

vation, where the skin had continued to be deprived of its natural function for two months, and albumen was discovered to exist, though the lady was only advanced two months and one week, and, while under treatment, in the course of two weeks ceased to exist, and still continues free from it. If, therefore, the kidneys become congested during gestation, even in its very early stage, may it not be possible, from the contiguity of the supra-renal capsules, they may become involved, or may they not, themselves, become slightly affected, as we perceive other organs do in this state; sufficiently so to allow the discoloration incident to pregnancy, to exhibit itself? It seems to me there is a feasibility in the suggestion that may admit of further illustration from the remarks we have made; and from the investigations of Meckel on the mammalia, and his observations on the human subject, and the case of Otto and others, showing the relation they both bear to the genital and uterine organs; but the further, and, as I conceive, the more valuable suggestions of Kölliker, respecting the physiological action of the two portions of these bodies being distinct, and which we are disposed to think may, in future, tend much to explain the reason how this pigment is deposited, and its connection to the supra-renal capsules. Now, if this should prove to be the reason why this discoloration exists, and in gestation also, may it not explain the reason why the nervous system is affected when albumen is discovered in the urine, and that instead, as some have believed, and which I have not yet been disposed to be fully convinced of, that instead of urea being the cause of the convulsions, it may be possible that the medullary part of the supra-renal capsule is involved?"

We consider the publication of Dr. Taylor as one of deep interest—furnishing a valuable addition to our stock of pathological knowledge. He has, unfortunately, clothed his observations in a style often so clumsy and obscure, as to render it, occasionally, difficult to arrive at his true meaning.

D. F. C.

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ART. XXV.—*Essays on the Physiology of the Nervous System, with an Appendix on Hydrophobia.* By BENJAMIN HASKELL, M. D., of Rockport, Mass. 8vo. pp. 88. Gloucester, Mass., 1856.

WHAT is life? Is it the mere result of organization; a power generated by the arrangement of molecules, of a certain chemical constitution, in a particular form and manner? Or does it exist prior to and independent of the organism which is created, developed, sustained, and governed by it? For the solution of this question, we in vain interrogate the physiologist; he has been unable, as yet, with all his multiplied and varied experiments, and his most profound researches, to throw upon it the slightest amount of light. Nor has he been any more successful in his attempts to elucidate the nature of nerve-force, of which so much use has been made, of late years, in accounting for the phenomena of life, as they occur, whether in the normal condition, or in a state of disease. Is this force identical with the living power or principle, or is it simply the agent through which that power or principle builds up organic structures, prompts, directs, and controls their actions, and thus produces all the functions of the living system? Who among us can give a satisfactory reply?

That the nerves perform a prominent and important office in the animal economy is indisputable; but in regard to what that office is, and how executed, we as yet know but little, if anything. We may theorize, and attempt to support our theories by a long array of apparent facts deduced from experiments and observations, but still we have in candour to confess that our actual knowledge in relation to the subject is limited and uncertain.

The doctrine now generally acknowledged by physiologists as the one based upon the most conclusive evidence is, that all mental affections, all active vital phenomena, are inherent in and dependent on the specific vital endowment of nerves.

"It is by virtue of a specific vital endowment of the optic nerve," we are taught, "that, when light is impressed on the retina, we are affected with the sensation of colour; by a similar endowment of the auditory nerve, when the vibrations of the air reach the internal ear, we are affected with the sensations of sound; another of the olfactory, to which we owe the sensations of odour; a fourth endowment of the gustatory, to which we owe the sensations of taste; a fifth, imparted to the nerves distributed to the skin and the posterior portion of the spinal marrow, gives the sensations of touch. The nerves that go to the muscles and the anterior portion of the spinal marrow have a motor endowment, of which the muscles are contracted, while the central portion has its reflex endowment. The power of breathing and the power of swallowing are inherent properties of the medulla oblongata. And as all these sensations of sight, hearing, taste, &c., are as much affections of mind as thoughts, emotions, and passions, and since no connection between the structure or vital actions of the nerves, and these sensations can be traced, or even conceived, the mechanical relations in which indeed they differ, being such as are accommodated to the physical causes acting upon them from without, it is perfectly consistent and legitimate to transpose this reasoning to the brain, and the mind in its higher faculties. The brain being a huge congeries of nerves of the same character as those of the superficies, any number of vital endowments may be predicated of it; and as the brain is not directly operated on by external or mechanical causes, there is no need of a mechanical division into parts distinct to the senses, as in the former case, in order that the analogy may hold. Not merely, then, are sensation, thought, volition, judgment, memory, imagination, with the passions and propensities, referable to vital powers or endowments of parts of the brain, but all the phrenological faculties, with their craniological organs, coupled with all the additions that the phreno-mesmerizers have made, are perfectly consistent with this philosophy.

"A moment's reflection," it is remarked by Dr. Haskell, "must satisfy any one that this doctrine is neither more nor less than materialism. If all the mental affections, from sensation up to thought (and there is no stopping point from the admission of one to the admission of the whole), are dependent on properties of nerves or of the brain, to suppose the existence of mind, soul, or spiritual principle, capable of sensation, feeling, or thought, is superfluous. We have no use for it in connection with the body, nor can we conceive of its enduring after death. When the nerves and brain crumble to dust, those vital endowments, dependent on their organizations, disappear along with them."

This doctrine Dr. H. has undertaken to disprove, and to substitute in its place a view of the nature and office of the nervous system in the human body, in which it is maintained that the supposed vital endowments of nerves are but another name for mental powers or activities associated with the physical activities of nerves. In other words, that the phenomena of life are the direct product of the mental powers, in obedience to the calls made upon those powers through the nerves; that these mental powers are diffused throughout the organism, which owes to them its origin and maintenance; and that to them the nerves serve merely as media for the communication of sensations, by which those powers are called into specific action, in accordance with the character of the sensations transmitted to them.

In the essay before us, Dr. H. has endeavoured to show that the received doctrine is false, inasmuch as—

"1. It is opposed to the general analogy of nature.

"2. It is opposed to the analogy of the other organs and organic systems in the body.

"3. It is contradicted by the structure of the nervous system, by the mechanical relations of its several parts to each other and to other organs, and by the nature of the causes operating physiologically to excite its functional activity, or pathologically to disturb it.

"4. It violates the law of proportion between the size of the nervous centres and the complexity of their functions, by assigning very complicated functions, in higher animals, to parts in which the same size is preserved as in the corre-

sponding parts of lower animals, in which the analogous function is extremely simple.

"5. In order to preserve its consistency, it denies to the invertebrated class of animals mental qualities which they most certainly possess. Thus Carpenter, while he allows intelligence to beasts, birds, and fishes, denies it to ants, bees, and spiders, because they have no brain.

"6. The persistence of a function after the destruction of the organ on whose voluntary endowment that function depended, as the continuance of the power of voluntary motion after the destruction of the whole anterior part of the spinal marrow—a fact admitted, and of a positive character—is a decided refutation of the whole theory.

"7. The mechanism of voluntary motion which it sets forth is absurd.

"8. The distribution it makes of the sensitive properties throughout the nerves is unphilosophical.

"9. It fails to account for *all* the phenomena which take place in the human body, and which are usually referred to the nervous system; such events as shock, sudden loss of vitality, and many of the phenomena of sympathy, remaining unaccounted for by it.

"10. The inconsistencies and contradictions of those who undertake to investigate and fix these vital endowments of nerves and nervous centres by means of physiological experiments and pathological observations are such as could not take place, did they possess the true key to the explanation of the facts which they witness.

"11. A comparison of the phenomena of association with those of instinct will show that the apparent fixedness of the sensibilities of the specific and other nerves can be explained as well by regarding them as mental faculties instinctively associated with physical excitements of nerves, as by supposing them due to inherent properties of the nerves themselves; and if so, the supposition of the existence of such properties is a gratuitous assumption.

"12. With regard to the well-known fact that when the cut end of a motor nerve, so called, is irritated, the muscle with which it is connected contracts—by far the strongest argument in favour of the doctrine of vital endowments—if we adopt a view of the nature of the union of the mind with the body which has been held by many of the most distinguished ancient as well as modern philosophers, viz: 'that the mind is all in the whole body, and all in every of its parts,' instead of locating it in the brain or in any other part, we can then conceive of a mental act intervening between the excitement of the cut end of the nerve and the contraction of the connected muscle, on which, and not on any property of the nerve, the effect is due.

"13. Finally, of those facts which have loosely been held to prove that the brain is the organ of the mind—such as the correspondence between the size of the brain and the intellect of the species or of the individual; the sense of fatigue in the head that follows long continued exercise of the mind; delirium attending an excited condition of the nervous system; impairment of the memory in disease of the brain; loss of the powers of sensation, volition, and consciousness in concussion and compression of the brain—they only serve to show a connection, perhaps fortuitous, between the functional activity of the brain and the exercise of the mind. Sensation and volitional guidance of the contractions of the muscles are both intellectual operations; and as the activity of the brain is necessary to those, so it becomes associated with, and is favourable to, the activity of all the intellectual faculties."

The foregoing objections are enforced and illustrated in the course of the three essays of which the volume before us is composed, often with great acuteness. The objections of Dr. H. to the commonly received doctrines of the physiology of the nerves are, in general, of far greater force than his arguments in support of his own peculiar views are conclusive. In relation to the latter, there are many points he would have us take as proved from his simple statement of them. The truth of them all is based upon the plea that they afford a more clear and ready explanation of the action and functions of the nervous system than the doctrines in the place of which they are offered, rather than upon any attempt he has made to demonstrate their absolute truth.

It would lead us too far, and demand too much space, to follow Dr. H. in his exposition of the various errors, contradictions, and inconsistencies into which he finds the most ingenious minds have been led by adopting and following out the prevailing theory of the vital endowments of nerves, and his attempt to prove that the doctrine which he has proposed, while it accounts satisfactorily for every fact which the former does, explains, in addition, many which that does not reach, besides others which are in direct contradiction to it.

His examination of the received theory of nervous physiology, and the entire chain of reasoning adduced by him in support of his own views, are deserving of consideration; they are marked often by a degree of acuteness which, though not sufficient perhaps to enforce our acceptance of the theory he would build up, cannot fail, nevertheless, to shake in some degree the implicit faith reposed in the views of nervous action and function taught by the leading physiologists of our own and other countries.

The doctrine advanced by Dr. H. is but a modification, and perhaps improvement, of some of the more ancient theories invented to account for the vital endowments and phenomena of living organized matter. All that is original with him is the attempt to connect the old doctrine with certain known facts in relation to the anatomical peculiarities of the nervous system for which we have been mainly indebted to modern investigations.

It must be admitted that the theory of Dr. H. accounts very readily for the production of all the actions and functions of the animal organism, and relieves us of many of the difficulties by which the explanation of certain of the actions and functions is surrounded upon the assumption of the vital endowment of nerves; in other words, that every act of the living tissues and organs, if not the direct result of specific nerve influence, is so controlled by such influence as to derive from it its efficiency in completing the chain of vital actions. Consistent, however, and convenient as is the theory in question, it is, after all, based upon nothing more substantial than pure hypothesis. It is simply the expression, in different words, of the assumed position that living organs act in a determinate manner, spontaneously, by virtue of their inherent vitality in connection with their physical structure, when called into action by certain impulses communicated to them through the medium of the nerves as mere conductors of impulses or impressions. This explanation of vital phenomena and function may remove some of the difficulties with which our present views of these phenomena and function are beset, but it removes them only by the arbitrary assumption of a hypothesis, the truth of which is unsupported by other evidence, unless such as may be supposed to result from its convenience.

It is true that, when we take the diagram presented by Dr. H. on page 72 of his publication, with his explanation of the manner in which by it nerve-agency is demonstrated, all appears plain and satisfactory; but then we are to recollect that this very diagram is a mere creature of the imagination; its accuracy as an exponent of a presumed nervous circle, as it exists in the living body, still remains to be proved.

We are not displeased that the essays before us have been written and published, and would invite for them a candid perusal. They throughout present much, in reference to the subject of which they treat, of an eminently suggestive character, and may perchance offer a clue which, carefully and cautiously followed out, shall lead to a correct theory of the office of the entire nervous system. At present, we are unprepared to construct such a theory. We have still to wait patiently; to collect, verify, and compare carefully the facts demanded for the accomplishment of the work; and, step by step, as materials are supplied us, endeavour to lay for it a broad and stable foundation. Truth can rarely be attained by adopting first an hypothesis, and then labouring to cause apparently discordant facts, and the conflicting conclusions to which these have led, to conform to it.

In the appendix, Dr. H. has furnished us with some remarks on the pathology and treatment of hydrophobia. He considers the disease in the human subject to result from the insertion, by the bite of a rabid animal, of a specific virus, which, after a period of incubation, often of considerable duration, gives rise to an irritation or inflammation of the part in which it has been inserted, followed

more or less speedily by inflammation of the posterior fauces and larynx, which in its turn is succeeded by inflammation of the spinal cord, especially that portion of it where the nerves of deglutition and respiration terminate. He would, therefore suggest to physicians who may be called upon to treat hydrophobia, that "it is a disease of a mixed local and general nature, having two foci of inflammation and constitutional irritation, a primary and a secondary one; and that, while the constitutional symptoms should not be neglected, the main hope of arresting its dreadful fatality consists in applying remedies to these seats of inflammation; and he would further suggest, from the known efficacy of nitrate of silver in various diseases"—as an abortive agent—"that its application, in a strong solution, to the whole surface of the pharynx, fauces, and mouth, as far as practicable, at an early period—that of commencing spasm—affords a hope of successful, while it can be productive of no injurious, results."

This, with tonics, quinia in large doses, internally; laudanum, in injections, in such doses and at such intervals as to keep the patient in a state approaching to narcotism; tobacco, in the form of smoke, by the rectum; an opium, belladonna, or snuff plaster to the throat, or nape of the neck, with light nourishment from time to time, if the disease is protracted, constitutes the treatment recommended by Dr. H.—hypothetically, however, inasmuch as he has not met with a case of the disease.

D. F. C.

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ART. XXVI.—*The Practical Anatomist; or the Student's Guide in the Dissecting-Room.* By J. M. ALLEN, M. D., late Professor of Anatomy in the Medical Department of Pennsylvania College, Fellow of the College of Physicians, Member of the Academy of Natural Sciences, &c., with two hundred and sixty-six illustrations. Philadelphia: Blanchard & Lea, 1856.

"Segnius irritant animos demissa per aurem,  
Quam quæ sunt oculis subjecta fidelibus."

To no department of our science are these oft quoted lines of the Sabine bard more applicable than to that of anatomy. A merely didactic description of the intricate and varied structure of the human organism can leave but a faint impression on the mind of the pupil, while in many instances it altogether fails to convey correct ideas of what is attempted to be taught. Hence the necessity of positive labour in the dissecting-room, under the supervision of intelligent demonstrators whose special devotion to its study has made the subject in all its details familiar to them.

But here, and still more when deprived of this supervision, text-books are indispensable, and among the most valuable of these we scarcely need mention the Dublin Dissector, which for so many years has justly commanded the approbation of the profession.

To write a book, however, which, while it shall avoid much of the cumbrous detail of a complete system of anatomy, shall yet contain all that is necessary for the dissector, requires no little tact and judgment. Such we believe to have been the successful endeavour of the author of the work before us. His book is a manual of about six hundred pages, printed in clear type and in a convenient form.

A few pages are occupied with some judicious preliminary remarks, after which the subject matter is at once entered on, beginning, as is usual, with the dissection of the head and neck. The descriptions, so far as we have examined, appear to us to be conveyed in clear, concise, and forcible language, well suited to the wants of the learner, while the numerous illustrations will at once enable him to localize in the actual subject the parts, &c., described in the context.

We have been particularly pleased with section 7th, which contains a description of the dissection of the eyeball, the text and illustrations of which are very lucid. So too with the description of the liver and its appendages; the muscles of the perineum, &c. &c.