex consciousness in certain morbid states, or in dreaming, falsifies the intuition upon which the metaphysician builds his doctrine of an immaterial ego. The whole of organic life is in fact so much an illustration of the law that an organism can only be defined on the basis that it is one thing. It is very true,

there are what may be termed communistic organisms ;* but as a town or a nation is not less one because constituted of many houses or individuals, so these are not less one because constituted of several or many individuals. It is only a question of more or less unity. Besides, if we pass from this law of unity in organic phenomena to its manifestation in the inorganic, we find it still operative, and learn that the same force upon which as manifested vitally, our intuition of being one depends, binds the universe into one harmonious whole. Hence the intuition has the highest scientific proof possible, and may therefore be admitted without question.

The truth of the intuition that we are always one and the same, (intuition of personal identity), may be established in like manner. The various parts of which a whole is made up mutually act upon each other in virtue of the teleological force, so that the result is stability, or continuance of the whole as a unit in space and time. In organic things, this continuance is termed duration of life. Now the intuition of personal identity is the correlative of this result of the vital forces operating to that end. But like that self-consciousness, it is not a simple intuition, but is a result of a comparison of an intuition of the What-is, with an intuition of the What-has-been. If a grocer is firmly convinced he is the pope, he has in his own consciousness the strongest proof of the fact ; but then his consciousness is in error, because from a certain morbid condition of the encephalon, the intuition of What-has-been is wholly erroneous. Otherwise he would detect the error.

Now I wish to state as emphatically as it is possible, that in all this, I do not question the value of experience in the attainment of knowledge ; the intuitions in question are in fact the results of the experience of mankind. What I wish to shew is the true nature of experience, and how both healthy and morbid vital conditions may influence the knowledge thus attained. There are, indeed, multitudes of truths which the experience of mankind has attained to exclusively, and which constitute in fact, the largest portion of human knowledge. These as I have stated are the best, if not the only starting points for scientific investigation, and consequently that a scientific inquiry must begin with the results of experience. All this I have most expressly laid down most carefully, as well as acted on in my work ;† and the more so, because of the imperfect meaning attached to the word by the speculative school, and which has evidently so influenced Dr. Bushnan that he has been unable even to understand my views. The source of all this error and misapprehension is in the simple fact that in their systems, the old meta-

* 'Mind and Brain,' vol. ii, p. 25, "Compound Consciousness."

† Ibid., vol. i, p. 89, seq ; *e. g.*, I say "the principles of a practical philosophy must not only be deduced from man's experience, but, conversely, be tested by experience."

physicians take no note of those vital changes, which at least necessarily coincide with and, as I maintain, necessarily correlate all states of consciousness; and consequently they could not apply the term to them, as things of which a man has experience. When, therefore, I concede Mr. Mill's proposition, that even our ideas of number are due to experience, I expressly explain the sense in which I use the term. My words are "If we apply the fundamental law of all cognition to an elucidation of this question, we cannot but see that in the widest sense of the term, all truths whatever, must be truths of experience; for consciousness itself is but an experience of the vital changes within us. We do not even *know* that we exist as one, out of relation to something else. Now a knowledge of that relation implies an anterior cognition of self and not-self, which cognition can only be the results of the teleiotic or teleorganic changes, going on within us to that end. Mr. Mill, therefore, [it is conceded] has rightly attributed, even our ideas of number to experience, *if the term be used in the sense here indicated.*"*

9. *Conclusions as to the importance of method in mental science.*—It is not of much practical moment to point out various minor mistakes and misapprehensions into which Dr. Bushnan has fallen in his criticism; they are all traceable to the same cause as the larger defects I have noted; namely a wholly defective method. Now this is a point of very cardinal importance to those officers of asylums who desire to use the large and valuable field of observation and research of which they are in possession, in virtue of their important office, for the advancement of mental science. Here is one of their body, a gentleman of high intelligence, and evidently a pains-taking and honest inquirer after truth, who mistakes (as I have shown) even the uses of the generalisations of science; who looking for the practical in mental science, can find no better tests for it, than the insoluble problem of the nature of the Deity, or the uses of metaphysical logomachy, and the like wearinesses; and who, although in daily contact with the mentally disordered, seems to have wholly forgotten in his search for the practical, that—

> " * * * To know
> That which before us lies in daily life,
> Is the prime wisdom."

I say that it is to the old method which he advocates and practises, that this failure is due, and I have ample grounds for this conclusion, by examples of similar failures. It is at least a curious circumstance that of the many critics of my views, who belong to the old school, none has discussed any of the numerous practical topics I have brought forward; but on the contrary, their criticisms have been

* 'Mind and Brain,' vol. i, p. 290. System of Logic, book ii, chaps. 5 and 6.

limited to speculative questions. And this is also true generally of the school in its inquiries after the truths of mental science; it flies at the highest speculations—not for the purposes of daily life—but as a pleasurable pursuit, and to satisfy the cravings of the mind after a knowledge of the subtleties of nature. The results are seen in the fallacies and frivolities of spiritualists, and mesmerists, and all the delusions of the modern mystical sects. Bacon seems to have marked this tendency of speculation, for in his 'Novum Organum' (tenth aphorism) he observes :—"The subtlety of Nature far exceeds the subtlety of sense and intellect: so that these fine meditations and speculations and reasonings of men are a sort of insanity; only there is no one at hand to remark it."

The practical conclusion from all this is, that if the members of the Association are resolved to build up a true mental science, available to the pressing needs of Society, and especially to the right development of mental pathology, therapeutics, and hygiène, they must look well to their method in the first instance, otherwise they will fail in their objects. And I will venture to add that, as no greater object than the building up of a sound system of mental science can occupy the minds of scientific men, so the utmost care should be taken that the foundations shall be both widely and solidly laid.