

**AN ESSAY ON  
PHYSIOLOGICAL  
PSYCHOLOGY**

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An Essay on Physiological Psychology by Robert Dunn

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# AN ESSAY

ON

## PHYSIOLOGICAL PSYCHOLOGY.

BY

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SOCIETY OF LONDON, OF THE ETHNOLOGICAL SOCIETY,  
ETC. ETC.

LONDON:

JOHN CHURCHILL, NEW BURLINGTON STREET.

1858.

TO

DR. WILLIAM B. CARPENTER, F.R.S.

ETC. ETC.

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MY DEAR SIR,—Impressed with the conviction that to you, more than to any other physiologist or metaphysician of the age, belongs the honour of having placed the great doctrines of Mind on the solid basis of a sound Physiological Psychology, I have much pleasure in dedicating to you the attempt made in the following Essay to expound some physiological points in connexion with our mental constitution, which you were among the *first* to enunciate; and, at the same time, in having such an opportunity as this presents, not merely for recording my sense of the value of your psychological labours, but of acknowledging the advantages and the pleasure which I have derived from your private friendship and social intercourse.

That you, my dear Sir, may long be spared to your family and to science, is the ardent hope and fervent wish of yours sincerely,

ROBERT DUNN.

31, NORFOLK STREET,  
April 1, 1858.

## PREFATORY NOTICE.

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THE following chapters on Physiological Psychology have appeared as a series of Papers in the "Journal of Psychological Medicine and Mental Pathology," edited by Forbes Winslow, M.D., D.C.L. Written at varying intervals amid the distractions of medical practice, I am sensibly aware that they bear too evident marks of needless repetitions, and of a want of unity in the treatment of the subject; and yet these were perhaps in a measure unavoidable, under the circumstances of their composition. There is reason, however, to believe that these papers have proved a *stimulus to thought*, and have roused into activity the energy of other minds of high endowments, possessing more leisure and better opportunities than I can command for successfully prosecuting such an interesting inquiry; and this belief has led to their republication in a separate form. Of the importance of the subject, and of its practical bearings upon Psychological Medicine, there can be no dispute, for surely it is on Mental Physiology, and a knowledge of the Correlations of Physiology and Psychology, that a rational and enlightened practice can alone be based. Besides

"E cælo descendit, γνῶσις σεαυτοῦ,"

and physiologically or psychologically considered, *self-knowledge* is equally important.

R. D.

## PHYSIOLOGICAL PSYCHOLOGY.

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### CHAPTER I.

*Genesis of the Mind.—Consciousness, an ultimate Fact; a succession of States.—Self-Consciousness, the Primary Condition of Intelligence.—Phenomena and Nervous Apparatus of the Sensational Consciousness.*

It is no longer a subject of dispute, that the doctrines of mind rest essentially on the basis of our physiological composition—that they form a part of the physiology of man. For, however it may be attempted to separate intellectual and moral from animal and corporeal man, and however we may reason about our intellectual and moral nature apart from our bodily and animal constitution, it is never to be forgotten that they are united in this life, forming one and a composite system of mutual dependence and reciprocal action. From the first moment that *the primitive cell-germ* of a human organism comes into being, and is launched upon the ocean of time and space, it may literally be said, that the entire individual is present, that an organized entity exists, fitted for a human destiny; and that, from the same moment, *matter* and *mind*, *body* and *soul*, are never for an instant separated. Their union constitutes the essential mode of our present existence, and they are alike subject to the laws of development and growth; for the mind, like the body, passes through its phases of development. Not only is the framework and different organs of the human body evolved and perfected, one after the other, in accordance with all the subsequent wants of the future man; but, among the rest, and from the same primitive cell-germ, are gradually developed, the nervous apparatus and the encephalic ganglia, upon the vesicular matter of which the mind is dependent for the manifestation of all its activities. And thus we see, that in the *primitive cell-*



vital  
mental  
&  
nervous  
forces

germ of the human organism are potentially contained the *vital, nervous, and mental forces*; and, than the attempt to investigate and trace the genesis and gradual development of these forces, and their correlations with each other, what subject, to the psychological inquirer, can be more interesting or more important?\*

The phenomena of the vital force are first displayed. For in the cell-germ, duly supplied with the nutrient pabulum, inherent are the powers of self-development and life under which the human fabric is evolved and built up. But after birth, to the organic processes, the animal functions and their allied appetites and instincts are superadded; and with these, sensations, as subjective conditions, are inseparably connected. Man then enters upon a new state of being and an individuality—an independent existence is established. For as soon as embryonic life is passed, the *nascent consciousness* becomes awakened,—roused into activity by stimuli from without, the senses coming into play from the moment of birth.

consciousness  
beyond which we cannot go

Now, consciousness is an *ultimate fact* in animal existence, beyond which we cannot go; it is the *distinguishing* attribute of animal life, the first of the phenomena of the *mental force*, and *self-consciousness* is the primary condition of intelligence: in a word, *it is mental existence*.

The great and fundamental mystery of life, indeed, consists in the relations of consciousness and of that dynamical agency which we designate *volition*, or the *will*, to the functions of the special senses, and those of the encephalic ganglia, which connect man as a sentient, percipient, and intelligent being, with his own bodily organization and with the world without. For, while it is no longer a matter of dispute that the encephalon is the material organ of the mind, where the ultimate molecular changes precede mental states, and from whence the mandates of the will issue, it has been well observed, by an acute metaphysician, that,—

“As to the nature of the relation which exists between the encephalon and the sentient and percipient mind, we never shall be able to understand more than is involved in the simple fact, that a certain affection of the nervous system precedes immediately a certain affection of the mind. And that a peculiar state of the particles of the brain should be followed by a change of the state of the sentient mind is truly wonderful; but, if we consider it strictly, we shall find it by no

\* The subject has engaged the attention of one of the ablest physiologists and most profound thinkers amongst us—I mean Dr. Carpenter. See his valuable paper, in the “Philosophical Transactions of the Royal Society,” On the Mutual Relations of the Physical and Vital Forces; and his chapters On the Correlations of Physiology and Psychology, in the last and fifth edition of his “Human Physiology.”

means more wonderful than that the arrival of the moon at a certain point in the heavens should render the state of a body on the surface of the earth different from what it otherwise naturally would be. We believe, and, indeed, with as much confidence, that one event will uniformly have for its consequent another event, which we have observed to follow it, as we believe the simple fact that it has preceded it in the particular case observed. But the knowledge of the present sequence, as a mere fact to be remembered, and the expectation of similar future sequences, as the result of an *original law of our belief*, are precisely of the same kind, whether the sequence of changes be in the *mind* or in *matter*, singly or reciprocally in both.\*

The essential nature of mind is a problem which belongs to the same category as the nature of life. We know nothing of life apart from organization; and we have no evidences of mind independent of a brain and nervous system. An organism is required for the display of vital phenomena, and an encephalon for the manifestations of mind. Life has accordingly been defined as "the collective expression for a series of phenomena which take place exclusively in bodies that are organized," and mind as "the functional power of the living brain."

But be it remembered, in affirming that sensation, perception, emotion, thought, and volition are functions of the nervous system, it is only maintained that the vesicular matter of the encephalic ganglia furnishes the material conditions, the substratum through which these mental phenomena are manifested, and that at the same time it is fully admitted the *essential phenomena of matter and mind* are so completely antagonistic, it is in vain that we attempt to establish any relationship of analogy or identity between them. But we have more satisfaction in the consideration of *mind*, in the light of *force*, and in the contemplation of the correlations of the forces of the physical, vital, nervous, and mental, for we see that the *nervous* and *mental* forces are constantly interchanged and interchangeable. We note the perpetually-recurring metamorphosis of *nerve-force* into *mind-force*, and of *mind-force* into *nerve-force*, and the important *physiological fact* that the nervous matter of the cerebrum is the material substratum through which the metamorphosis is effected. Nay, more; we have actual proof of an *increased disintegration* of the nervous tissue in the *redundant amount* of the *alkaline phosphates* in the urine, when the centre of intellectual action has been over-taxed. And in all our voluntary movements and volitional acts we see the dynamical agency of *mind* producing *motion*, and that of the will, through the in-

\* Dr. Brown's "Lectures on the Philosophy of the Human Mind." Lecture XIX.

strumentality of the *nerve-force*, acting upon the muscular system.

Dr. Carpenter has well observed:—

“ We have evidence in what we know of the physiological conditions under which *mind* produces *motion*, that certain forms of the *vital force* constitute the connecting link between the two; and it is difficult to see that the dynamical agency which we term *will* is more removed from *nerve-force* on the one hand, than *nerve force* is removed from *motor force* on the other: Each, in giving origin to the next, is itself suspended, or ceases to exist *as such*, and each bears in its own intensity a precise relation to that of its antecedent and its consequent. But we have not only evidence of the excitement of *nerve force* by *mental agency*; the converse is equally true, *mental activity* being excited by *nerve-force*. For this is the case in every act in which our consciousness is excited through the instrumentality of the sensorium, whether its conditions be affected by impressions made upon the organs of sense, or by changes in the cerebrum itself, a certain condition of the nervous matter of the sensorium being (we have every reason to believe) the immediate antecedent of *all consciousness, whether sensational or ideational*. And thus we are led to perceive, that as the power of the will can develop nervous activity, and as nerve force can develop mental activity, there must be a *correlation* between these two modes of dynamical agency, which is not less intimate and complete than that which exists between the nerve-force on the one hand, and electricity and heat on the other. This idea of *correlation* of force will be found completely to harmonize with those phenomena which indicate the influence of physical conditions as the determination of mental states, whilst, on the other hand, it explains *that relation* between emotional excitement and bodily change which is manifested in the subsidence of the former, when it has expended itself in the production of the latter.”\*

Now, of consciousness as an ultimate fact in animal life—the first of the phenomena of the mind-force—we can best conceive in relation to time, as an incalculably rapid succession of acts or states, and as passing through a series of successive developments from the moment of birth. Purely sensational at first, it emerges gradually, *step by step*, from self-consciousness, through the perceptive and emotional to the higher phases of intellectual consciousness, until the mind reaches its dominant development in the perfect freedom of volition or the will.

But these progressive phases of mental development are dependent for their very existence upon the evolution and material condition of the vesicular matter of the encephalic ganglia through which they are manifested.

Comparative psychology, the study and strict interpretation of

\* “ Human Physiology,” pp. 553, 554. Fifth Edition.