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THE SCIENCE OF MAN:

A BIRD'S-EYE VIEW

OF

THE WIDE AND FERTILE FIELD

OF

ANTHROPOLOGY.

BY

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"The Education of the Feelings," &c., &c.

"'Tis life, whereof our nerves are scant,
Oh life, not death, for which we pant;
More life, and fuller, that I want."—*Tennyson*.



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PREFACE.

THE object of Anthropological Science must be to improve the race of men, and to make Newtons and Shakespears to order. Our Life and Soul are part of the forces and powers of nature—of the spirit ocean that surrounds us. They are entirely supplied from the great fountain which works only in accordance with fixed law, and the conditions of their existence we can therefore discover and control. If the world's thanks are universally acknowledged to be due to the late Jonas Webb for improving the breed of short horns, and for teaching us how "to grow more mutton and wool to the acre," surely we shall owe more to the man who will teach us how to improve the breed of men, and to grow more "brains to the acre." Our Anthropological Societies, both of London and Paris, are occupied too exclusively with the past; with Man's antiquity; with his origin,—whether born or created; with race distinctions—being most assiduous in collecting skulls, and talking most learnedly of dolichocephalic and brachycephalic heads (long and short heads), without apparently a suspicion at present that brains are of any use. As the president of the London Society truly tells us, the attention of the Society has, during the four years of its existence, been "mostly directed to the physical characteristics of man;" and he says, "I am not aware that a single fact of cerebral physiology has been brought under our consideration for investigation." The object

of the present writer is to enter, doubtless, "the ignorant and egoistical" but humble protest of an outsider against this mode of proceeding; and to point to the spacious and fertile fields that invite attention. Between the aspirations of the young lady who tremblingly asks "why the nose is placed on the front of the face, pointing towards the infinite, if it is not to give, as it were, a fore-smell of the illimitable," and the proceedings of the Anthropological Society, there is no doubt a wide range, but either extreme is probably equally useful. As there is so much to do, perhaps it would be better to take man as we now find him than to begin at the very beginning, where the record may be considered by some a little obscure. Of course, it is fully admitted that all honest investigation, in every field of research, is of importance; it is simply a question of relative importance.

COVENTRY, *November 23, 1868.*

THE SCIENCE OF MAN.

“All our hopes now lie in a true understanding and philosophy of man's nature. . . . The little that is known of man's nature is not acted upon, or is used against him. We boast of our breeds of cattle and our dogs—of our tulips, and our fine geraniums—of the gas-lightings, and the steam engine, and pass ourselves by; and the passions which govern all the rest are themselves ungoverned, and the understanding without law.”—H. G. ATKINSON, F.G.S., F.A.S.L., &c.

ANTHROPOLOGY “proposes to study man in all his leading aspects, physical, mental, and historical;” and if it really is “the science of man,” it must occupy itself principally with the present laws and conditions of his being. His past history—with which anthropological societies have hitherto too exclusively occupied themselves—as to whether he was created or born, or as to his age upon this earth, has really little to do with this science. The history of the past can be of use only so far as it bears upon the present. Except Mrs Shelley's *Frankenstein*, we know of no man that has yet come into the world without being born; and as to his age, whether 6000 or 600,000 years, for practical purposes we cannot go beyond the comparatively modern date of written record. In deference, however, to those who think such matters of importance, we will consent to go half-way with them, and take woman's advent into this world upon authority. A modern sceptical philosopher, Dr Whately, defines woman as “a creature incapable of the exercise of reason, and that pokes the fire from the top;” but this is since the fall, for we have it on the recognised authority of Matthew Henry's

Commentary, that "man was dust refined, but that woman was dust double-refined, one remove further from the earth; and that Adam slept while his wife was in making, that no room might be left to imagine that he had herein 'directed the spirit of the Lord, or been his counsellor.'" And also we are told by the same learned Commentator, having reference, doubtless, to the obedience that a woman is known to owe to man, "that the woman was made of a rib out of the side of Adam; not made out of his head to top him, not out of his feet to be trampled upon by him, but out of his side to be equal with him, under his arm to be protected, and near his heart to be beloved." Now we are willing to take all this about woman on such excellent authority, so that anything we have to say less orthodox about man may be condoned. A "science of man" ought to teach us how to make a man according to the most approved pattern, and with all the modern improvements. Anthropology, it must be confessed, has advanced little in this direction at present, and has occupied itself too exclusively with scratching among the dry bones of past ages; but it is with living function and not dead form that we have to do.

By the study of the laws and conditions of plants, flowers, and fruits, we can produce almost any variety, and by attention to breeding almost any form in animals; but man, notwithstanding our anthropological societies, has been left to chance. Providence is supposed to preside especially over this department. It is presumptuous to suppose that natural law is to reign here. A man has only to procure a license, and he may without any kind of censure, bring any number of decrepid, imbecile, insane, scrofulous or otherwise diseased children into the world; and all discussion of this subject is considered to be against the rules of good society. And yet this ignorance and neglect is the parent of half the ills flesh is heir to. Theologians tell us it is man's soul with which we are concerned, and not his perishable body; it is this that is supposed to control all his conscious functions, and everything relating to the production of a human soul is supposed to be a divine mystery, and referable solely to divine agency. Man, at best, can only provide receptacles; and Hepworth Dixon tells us that "the New American Church puts

marriage into the very first of man's duties on earth," and that its principal duty and most solemn rite is considered to be that "of providing tabernacles of the flesh for immortal spirits waiting to be born."*

But that we may not be stopped, as others have been, by some "first proposition" said to contain some "gigantic assumption" "which must for ever estrange" all our *facts* "from every really scientific mind," it may be as well, perhaps, to clear the ground from theology and metaphysics by a few short definitions of terms.

Professor Tyndall gives us an excellent book on heat considered as "a mode of motion;" the question is, can we consider anything else in any other light? Is not all we know of every thing merely its mode of action or motion,—what we call its phenomena? But motion is nothing in itself—it is merely the transference of something from one point of space to another, and cannot therefore be separated, even in thought, from the thing moved or moving—and of this we know nothing, except of its existence. Of that which underlies all phenomena, we have no faculties that tell us anything. We know and speak only of how we are affected by modes of action, as J. S. Mill says, "*all we know* of objects is the sensation which they give us, and the order of the occurrence of these sensations." The real objects of our knowledge are only those affections, which we call thoughts and feelings. These feelings and ideas are themselves only modes of action; but we must recollect that in no case can this motion exist separately from the thing moving. The ideas and feelings pass away, while that which underlies them only is indestructible. With each turn of the kaleidoscope we have a new form, which form passes away, but that which produced it and underlies it, is still there and always the same.

The world is a great kaleidoscope,—moved, not by mechanical action, but by continuity of force or evolution. Of these forms, then—of these modes of action or of motion—of phenomena only, can we know anything?—Of the nature *per se* or essence of that which underlies them, we can know nothing. We have called it Matter, Force, Spirit, and have fought over their supposed

* New America, p. 288.

differences, having first, however, been obliged to admit that we can know nothing about them; for if we do not know what matter is, except in its mode of action, how can we know that it differs in essence from spirit, or *vice versa*?

Force, however, appears to me to be a common term including them all. When we speak of matter, we speak only of properties or powers; to assume therefore that there is anything else, is certainly a "gigantic assumption." The same may be said of spirit. Force or power, again disappears under the more general term of God, as power can no more be separated from its source than motion from the thing that moves. What *we* mean then by soul, is that which *underlies all* phenomena. As Cowper says:—

"There lives and works
A soul in all things, and that soul is God."

A distinction also is made between cause and effect, but all are *causes*, or all *effects*, according to the side from which they are viewed in the infinite chain of sequence. The same may be said of active and passive: such terms also are only relative; all things are active; if passive with respect to ourselves, they are actively supporting each its part in the whole, so that "even an infusory animalcule could not be annihilated without altering the equilibrium of the universe." If, therefore, as Faraday says, "the size of a thing is as far as its influence extends," then are we as large as the world.

Mind is the aggregate of all our sensations from whatever source derived. It is not an entity but a phenomenon—a mode of action; not however of the brain, but of the force, derived from the food, that passes through the brain. The brain only conditions it; it is the means of its correlation or transformation from vital force to mental. If, therefore, mind is a mode of action of force, it is quite as correct to say that "the brain is the organ of the mind," as that mind is the function of brain; the function or power of the brain not being inherent, but derived from without;—the peculiar "form" only is owing to the brain. Neither is it strictly correct, to say that "mind is one of the phenomena of life," as the life of the vegetable world, as far as we know, is not attended with mind or consciousness. The tailor has a mind but not the cabbage,—although it is true we can-

not *prove* that both have not. Mind as a phenomenon of life must be confined to the animal kingdom, or extended to the whole universe; for the whole world is alive, and every atom acting intelligently, that is, with a definite purpose.

If, then, the Soul is Force, and the Mind is its mode of action, all with which we have to do are the conditions under which this action takes place, and we may thus far agree with those who say that our material—our physical and physiological laws are merely the conditions under which the soul manifests itself here. The soul is entirely subject to law, or to these conditions; it is with these only, therefore, that we have to do, and we shall proceed at once to their consideration. We shall make no statement which we do not think there are sufficient facts to verify; the true “aim and method” of anthropology being to test such facts and to carry them further. Our object in the present paper is to point to more fertile fields of investigation than have been yet pursued. We shall begin, then, not with the first man, but with the last, as we may fairly be presumed to know more of him than of his predecessor.

Life proceeds only from life, that is, so far as we know; putting the experiments of Cross and others aside as inconclusive. Life a few years ago was regarded in the same light as the soul is now; it was supposed to be a peculiar principle capable of controlling and modifying the ordinary forces of nature; but whatever the “vital spark,” which is derived from the parent, may be, it is incapable of acting without the aid of the ordinary forces of nature, its controlling and modifying power over these forces depending upon the peculiar organisation of the germ or bud, which in itself is passive until joined to the active powers around. The forces of nature are thus so far directed, controlled, and modified, that their combined action cannot make the acorn grow into anything but an oak. These powers, judiciously directed, may perhaps make such differences as exist between the English, Spanish, or American oak, between the *pedunculata* and the *sessile flora*, but even this is doubtful. “Natural tendency” is thought to be a metaphysical expression; but if the term is made use of here, it is to the forming powers of the germ or organism to which it is applied.

The human germ, like the acorn, has similar "natural tendencies" awaiting development. Under the microscope, we are told that he (or she) is very like a tadpole, alive and kicking, and particularly active with his tail, possessing not only the physical peculiarities of the father, but those of the mind also—the soul's idiosyncrasies as well as the body's; the carrot hair with the mental aptitudes of the educated or uneducated father.* Here then, in this microscopic animalcule, lie folded up all the wondrous powers of man, awaiting the development in which the female only aids, and if the mental characteristics are dependent upon the soul, it must already have joined the body. As the father has impressed the germ with certain indelible attributes, so also in the process of its development through the mother, it is impressed with her bodily and mental characteristics. A true science of man must begin here, in determining these relative forces. There is not a doubt but that there is more modifying power over the future man before birth than after, and that a greater improvement in the race may be made then than in all our schools and colleges. Of course, this opens up the whole question of the relation between the sexes. While, as anthropologists, we are compassing the whole world in search of the physical characteristics of man, we are satisfied to remain completely in the dark as regards those more important laws that lie directly under our eyes. Touching the laws of hereditary

* In foreign asylums where illegitimate children are received without question, the children of educated parents are known by the much greater ease with which they receive instruction.

Mr Herbert Spencer says, "The capacity possessed by an unorganised (?) germ of unfolding into a complex adult, which repeats ancestral traits in the minutest details, and that even when it has been placed in conditions unlike those of its ancestors, is a capacity we cannot at present understand. That a microscopic portion of seemingly structureless matter should embody an influence of such kind, that the resulting man will in fifty years after become gouty or insane, is a truth that would be incredible were it not daily illustrated." (First Principles, p. 374.) Peculiar physical traits, both aptitudes and attitudes, are often developed at that period of life in which they first showed themselves in the parent.

Professor Macdonald tells us that, "the human ovule, when it commences its first journey of life within its mother, may be described as a minute automatic organism existing by means of its own circulating system during one-fourth of its own embryonic existence, enclosed within its bed, entirely unconnected with its parent." (Journal of the Anthropological Society, July, 1868, p. 118.)

descent we are almost entirely in the dark, and our ignorance is at the bottom of the state of public opinion on this matter, and of the utter want of any feeling of responsibility in bringing children into the world. We do not even yet know what determines sex; everything is left to chance. The French anthropologists have resolved to inquire into the question of menstruation and acclimatization; this is a very small nibble at the circumstances before birth and after, but it is a step in the right direction. A man's physical and mental condition before marriage, and a woman's health and whole mental state during the period of gestation, affect the coming child, and if the full light of the science of man were thrown on this subject, parents would not dare to act as they do now; or at least, would cease to lay many of their trials at the door of Providence, or even of the other power. It is true that at present science has little light to throw. Mr Alexander Walker has written on "Inter-marriage, or the natural laws by which beauty, health, and intellect result from certain unions, and deformity, disease, and insanity from others; with delineations of the structure and forms, and descriptions of the functions and capacities which each parent, in every pair, bestow on children, and an account of corresponding effects in the breeding of animals." Mr Walker's intentions and promises are very much in advance of his performance, but is not the knowledge promised here what we want? Much valuable information on this subject will be found among the countless facts of Mr Darwin's last book, but they want a human application. Mr Walker gives as a motto an admirable passage from a letter to him from Sir A. Carlisle:—"Our aristocracy, by exclusive intermarriage among ancient families, proceed blindly to breed in contempt of deformities, of feeble intellect, or of hereditary madness, under the instigation of pride or the love of wealth, until their race becomes extinct; while another portentous curse, that of unwholesome factories, threatens to deteriorate the once brave manhood of England. I believe that, among mankind, as well as domesticated animals, there are physical and moral influences which may be regulated so as to improve or predispose both the corporeal and moral aptitudes; and certainly the most obvious course is that of selecting the fit

progenitors of both sexes." An anthropological society ought to experiment and report on the subject—it would have a much higher bearing on the science of man and the true interests of humanity, than a mission sent to report on the mere physical characteristics of the King of the Caribbee Islands. We want to know at what age it is best to marry ; what physical and mental temperaments and characteristics should be brought together ; what difference there is, intellectually, morally, and physically, between illegitimate and legitimate children ; whether the Spartan or modern relations between man and wife are the best ; and what mode of treatment and feeding is best adapted to the varying circumstances during the period of gestation. Much most valuable information on the subject might be collected from the different habits and customs prevalent in the world, if a committee from our anthropological society were appointed to investigate the subject. Before a child is born its system can be modified only through the parent ; but when it is born it is fed upon the natural force around. It was supposed that locomotive and bodily power depended upon life, and mental power upon the soul ; but life is dependent upon physical forces, and mental action upon life. Sun-power having divorced oxygen from the carbon in the food, the power used to effect this separation is restored when the union between oxygen and carbon again takes place in the human organisation ; and this is the real source of all bodily and mental power. The human body and the steam engine equally require to be stoked at regular intervals, and just in the same way ; and we are told that " of the total heat given out by the combustion of the food, a man can make a fifth available in the form of actual work, while it has never been possible to construct a steam-engine that could utilize more than a ninth of the energy of the fuel burnt under the boiler. But in addition to this external work the body has constantly to perform a vast amount of work in order to sustain the life. There is the blood to be kept circulating and urged through the lungs and capillaries ; the chest and diaphragm have to be raised for the purpose of breathing ; digestion has to be carried on, and the body kept erect—all these consuming energy. It has been determined that the heart, contracting at the rate of 75 pulsations to the

minute during the twenty-four hours, performs an amount of work equivalent to raising a hundred-weight to the height of 4463 feet. The work of breathing has been estimated by Fick to be about equal to raising the same weight to the height of 703 feet. The other sources of internal work have not yet been estimated,* and thinking power, the most important work of all, has not yet, by physiologists, been included among them.

The fact is, physiologists are only able at present to form the rudest approximation to a true estimate of the amount of the power entering the body through the food, or as to what becomes of it; and our ideas even on "heat-givers" and "flesh-formers" are far from definite or fixed. The amount of common physical force, such as drives a steam-engine, derived from the consumption of the food in the full grown body of a man, is estimated as that which would raise 14,000,000 lbs a foot high. This is changed in its character according to the structure of the body through which it passes. The experiments of Dulong and Depretz are said to have shown "that the same amount of heat is given out from the body of a living animal as its food would produce when submitted to combustion in oxygen." But whatever truth this may contain, it is certain that this is not the way in which the force, resulting from the food, is given out from the body. Animal heat is only one of the products, and probably is the least expensive. We have, besides mechanical force,—chemical, electrical, odyllic, vital and nervous force. Each force rises in intensity in proportion to its importance in the animal economy, and complexity of structure rises with it. Chemical force is more concentrated than physical, and vital than chemical, and nervous than vital; and thinking and feeling are found to depend upon nervous force, and are proportioned to the complexity and size of the structure with which they are connected. Nervous or mental force, thus packed in the brain and nervous system, is like air compressed into an air gun, and sometimes, in certain disorders of the system, escapes with the same destructive energy. The one, however, is mechanically compressed, while the concentration of the other is the result of

* Animal Force and Animal Food, by J. Broughton. The Intellectual Observer, July, 1866, p. 455.

correlation, through complicated structure or tissue. The highest force, that is, mental or nervous, thus contains all the others, and is dependent upon them: and they are dependent upon the perfection of the organisation ascending through specialisation and increasing complexity.* Thus, Dr H. Maudsley says, "Mind is the highest development of force, and to its existence all the lower natural forces are indispensably pre-requisite."† The great desideratum is the proportional distribution of these forces throughout the body; if one predominates it is necessarily at the expense of the others. Thus we have mental power at the expense of the vital, and vital and mechanical or locomotive power at the expense of the nervous and mental. Genius too often absorbs a large portion of the vital power, and is consequently at the expense of health. Genius, to be safe, should be attended with a large brain, and with a proportionably large body. Most of the secrets of our nature—the power of enduring fatigue, longevity, the *vis medicatrix*, genius, &c., will, we think, be found to depend upon the mode and proportion in which the food-force distributes itself; and this depends, of course, upon the speciality of structure. The action of the mind, then, or

* "That no idea or feeling arises, save as a result of some physical force expended in producing it," Herbert Spencer truly says, "is fast becoming a common-place of science." Of course, it may be said that these are merely the conditions under which the "soul"—a peculiar entity invented for theological purposes—acts, and we cannot deny it as we know nothing about it; all we can say is, that if such an entity exists, its only attribute is sensibility, and its power and mode of action *entirely* depend upon nervous tissue. Its function instantly ceases with the slightest pressure on the brain, or when the brain is not supplied with blood. Its existence altogether is an entirely gratuitous assumption, and if we grant it we have still only to do with the bodily conditions. "Vitality," says Dr W. F. Channing, "is dependent on physical conditions, and performs its functions by the agency of physical force. A distinction thus exists between the principle itself and the agents by which its results in the living structure are accomplished. This distinction is an essential one, and constitutes the basis of any system which proposes to act directly on the vital forces. The agents employed by animal organisation are principles found *universally in nature*; and in addition to these, a force which is peculiar to living structures, the special agent of vitality," and may we not add that in addition to the vital force we have an agent peculiar to nervous tissue, mental and nervous force; and both, as we shall see, are capable of action out of the special organism in which they have been generated, or in which their correlation has taken place—from the physical forces surrounding us, "found universally in nature."

† The Physiology and Pathology of the Mind, p. 60.

mental force, must be studied like any other force, by the comparison of function or power with development; its more or less powerful and perfect action depending upon the more or less perfect action, not merely of the nervous system, but of the whole machine or animal economy.

Phrenologists claim to have done this, and their claim must be admitted, as it is based upon eighty years' close observation of facts. Theologians have given phrenology a bad name from its supposed tendency to materialism, and scientific men have refused to use Gall's method of comparing mental function with development of brain and nerve—they refuse to look through his telescope, and then complain that they cannot see the facts upon which the system is founded; for we have never yet met an opponent to phrenology who could map out a skull according to Gall, much more according to the latest discoveries. Men of science are still looking only to anatomy to confirm Gall's discoveries, and because they fail to find living function in dead matter, the physiology of the brain is still a *terra incognita* to them. Dr W. B. Richardson, however, who is not a phrenologist, in a lecture to the Leamington Philosophical Society in January last, professes to be able to point out a decidedly marked anatomical difference between different organs in the brain. He said that recently in a dry human brain that he dissected he discovered membranes lining the convolutions that were really separable, and convolutions in which there were distinct centres; and that if these proved to be distinct organs it would be a remarkable study. The brain was being photographed. But there can be no doubt that the different organs will be sufficiently marked to all who will follow the phrenological method. Excess or deficiency of organ, attended by excess or deficiency of mental power, will turn up every day if they are looked for; and every one may establish for himself, with a little care and study, what phrenologists profess to have established. My own attention was first called to the case of a boy whose only accomplishments were blating like a calf and calculating mentally the butcher's bills. For instance, he would tell instantly how much $19\frac{3}{4}$ lbs of mutton at $9\frac{1}{2}$ d came to, and the like; and he also told immediately how many pounds there were

in a million farthings. This boy was almost idiotic in all but the one direction, and he had a large organ of number.* My attention was next called to a young man in a ribbon manufacturer's warehouse, who looked out the orders, but who really could not distinguish pink from blue. This deficiency he himself was not aware of, but the decidedly small organ of colour first drew my attention to it. Sir David Brewster says that one person in eighteen cannot distinguish some colours from others, and that one in about eighty is colour-blind, and the absence of the organ in these cases is very distinguishable. So is it also easy to distinguish the more or less development of the social, self-protecting, self-regarding, moral, æsthetic, and religious regions of the head, and the individual organs of which they are composed, so that there is no excuse for the nonsense we frequently hear on this subject from men well informed in their own special departments. A *competent* observer can tell more of a man's character, by one glance at his head, than can be obtained by twenty years of ordinary observation and experience. Neither is it true that phrenology has been standing still of late years: Mr H. G. Atkinson and others have made many important discoveries touching the physiology of the brain and nervous system. Neither is it true that attention has been confined to the brain only. The Americans first note every condition of body, and their phrenological chart is now marked with about 100

* Such cases are familiar enough to phrenologists and to those who look for them; but recent extraneous testimony may be better received. A writer in the *Pall Mall Gazette*, July 13, 1868, alluding to Professor de Morgan's communication on the incapacity of certain persons to comprehend questions involving numbers, says,—“I knew a man who was recognized as an idiot by all who knew him. It is true that he had capacity enough to herd a few cattle, but his gifts for any practical purpose went no farther. When any member of the family to which he belonged was removed from home he never could understand the matter, but went moping about seeking for them and inquiring for them. The only rational speech, or what coming from him was repeated as being considered as an approach to rationality, was this: A new parish church was built, and he was strongly of opinion that it should not be taken into use till the old church was worn out; that the old church being still standing it ought to be used to save the new one. Yet this acknowledged idiot had the gift of numbers, so as to give an answer to a question in the rule of three with a rapidity and a precision altogether marvellous.” In testimony, also, of other special faculties, he says, “In spite of the harmony of their verse, I believe that neither Sir Walter Scott nor Lord Byron could ever clearly distinguish between the music of “God Save the King” and “Rule Britannia.”

sub-divisions, not undoing what had been previously established, but carrying forward in the same way as our knowledge of the atmosphere was increased, not altered, by its division into nitrogen and oxygen gases. If we have 99 cases in which organ and function come together, an apparent exception to the rule, in the absence of the organ, or rather of the particular form that it took in the 99 cases, would not disprove the 99 cases, but would show that the brain, like the body, was liable to malformation. A hump-backed man does not disprove all that is known of the functions of the spine.* Phrenologists then claim, by close and

* There seems to exist a curious difference of opinion among the members of the London Anthropological Society on this subject—of the physiology of the brain. The president, Dr Hunt, appears to have arrived at the conviction that “the doctrine of the absolute intellectual inequality of the different races of man is demonstrated by well ascertained facts,” and that “these races have different instincts,” while the doctrine of the phrenologists is that these differences are not absolute, but differ only in degree: that all men have the same faculties and feelings—as proved by the “Newtons” of the inferior races—although in the generality of such cases they are at present in a mere rudimentary condition. Dr Hunt gives it as his opinion that “at this minute the so-called sciences of psychology and phrenology stand before the world as hopeless failures,” and yet he says—“I willingly give place to the encomium passed on it (phrenology) by so impartial a writer as Mr Lewes, who declared, ‘that doctrine (the psychology of phrenology) may now be said to be the only psychological one which counts any considerable mass of adherents.’” “The phrenologists,” Dr Hunt tells us, “venerated Gall and Spurzheim too much even to make the slightest advance with researches into the function of the nervous system,” and that in consequence of a division of opinion as to whether “the brain is the organ of mind” or “mind a function of brain,” the “happy despatch” was performed, and “there was an end in this country to the ‘inductive science’ of phrenology.” The Doctor tells us that he cannot but express the satisfaction he feels “at the ignoble finale his (George Combe’s) teaching received.” Now George Combe’s 5th edition of his “System of Phrenology” contains all the discoveries in the physiology of the brain and nervous system made by Gall and Spurzheim, in addition to others made by himself and other phrenologists; and at the present time there is a larger circulation of Geo. Combe’s works throughout the world than of all other anthropologists, biologists, and psychologists put together. What, then, is the “ignoble finale” to which the Doctor alludes? Dr Hunt also tells us that “the same blind *enthusiast* (George Combe) told his American hearers that in France and Britain phrenology ‘already directs lunatic asylums, it presides over education, it mitigates the severity of the criminal law, it assuages religious animosities, it guides the historian, it is the beacon-light to the physiologist.’” Now, what is this “scientific anthropology,” in the light of which phrenologists must consider themselves defunct? Dr Hunt tells us—“The attention of the society (Anthropological) has, during the last four years (the whole term of its existence), been mostly directed to the physical characteristics of man.” . . . And he says—“I am not even aware that a single fact of cerebral physiology has been brought under our consideration for investi-

long continued observation of facts, to have discovered the functions of the brain; and they are able to show how, by the action of simple force without us, on force transformed by the brain from the same physical force within us, the phenomenal world

gation." "Let us rejoice," says the Doctor, "that our science—the science of human nature—is just appearing to shed its light, and thus put an end to the age of darkness." How far we have cause for rejoicing with Dr Hunt is matter of opinion, but certainly the promised light "just appearing," at its present rate of travelling, must be sometime before it lightens its own darkness much more than that of "the age." Allow me to assure Dr Hunt that the differences between phrenologists, of which he would make so much, are purely metaphysical, and have little relation to the "conditions" under which the brain and nervous system act, or to its functions, concerning which they are agreed; and that whether the mind is an "entity" or "one of the phenomena of life" is not "the whole question under discussion," but the question is, the function of the brain and the 80 years' observed facts upon which phrenology or cerebral physiology is founded. But if the light is only "just appearing" on this subject among anthropologists, the British Association must be in utter darkness, as Dr Hunt tells us that "at a late meeting a paper was read to prove that the brain was contained within the skull." Doubtless having heard that *some* men had brains, the members were *anxious* to know whether they were in the head, or the reverse. We believe that the author of the paper was in favour of brains in the skull, but on discussion it was agreed that this was by no means without exception, as there were many members of the Association without; the little they may possibly have originally possessed being dried up by the narrowing nature of their occupation as mere physicians. As to the function of the brain, probably the Association at present sees no reason to disagree with the barber, who maintained that the use of the brain was "to percolate through the skull and nourish the roots of the hair."

Dr C. Carter Blake, late secretary to the A. S., L., said—"He hoped the society would not be led too much into metaphysical inquiries, but would only accept the statements of those who had studied the brain as it was actually presented to them on dissection." Mr Dendy, in the discussion on a paper he had read "On the Anatomy of the Intellect," following in the same strain, said—"With respect to craniology, he differed on that point entirely from Drs Gall and Spurzheim, and he considered it to be a complete fallacy unworthy of the science of the present day." We presume "nous avons change tout cela" since Gall and Spurzheim's time, or it is otherwise *difficult* to conceive that men of their known intellectual calibre should have been engaged in illustrating, by facts collected all over the world, "a fallacy unworthy of the science of the present day." It is not, however, *so difficult* to conceive that Mr Dendy knew *nothing* of what he was talking about, but had followed Dr Carter Blake's method only.

The British Association seems to have made a considerable advance in this direction since the state of opinion chronicled by Dr Hunt. Professor Tyndall, in his opening address in the Mathematical and Physical Sciences section, at Norwich, 1868, said—"I hardly imagine that any profound scientific thinker, who has reflected upon the subject, exists who would not admit the extreme probability of the hypothesis, that for every fact of consciousness, whether in the domain of sense, of thought, or of emotion, a certain definite molecular condition is set up in the brain; that this relation of

is created. The form, size, weight, colour, arrangement, &c.,—the solidity, extension, &c., considered to be the properties of matter without us, are merely the names we have given to our ideas and impressions. The objects of knowledge are ideas, not things; of things themselves we know nothing, but only as to

physics to consciousness is invariable, so that, given the state of the brain, the corresponding thought or feeling might be inferred; or given the thought or feeling, the corresponding state of the brain might be inferred. Granted, however," the professor continued, "that a definite thought and a definite molecular action in the brain occur simultaneously, we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning from the one phenomenon to the other. They appear together, but we do not know why. Were our minds and senses so expanded, strengthened, and illuminated as to enable us to see and feel the very molecules of the brain; were we capable of following all their motions, all their groupings, all their electric discharges, if such there be; and were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem, 'How are these physical processes connected with the facts of consciousness?' The chasm between the two classes of phenomena would still remain intellectually impassable. . . . In affirming that the growth of the body is mechanical, and that thought, as exercised by us, has its correlative in the physics of the brain, I think the position of the 'materialist' is stated as far as that position is a tenable one. I think the materialist will be able, finally, to maintain this position against all attacks; but I do not think, as the human mind is at present constituted, that he can pass beyond it. I do not think he is entitled to say that his molecular groupings and his molecular motions explain everything. In reality, they explain nothing. The utmost he can affirm is the association of two classes of phenomena, of whose real bond of union he is in absolute ignorance. The problem of the connection of body and soul is as insoluble in its modern form as it was in the pre-scientific ages."—Not quite; for although we only know cause and effect, in either matter or mind, as invariable sequence, yet we do know now "that no idea or feeling arises, save as a result of some physical force expended in producing it;" and that "mind is the highest development of force, and to its existence all the lower natural forces are indispensably pre-requisite." The soul in the pre-scientific ages was thought to be a peculiar entity—one and indivisible, and *therefore* immortal, which joined the body at some period of its growth, either before or after birth; and that the mind, that is, the aggregate of all our thoughts and feelings, was dependent upon it; but we now find that the mind is manufactured by the body out of the physical forces around us. Our organism transforms heat into vital force, and vital into nervous, and nervous into mental; and mental force again is re-transformed into motion, or heat, or vital, or electrical, or odylic forces. A person with a strong will has sometimes said, "I will *not* die," and sufficient will or mental power has been transformed into vital as to keep the digestive and other apparatus going, so that increased power has been introduced into the system from without, and he has kept his word for a time. We have gone far beyond "those of old time," for the bridge between physics and metaphysics has been found, and the sciences cannot properly be pursued separately. Metaphysics is the highest of all sciences, and it is based on Physics.

the mode in which we are affected by them—that is, by the ideas they create within us, and of which only we are conscious. Realists, or those who maintain that we can know things in themselves, and not merely in relation to our sensibility, have never been able to controvert what David Hume so well and concisely put; he says—“We may observe that it is universally allowed by philosophers, and is besides pretty obvious in itself, that nothing is ever really present with the mind but its perceptions or impressions, and ideas, and that external objects become known to us only by the perceptions they occasion. Now, since nothing is ever present to the mind but perceptions, and since all ideas are derived from something antecedent to the mind, it follows that it is impossible for us so much as to conceive or form an idea of anything specifically different from ideas and impressions. Let us fix our ideas out of ourselves as much as possible; let us chase our imaginations to the heavens, or to the utmost limit of the universe; we never really advance a step beyond ourselves, nor can perceive any kind of existence but those perceptions which have appeared in that narrow compass.” A single additional faculty, therefore, or small additional convulsion of the brain, might create within us a whole new world of ideas, or entirely alter the character of the present. As the author of an excellent paper in the *Intellectual Observer*, called “Pleasant Ways in Science,” says—“We find reason to believe that the system of wave motion, which affects us with the sensation of red light, might call up a quite different sensation in beings differently constituted. What we call the redness of a rose—that is to say, its power of reflecting waves that give us the sense of red light—though *seen* in action by us, might be heard by some other creatures, and smelt or tasted by others, having organs of sensation differently constructed from our own, or having brains translating the same kind of vibration into mental impressions of a different kind. There might be creatures who taste light, smell sound, and hear a concert when they frequent a garden of odour-giving flowers.”* Yes, we might have brains translating the forces from without into mental im-

* *The Intellectual Observer*, April, 1868.

pressions of an entirely different kind; as it is, no two persons' mental impressions are the same, but vary in clearness, in intensity, and in breadth, according to the size, and quality or temperament, of the organ or part of the brain with which they are connected. Transmuted forces thus passing through one portion of the brain and acted upon by forces from without, create the world as it appears in our consciousness; passing through other larger portions of the brain—the organs of the propensities and sentiments—they create the world of our likes and antipathies, called the moral world. This world of ideas and feelings, about which we make such an undignified fuss, is purely phenomenal, and passes away with each turn of the great kaleidoscope—with each evolution and correlation of force. Our joys and sorrows, our hopes and fears, our sins and sorrows, our good and evil, are purely subjective, affecting only ourselves; of the One Great Reality, or Entity, or Spirit, or Power, or Force, that underlies *all* phenomena, we can know nothing; our own Will-power alone constituting a distant analogy. We know, however, that

“For love, and beauty, and delight,
There is no death nor change.”—*Shelley*.

With respect to races of men and the permanence of physical types, “the Darwinists assume that all animals, including man, are derived from a small number of simple beings, possibly from a primordial monad. The Monogenists, with much less boldness, are of opinion that all human races are derived, if not from a single couple, at least from a certain number of primitive men perfectly resembling each other. The Polygenists finally assert that human types are only liable to slight modifications; that the chief physical characteristics are permanent; and that, consequently, the actual diversity of races can only be attributed to the multiplicity of their origin.”* We greatly incline to the latter hypothesis. Without going with the Darwinists to the very beginning, it seems probable that the causes that were equal to the production of the simple beings could have produced also the more complex, and still more probable that the

* *Anthropological Review*, January, 1868, p. 42.

causes that could have produced a single man could have equally produced all the varieties. We believe with Professor Macdonald in "the separate centres of creation of the different races adapted to the different parts of the world, and that the east and midland mountains had peculiar creations adapted to them." The Professor shews us how "a due consideration of the progressive development of an embryo or germ within the Graafian vesicle would militate against Darwinism in any attempt to press hybridism beyond the boundary of nearly allied species, and also against breeding among hybrids themselves being carried beyond the third or fourth generations, unless refreshed by one or other of the originating species."*

Races that had probably the same ancestral types, such as those which now inhabit Europe, are crossed with advantage, but the crossing of distinct races makes mongrels; what the inferior gains the superior loses, and there is always a tendency to revert to the original or ancestral type. It will be easier then to breed from good stock, and thus fill the world on the Malthusian principle, than to improve the inferior races, which, on the principle of Natural Selection, cannot fail to be "civilized" off the face of the earth.

Professor Owen "has attempted to form a system of classification on degrees of cerebral development as being the anatomical feature, which on the whole stands on the most governing relation to other peculiarities of structure;" and certainly from the knowledge we now have of the brain this can be the only classification that is of any value. The brain and nervous system, as connected with mind, dominate the whole bodily system and regulate its structure, so that the natural language of mind is not only to be seen in the lines of the face but in the lines of the hand, and governs every limb; and not only physiognomy, but palmistry or psychonomy, is based on science. Anthropology can gain little from the description of mere physical characteristics as now given. To Gall and his followers, who have made the skull and its contents their special study, "brachycephalic" and "dolichocephalic" crania, or long and short heads, or a

* *Journal of the Anthropological Society*, pp. 118-122, July, 1868.

“prognathism limited to the upper jaw,” as mentioned in the report of the Transactions of the Anthropological Society of Paris, convey little information. Neither does there appear to be much light thrown upon the functions of the contents of the skull by the 15,000 measurements of crania by M. Pruner-Bey. The measurements adopted by phrenologists, and given by George Combe, p. 157 of his 5th edition, are simple and efficient, and generally understood and recognised.

PART II.

THE OCCULT POWERS OF MAN.

“Not directly, but by successive approximations, do mankind reach correct conclusions; and those who first think in the right direction—loose as may be their reasonings, and wide of the mark as their inferences may be—yield indispensable aid by framing provisional conceptions, and giving a bent to inquiry.”—HERBERT SPENCER.

“Nothing in the world is single—
All things, by a law divine,
In one another's being mingle.”—SHELLEY.

ONE HUNDRED years ago, electricity was a new force, that is, its laws and very existence were unknown to man. Jove held the lightning in his hand, and hurled the thunderbolt; but it was not suspected that this had any relation to the magnet, or to the harmless power of sealing wax to lift bits of paper. And if the inventor of the electrifying machine had shown its force one day in a dry room, and it had refused to act the next day in a damp one, our savans, as at present with respect to other forces, would have denied its existence; for if it existed, why should it refuse to act as well in one room as another! Dr Büchner tells us that “Science now makes us acquainted with eight different forces—gravitation, mechanical force, heat, electricity, magnetism, affinity, cohesion,—these are mutually convertible.”* that

* Matter and Force, p. 18.

is, pass from one into the other without loss, and are therefore probably merely "modes of action" of one and the same force. Dr Büchner makes no mention of odyllic force, discovered by Baron Reichenbach, or of vital force, or nervous, or mental force. By mental force, we mean when nervous force has passed into consciousness, and which is probably distinct from—that is, a correlation of merely nervous force. From ignorance of these forces, Dr Büchner declares clairvoyance to be an impossibility; and, from the same ignorance, Spiritualists ascribe to departed spirits the action of ill-understood natural forces.

How little do we understand of these natural forces! "Every fragment of material we can hold or see is a storehouse of force. In the case of certain compounds like gunpowder, we know how to unlock chemical forces of affinity and cohesion, and to obtain, by a sudden expansion and re-arrangement of atoms, a mechanical power that rends the rock or propels the ball; but it is startling to think that the most quietly behaved bodies we find on the globe, the granite frames of mountains, or the very dust particles on the road, are like sleeping lions, full of *potential* force, which they can give out the moment the balance of their affinities is disturbed." *

But these natural forces, and their sudden and often violent and unaccountable modes of action, have been supposed to have no relation to the human body; there, a mysterious "principle of life" and the "soul" have been thought sufficient to account for all that goes on, both in motion and thought. Life was supposed to be something entirely apart from ordinary force, and souls were made and kept in stock until bodies to hold them had been provided, and man, the unity of this life and soul, was supposed therefore to be superior to, or above, the laws of the natural forces around us; but this was the mistake of theologians, and has tended above all things to impede the true science of man. Man, a part of the Nature around us, is equally subject, in body and mind, to all her laws. The force that enters the body with the food has been estimated, as mere mechanical force, as being equal to raising fourteen million pounds a foot high. It is this

* *The Intellectual Observer*, p. 222.

enormous force—force being indestructible or persistent—and its modes of action in the human frame, that have to be accounted for in any science of man. Its correlation depends upon the structure through which it passes, and every interference with, or obstruction in, its normal mode of action, often produces effects as violent and unlooked-for as those we have mentioned above in physics.

I shall mention cases in illustration of the abnormal action of these powers, and of their separate existence. Angelique Cottin was a native of Perriere, in France, aged 14. On the 15th January, 1846, in the evening, the oaken frame she was weaving silk gloves at began to jerk, and no efforts could keep it steady. She was thought to be “possessed,” and the priest was applied to, who sent her to the physician, who ultimately took her to Paris to M. Arago, who reported on her case to the Paris Academy of Science. Here is authority that cannot be doubted. The fact demonstrated here, on full investigation, was “that, under *peculiar conditions*, the human organism gives forth a physical power which, *without visible instruments*, lifts heavy bodies, attracts or repels them, according to a law of polarity,—overturns them, and produces the phenomenon of sound.” “This force has moved articles of several hundred pounds without the slightest contact with the person, and has raised from the ground a body of 200 lbs. or more.” Arago, on being asked what was his opinion as to the force, said—“That has yet to be settled. It seems to have no identity with magnetism proper, for it has no reaction upon the needle; and yet the north pole of a magnet has a most powerful reaction upon her, producing shocks and trembling. This is not effected through the action of her imagination, as the magnet has the same influence, whether *secretly* brought near her or otherwise. It seems a new force. At all events, whatever it be, time and research will determine, with sufficient cases; at present we are left to conjecture. One thing, however, seems to be certain: the phenomena of this case show very plainly that, whatever this force is which acts so powerfully from the organism of this young girl, it does not act alone; it stands in some mysterious relation to some mundane force, that acts and reacts with it. This is witnessed in the

reactions which external things have upon her person, often attracting her with great power. It is a curious inquiry, and may open to us new resources in the nature of man and the world, of which, as yet, we have hardly dreamed." We are told that "the girl was at that age when, frequently, one of the most important changes of the female constitution takes place. There was evidently a derangement of the uterine functions, which favoured the evolution of this powerful force at that part of her organism. Hence the tremendous energy with which the agent acted from this exact locality. She would have the most tremendous shocks in this region, and simultaneously various articles in her way would be overthrown or driven to a distance, as by a sudden blow."* The force provided for the generative or reproductive system, both in men and women, is greater than for any other single function, and the vital and mental action is proportionally intense. Should any impediment arise in the structure that should prevent the proper concentration and correlation of this power from physical to vital and mental, effects similar to the above might be expected, the same as if the heat force of a steam-engine could not work itself off through the machinery, we might look for an explosion. Where these forces are not used up in a legitimate direction, they take all sorts of irregular shapes, as the hysteria and epilepsy of young women too often testifies; and physicians are tolerably familiar with the dangers to the system both at the commencement and the termination of this important change in the female constitution. At the termination of this period of menstruation, the force frequently disperses itself in periodical accessions of heat sufficient almost to produce spontaneous combustion. So important is the coming generation that Nature has provided a brain to itself—the cerebellum or little brain—to preside over its interests. The function of the cerebellum has been a mystery to, and mystified by, physiologists, because it is one of motion as well as feeling. So enormous is the force consumed by it, that if it comes into too early activity, development both of body and brain is checked for want of vital force requisite to carry it on; and too great

* Philosophy of Mysterious Agents—Human and Mundane. By E. C. Rogers. Pp. 53, 56, 58, 59.

activity of its function at all times is always at the expense of the muscular power, and indeed of all the powers.

The systems of bones and muscles stand in the relation of both cause and effect to the mechanical or muscular force.

Vital Force.—The quantity of vital force generated in the system is in proportion to the size and perfection of the peculiarly vital organs—the stomach, heart, lungs, blood vessels, &c. Where these, and the muscular system, are in excess, as in some men and most beasts of prey, quiet is torture; perpetual motion is a necessity. It is this vital force that principally constitutes the *vis medicatrix naturæ*, and it is transferred readily from persons who have it in excess to those in whom it is deficient; but in this case the brain or nervous power is proportionately weakened by the vital current being diverted. Persons who sleep together draw from each other—the weaker from the stronger, the older from the younger; and children have become prematurely old by sleeping with their grand-parents. Constant out-door labour greatly increases the motive and vital or curative power, so that you may cut an agricultural labourer's limbs in two, whereas a comparatively slight wound kills a student. The thinking power is dulled in proportion.

Electrical Force.—Electricity being the last discovered force with which the public has become familiar, all effects, of the causes of which we are ignorant, are generally ascribed to it. Its power of lifting or turning tables, however, must be very limited. The quantity in the body greatly varies, and upon what this variation depends is but little known. It is evident enough to the senses in most people in a dry atmosphere. Dubois Raymond demonstrated the difference between it and nervous force; but Matteucci showed that nervous force was readily transformed into electricity, as illustrated in electrical fishes. The singular fact is, that this force is under the control of the will in fishes—the torpedo numbing or killing its prey at a considerable distance in the water; and where one shock has not been found sufficient, it gives a second. Its force, however, is soon exhausted. Dr Ennemoser reports a case of a young

woman, the sister of a Strasburg professor, who, after a sudden fright, had "her body so highly charged with electricity, that it was necessary to conduct it away by a regular process of conduction." She gave powerful shocks, and she is reported to have given her brother "a smart shock, when he was several rooms off," and to have done this willingly.

Animal Magnetism.—This has been used as a general term for any or all of the forces acting in the body, and through that supposed medium influencing others; but man is a magnet in direct relation to all the magnetic forces about him. Mr Rutter proved this by the discovery of the magnetoscope. Dr Leger, by an improvement upon this instrument, was able to indicate the magnetic force of each phrenological organ of the brain, showing that the nervous and magnetic force must be in close relationship. We are told by Dr Ashburner that in the House of Correction at Coldbath Fields, Colonel Chesterton, the governor, allowed Dr Leger to examine the heads of 126 prisoners; and that from the relative power of the different organs, afforded to him by his instrument, he deduced *minutely* the offence for which it was probable that each man had been committed to the prison. "When the sums representing the organs of greatest activity were added together, the inference as to the character of the individual was easy, and seldom failed in being perfectly accurate. It was a numerical process, and was the germ of what must be, at no very distant period, the application of mathematical law to the formation of the human mind. Dr Leger found means, by patient study and great acuteness, of discovering tendencies to aberration from natural or normal manifestation of propensity. These, by the aid of his instrument, were certain of detection. In the asylum of Colney Hatch, he examined epileptic cases, and some of the insane. . . . In most of these cases there existed a very striking disproportion between the magnetic force of Concentrativeness, and that of some other organ in the moral or intellectual group, generally Ideality. Whenever the disproportion was observed, Ideality was represented by 25, and Concentrativeness by a very low figure, perhaps 2, or by *nil*, which was indicated by the curious

phenomenon of the pendulum coming to a dead stop."*† Dr Leger adopted 5 as the average force of each organ, giving a force of 180, or five times 36—the number of established phrenological organs. The force ranged, however, between 130 in a poor Irish servant of-all-work to 350 in Lord Ellesmere. Mr Rutter found that all dead animal matter, held in his left hand, arrested the movement of the pendulum of the magnetoscope in a few seconds. Arsenic and several other poisons produced the same effect. He also announced correctly, from the action of the instrument, the name of each metal contained in homœopathic globules of metallic salts—an infinitesimal quantity.

Odyllic Force.—This force is not to be confounded with electricity or magnetism. It differs, we are told, from the latter, "inasmuch as bodies possessing it do not attract iron, nor the magnet; nor assume any particular direction from the action of the earth's magnetism; nor affect the magnetic needle. It appears everywhere where magnetism appears; but magnetism by no means appears where odyle is found, and has therefore an existence independent of magnetism." "The perceptions of this force, Baron Reichenbach, its discoverer, tells us, group themselves about the senses of touch and sight; of touch, in the form of sensations of apparent coolness and warmth; of sight, in the form of luminous emanations visible after remaining long in

* Notes and Studies in the Philosophy of Animal Magnetism and Spiritualism, p. 70, 71.

† "The *Standard* calls attention to the fact, that though we can treat insanity better than it was treated by our forefathers, nevertheless, insanity spreads. The glory of our century, in the improved condition of lunatics, is counterbalanced by its mystery in the constant multiplication of lunatics. Is it that wizard theories and occult speculations are more rife? Not so; five-sixths of the victims to cerebral maladies are paupers, and nine-tenths of them illiterate. Is it that our morality is worse? This would account for no more than an infinitesimal proportion of the total. The commissioners, rationally enough, attempt no hypothesis. They simply set forth the figures, from one January to another, and leave us to judge for ourselves. Some years ago they were not so wise. They, or the individuals then in their places, said—'We are satisfied, from extensive observation, that in a large proportion of cases of insanity, the disorder is mainly attributable to the want of acquirement, in early life, of proper volitional control over the current of thought.'—*Pall Mall Gazette*, July 15, 1868. This furnishes a singular confirmation of Dr Leger's induction, as it is the function of Concentrativeness principally to aid in this "volitional control over the current of thought."

the dark, and flowing from the poles and sides of magnets; and not only to magnets, but more or less to the whole material universe." Human beings are luminous over nearly the whole surface. In sleep, the seat of the odyllic activity is transferred to other parts of the nervous system, and the odyllic light, weak as it is, has yet force enough to pass through the closed eyelids, and become perceptible to sensitives. Mr Rogers says—"It is a fact too well established by the philosopher (Reichenbach) to be readily cast aside, that certain substances, as well as all chemical action, and, indeed, every form of material change, not only evolves a new form of agency, but also excites the phenomena of light, flame, luminous ether or vapour, and that one of the prevailing colours of this is blue and bluish gray." (The colour ghosts usually take.) "He has also," Mr Rogers tells us, "demonstrated that this new agent has a peculiar relationship to, and influence upon, the nervous system,—that, indeed, it is the agent that establishes the sympathetic relation, not only between one organism and another, but also between a human organism and the vast world of unorganised matter; and that certain constitutions and temperaments are peculiarly and remarkably susceptible to its influence, even from birth; and still further, that, by certain derangements of the nervous system, the whole organism, especially the nerve-centres, fall more readily under its influence." *

Nervous and Mental Force.—We have included these separate forces under one head, because we cannot at present say where one begins and the other ends. The quantity of the nervous force is in proportion to the more or less perfect development of the nervous system; but probably the greater part of the force that passes through the nervous system is unattended with consciousness, and yet we have in many, if not in most cases, all the physical effects that attend mental action or consciousness. The heart acts unconsciously and so does the brain, that is, we are unconscious of its action, and of the disintegration of nervous tissue that is now known to accompany every action of mind—of

* Human Body and its Connections, p. 38.

thought and feeling. Each portion of the brain, however, although thus unconscious of its physical action—its molecular motion, is attended by its own specific thought or feeling; and the intensity of the mental action, or the amount of feeling, is in proportion to the size of the organ, which regulates the quantity of force consumed. Dr Wilkinson asks, "What is the use of the spinal cord to the senses and the brain?" "Its use," he replies, "is to carry the general cerebral principles into an automatic or mechanical sphere, and there to set them up in unconscious operation. Thus the spinal cord makes motions which look as if they proceeded from emotions, when yet there is nothing felt."* The cerebrum, also, may be set in motion both by external and internal agents, in the same way. The brain grows, or acquires firmness, health, or strength, unconsciously, in sleep or awake; and the processes of thought in which we have been previously engaged attain clearness and strength; and when, after rest, we return to a subject, we find ourselves unconsciously advanced in it, and thought easier. So also the feelings *unconsciously* take a bent or direction, until new circumstances call into conscious manifestation the new condition which the organ has acquired—Love, for instance.† Mr H. G. Atkinson, whose opinion as a cautious and careful investigator is deserving of the greatest respect, tells us, in explanation of the unity of consciousness and of the difference between the conscious and automatic action of the brain, that there is an organ of Consciousness deep seated in the centre of the brain. But how can this accord with each organ having its own peculiar function, with power in proportion to its size? Is our consciousness of colour, for instance, dependent upon the organ of Colour, and mental arithmetic on the organ of Number, or upon Mr Atkinson's central organ? It may be that each separate organ has its own peculiar modifying effect upon the organ of Consciousness, but this would be giving to one organ, differently influenced, all the variety of thought and feeling that belongs to the whole brain. This is possible, but not probable, and wants much more evidence in its favour

* *Philosophy of Mysterious Rappings*, p. 263, 264.

† See Dr Carpenter, Sir B. Brodie, &c., *Psychological Magazine*, p. 330, April, 1858.

than has been yet produced. There certainly must be a difference between unconscious cerebration and conscious—between nervous force and mental; but how, or under what exact conditions, one passes into the other, we do not know. We do know that the slightest pressure on the brain prevents it, that is, instantaneously suspends all consciousness.

So far, I think, I have advanced nothing but what observation and experience will verify, and the inferences are most important.

1. It is essential that the forces I have described should be equally distributed throughout the system; this depends upon the bones and muscles and the vital and the nervous systems being all equally well developed. This can only be brought about by the same attention to breeding and culture which we have already bestowed upon plants, fruits, and animals. Breeding is most important; for who, by “taking thought, can add one cubit to his stature?” Exercise may do something, but it will not turn five feet six inches into six feet; it will not much expand a narrow chest, or a narrow forehead. Anthropologists, instead of dwelling on fossil “jaw,” should establish the laws of this department; and common sense and public opinion would carry them out. The doctrine of natural affinities, spiritual wives, &c., and all the ferment now going on in America on these subjects, so well described by Hepworth Dixon, may be only the shadow of a great truth thrown before—the breaking ground for a more rational union between the sexes than now exists. No doubt natural affinities do exist, and that one man and one woman might, by the union of their vital and nervous forces, become really one; but how far this would tend to the improvement of the breed facts only can determine. In what is called the Anglo-Saxon, in Britain, the vital forces greatly predominate; while in his descendant in the United States of America, owing to the effects of climate—the dry atmosphere, Nathaniel Hawthorne tells us, and vicious habits of life—the nervous system so greatly predominates as to cause a considerable deterioration of race. James M'Grigor Allen, in his very excellent paper on Europeans and their descendants in North America, says—“The precocity of American children—the early age at which marriage is contracted—the greater rapidity with which the course of life is passed over, as

compared with Europe—are all interesting anthropological facts, testifying to the effect of climate on transplanted races;”* and testifying probably quite as much to training, education, and peculiar social conditions and institutions; “John Bull, on the other hand,” says Hawthorne, “has grown bulbous, long-bodied, short-legged, heavy-witted, material, and, in a word, too intensely English.” Both states are probably as much owing to habits of life as to climate. If, as Dr Hunt says, “We have exhaustion and degeneracy, but no real acclimatation;” and if, as Mr Allen concludes, “The modern Saxon may be destined to learn practically that the teachings of our science are not to be despised, and that in these lines, which seem to suggest the scientific theory of distinct racial realms for *man*, as well as for other animals, and plants, and that the various races cannot overleap their respective natural limits with impunity,” it will probably be because Anthropology at present has no *science*, but merely a history, and a very limited collection of facts. Science will inquire more intimately into the causes of climatic differences—if, for instance, as Mr Hawthorne tells us, it is the dry atmosphere that tends to develop the nervous system at the expense of the vital, we want to know in what way it acts? We know how the forcing mental process, and the restless activity, consequent on habits of life, tend to this end; and probably they may have the greater influence. The question is, will not science be able to counteract both tendencies—the physical quite as much as the moral? How much of the change observed in the Americans is owing to the air, the mental forcing system, or to tobacco, it will be for Anthropology to determine, and not merely to note the change and sit down with the belief that it is irremediable. Science will inquire into both cause and remedy.

2. The quantity of force, as well as its distribution, should also be attended to. This depends not only on the digestive and alimentary apparatus, but much also upon the stoking. A goods' train may do with coke, but an express will do better with coal. Our mode of cookery and our dietary tables are at present very imperfect; and it is of little use that beef-fat and cod liver oil

* Journal of the Anthro. Society, p. 133, July, 1868. † Ibid, p. 142.

contain the largest amount of force, if it is to be nearly all consumed in conversion or digestion. Little, comparatively, is yet known of the direct action of different foods and drinks and gases upon the nervous system, and through it upon the mind. It is true we are familiar with the effects of tea, and coffee, and alcohol, and tobacco, and opium, and absinthe, and hashish as stimulants and narcotics, but doubtless there are many things that would directly promote the growth of the nervous system, and thus strengthen the mind. Almost all mundane agents act differently and powerfully on different constitutions. Some persons cannot pass over metal, or water, or subterranean current, or chemical action, without being powerfully affected. People so constituted are retained by American Mining Companies to indicate the exact position of both metal and water under ground. Hence the secret of the hazel rod.

3. When there is any defect in the human machinery by which the correlation of force, from physical to vital, from vital to nervous, takes place, there is not only great derangement, but often an escape and a blow-up. The mode of action, or the effect of this escape, depends upon "the mundane force to which it may stand in some mysterious relation, which acts and reacts within it," as reported by Arago in the case of the girl Angelique Cottin. In this case the force was merely physical, and mechanical, and electrical, and unattended by consciousness; but the different forces of this organism may stand in relation to other mundane forces both physical and what have been called spiritual, and may act and react upon them at any distance. Our bodily force of gravitation is in connection with the whole universe, so may our other forces be; and what we have to discover are the conditions under which peculiar manifestations of this "action and reaction" take place. This would introduce us at once into the whole field of miracle and magic, of inspiration and prophecy, of witchcraft and priestcraft, of revivals and rewifeals, of mesmerism and spiritualism, without the aid of either angel or devil, god or spirit, or any physical or mental fetish which assumes a separate personality behind merely natural phenomena.

4. When this force proceeds from the spine or sympathetic nerves it is unattended by consciousness, but when it is con-

nected with the brain as well, then both consciousness and will attend it, but not always; indeed, when these abnormal forces are in connection with the brain and have all the effect of intellect, the action is most often of an automatic character—that is, unattended with consciousness. Mr Home, the spiritualist, reports that the singular phenomena that have been connected with him from his childhood are altogether without his own control.

Our little individuality is thus very imperfectly partitioned off from the great forces around us, and even that partition is often partially removed. The senses which are thought to be the only inlet to knowledge are in reality the barriers that protect us from a too great influx of such force, and thus help to keep us to our allotted but narrow sphere. Our bodies are always mixing with all around, of which we are made painfully conscious if shut in a close room with any of the “unwashed.” Our vital forces, like water, are constantly trying to find their level, and in mesmeric action two lives often become inseparably blended. There is a direct emanation from the brain, carrying with it our mental states, and in this direct way “evil communications corrupt good manners.” Through our vital forces we take health or we take disease, and through our mental forces the mind is raised or lowered in tone, according to the persons with whom we habitually associate. The communion of the saints is a great present fact. Each particular organ has not only its natural language in the body, but its own peculiar emanating power, influencing imperceptibly all around. In our intercourse with our domestic animals and children, even infants, this is very evident, and, joined with the other influences we have named, it is the cause of those strong personal likes and antipathies to which we are all liable. These things indicate only the normal conditions of body and mind; let us, however, notice briefly, some of the phenomena where, in cases of disease, the ordinary thin partition wall of our individuality is broken down and their forces act abnormally. It is a great mistake to suppose that the mind is acted upon from without only through the senses; where people are sensitive from the nervous force greatly predominating, it is

acted upon through the nervous system by almost every variety of mundane influence, as well as by the general atmosphere of nervous or mental emanation everywhere surrounding us. Mind may be set in motion—that is, force pass into consciousness—either by the action of the force within or without, either by the will, the sense, or other agency acting *directly* on the brain. Thus people can see without eyes. Light upon the retina ordinarily brings the powers of vision into action, but the brain may be brought into similar action, and the same ideas elicited by the subtler action of odyle or other agent on other parts of the body.

In “thought-reading,” that only is seen by the patient which is clear to the mesmeric operator. I have seen a mesmerised child, with eyes completely closed and turned upwards, give the “number” on three watches consecutively, and each number consisted of five figures; but when there was not light enough to make things clear to the operator, there was either no answer, or it was equally obscure. Here was a transference of *thought*, not of a mere action of the brain, and mental and nervous force, therefore, must be different things.

In electro-biology, the mind of one person seems to take entire possession of both the mind and will of another. These experiments illustrate forcibly some magnetic influence at work, for at a single pass of the hand of the operator along the body from head to feet, the body is made so stiff that when placed on two chairs it will bear a great weight, and yet, by a single word of the operator addressed to the *unconscious* subject—that is, by a mental action of will, all this stiffness is dissipated, and consciousness restored.

Then there are all the wonders of mesmerism—of introvision, prevision, and clairvoyance, not to be doubted by those who have either studied their history, or who have experimented themselves. Some people are so constituted that they can read people’s thoughts, and tell what is going on at a great distance. Some can act upon others a long way off, and, by will-power, throw them into trance, or compel instant obedience. Some, as in Zschökke’s case, can read the whole history of a past life. The fact is, our forces, both physical and mental, are only par-

tially individualised, and we are not only associated with, but we act powerfully upon, forces without ourselves; and the question is, through what medium or media does this take place? Gravitation, we know, unites us to all around. Odyle, Reichenbach discovered to be an equally common force, and electricity and magnetism are universal; and may not mental force—the highest and most concentrated of all, and which we find to be compounded of all the others—exist in an equally free state, forming an atmosphere of its own? Heat, and Od, and Electricity, are constantly emanating from the human body, and why not mental force, the most powerful of all? Individual will-power could act through this medium, and, as mind is the most concentrated force of all, if we had faith, “we might even say to this mountain, Remove hence to yonder place, and it shall remove.” “Howbeit, this kind goeth not out but by prayer and fasting.” We have less faith in, and knowledge of, the occult powers of nature than even the magicians and necromancers of old. They knew that this kind goeth not forth but by prayer and fasting, and they studied and cultivated the conditions of body necessary to put them *en rapport* with what are still to us *occult* powers. The pretensions of the ancient magician were not all fictitious; he was acquainted with, and used most of the powers we have mentioned above, and probably many more; and the initiation into his mysteries was probably only the training required to unite his mental and bodily powers more intimately with the forces without. Alas! we have no conjurors among our present men of science, and a “nervous epidemic” called Spiritualism, in ignorance of our bodily and mental constitution, based on a gigantic assumption, and propping an ancient superstition, takes the place of the power and mental advance we might attain, if we had only a real Anthropology, and the *whole* nature of man became, as it ought to be, a real science. We agree with the *Pall Mall Gazette* (May 2, 1868) that “Mr Home ought really to be set apart, kept at the public expense, and carefully examined by the first experimental philosophers of the day, until the laws of these anomalous phenomena have been satisfactorily determined.” Instead of being Lyon-ised by the spiritualists, he ought for a time to become the Lion of the Royal Institution,

whose members should be satisfied at first with observing facts, without dictating in any way the conditions under which they were bound to appear. Of course if these phenomena only take place in the dark, the investigation becomes difficult, if not impossible; and without investigation every one has an equal right to his opinion. As Professor Faraday truly said, "How could electricity, that universal spirit of matter, ever have been developed except by rigid investigation?—and if these so-called occult manifestations are not utterly worthless, they must and will pass through a like ordeal." Very little light has as yet been thrown upon this subject by mere physicists.* Du Bois Reymond, and after him Humboldt and other philosophers, detected an electric current excited during his contraction of the muscles of the arm, producing a deflection of the needle. Humboldt says:—"The fact of the experiment affecting a magnetic needle

* On the question of these so-called Spiritual Manifestations, among a press of other evidence, Mr C. F. Varley, consulting electrician of the Atlantic Telegraph Company, and of the Electric and International Company, says—"About nine or ten years ago, having had my attention called to the subject of Spiritualism, by its spontaneous and unexpected development in my own family, in the form of clairvoyant visions and communications, I determined to test the truth of the alleged physical phenomena to the best of my ability, and to ascertain, if possible, the nature of the force which produced them. . . . I have examined and tested them with him (Mr Home), and with others, under conditions of my own choice, under a bright light, and have made the most jealous and searching scrutiny. I have since then been in America, where the subject attracts great attention and study, and where it is cultivated by some of the ablest men, and having experimented with and compared the forces with electricity and magnetism, and having applied mechanical and mental tests, I entertain no doubt whatever that the manifestations which I have myself examined were not due to the operation of any recognised physical laws of nature, and that there has been present on the occasions above mentioned some intelligence other than that of the medium and observers." Mr Varley further says in a letter to Professor Tyndall, dated May 19, 1868—"I have endeavoured, whenever opportunity, health, and business would permit, to ascertain the nature of the force by which these phenomena are produced; but I have not progressed much farther at present than to find out the source whence the physical power is abstracted, viz., from the vital systems of those who are present, and especially from the medium. The part of the subject under discussion, therefore, is not yet ripe for publication." In this stage of Mr Varley's investigation, Spiritualists have no right whatever to claim him as one of themselves. It by no means forwards the interests of truth to represent all who believe that they have witnessed phenomena "not due to the operation of any of the recognised physical laws of nature," as also believing that these manifestations are caused by disembodied spirits who have had a previous existence on the earth.

by the alternate tension of the muscles of the two arms,—an effect due to volition,—is established beyond the shadow of a doubt. Notwithstanding my advanced years, and the little strength I have in my arm, the deflections of the needle were very considerable.”* Here was volition, *i.e.*, will-power, affecting the needle through the arm, but without contact. Faraday also showed the magnetic power of oxygen, and that this power was set free in the body upon the union of the oxygen with the carbon of the system, and, as this is constantly taking place, as this union is the original source of all power in the body, there must be always a large and constant supply of magnetic power. The nerve power, upon which the strength of each organ depends, must also bear a strong relation to electricity, as was shown by Dr Leger’s instrument.

“Action and reaction are equal and contrary,” and, consequently, the mind being a force, for every action from without upon the mind there must be a corresponding reaction; to whom, and how far extending to other minds, we cannot tell. Also, “as every event in time and space is a change of matter (or depends upon it), and every one change of matter is related to every other change of matter in space and time, it must follow that the change in the matter of the brain bears a relation to every other change of matter, whether *past*, present, or *to come*—whether *here* or in the stars.”†

Mr Atkinson, treating of the same subject, says—“Consciousness and reason, after all, seem but as one outward sign of an inward principle, which sees as in a glass at once, and through phenomena to laws, without the process of induction: whereas, by consciousness and reasoning, we have to use signs, and take up nature by parts and degrees: and, after all, can see but in part and superficially. We cannot see, like the sun, into every corner, but go about like a candle moving from place to place, and shall see clearly only when we have noted our facts, placed them in order, and inferred from them general laws. I have heard men say, ‘We are men of facts, and do not believe in *clairvoyance*.’ I have replied, ‘You are not men of facts—or at

* Annual of Scientific Discovery for 1856, p. 115.

† Rogers, p. 252. See Walther, the Prof. at Landshut, quoted by Gall.

least men of these facts. You are like machines which spin out only one kind of fabric. You are men of one language and one country;—prisoners, with a window to the north, and declare there is no moon.’”*

The forces of nature are only known to us as modes of motion or action, and they are all correlates, or pass readily into each other, † *i.e.*, from one mode of motion to another; matter, which Huxley calls “a balance of forces,” being merely the instrument by and through which this change takes place. Thus force is not *inherent* in matter: it simply “conditions” it, producing what we call its properties or qualities. Force is erroneously supposed to result from the action of matter, whereas the reverse is the case—the action of matter being always dependant upon force. Matter is said to exert *force*, but this is a delusion consequent upon the fact that every phenomenon, every event in time and space cognisable by us, is attended by a change of matter. Force is persistent, and all present force is previously existing force in another form, and matter in no way increases or diminishes this: it is simply the medium of its correlation or transformation from one mode of action to another. It is said that the properties of matter are inseparable from its existence. True; properties, qualities, and functions—that is, *particular modes of action*—are inseparable from that which caused, not that action, but that particular form or mode of action. We have throughout treated force as an entity, the common term for both matter and spirit, and to us it is the only entity: inseparable, however, from its supreme source, as motion is from that which moves. Baron Dupotet says, “There is an agent in space, whence ourselves, our inspiration, and our intelligence proceed; and

* Man's Nature and Development, p. 149.

† Gravitation has hitherto been thought to be an exception to this law, and Professor Tyndall has declared that he should think a man mad who believed that a body could lose its weight, although Huxley pronounces himself willing to investigate. We believe with Mr R. H. Paterson, “that Heat and Light are simply forms of the great cosmical force which we call gravitation; they are not sent travelling through the abysses of space by the solar orb, but are generated when the great cosmical force enters and acts upon an atmosphere such as surrounds the planets.” Thus Heat and Light “are forms of the grand cosmical force which in its simplest form we call attraction,” its correlation or transformation being brought about by the matter of our atmosphere, *i.e.*, the emanations from our earth.

that agent is the spiritual world (not would-be individual spirits) which surrounds us." In this we most thoroughly believe. Mental force or thought—its "form" determined by the brain—may float as free essence, or in a medium of its own, until it meet with some structure or body through which it is again changed, and again reduced to its primitive physical condition; or having been once transformed into spiritual force, it may never be retransformed, but may await its transmigration into new bodies.

"Much more, if first I floated free,
As naked essence, must I be
Incompetent of memory.

"Yet how shall I for certain hold,
Because my memory is so cold,
That I first was in human mould?

"It may be that no life is found,
Which only to one engine bound
Falls off, but cycles always round."—*Tennyson*.

"Spirits seem buried, and their epitaph
Is writ in Latin by severest pens;
Yet still they flit about the trodden grave
And find new bodies, animating them
In quaint and ghostly way with antique souls."

—*George Eliot*.

What power over this atmosphere of mind, or spiritual free essence, the human will has it is impossible yet to say, nor, as this mental atmosphere increases and intensifies, what may be its future power; but here, no doubt, is the spirit world of the Spiritualist, and in this will-power and unconscious action of mind the hidden cause of most of the spiritual phenomena. There is spirit—the agent in space mentioned by Dupotet—but no spirits; the personality is the thing wanting. Force is persistent, and both body and mind are indestructible, except in form; and what new form they may take in the future it is impossible to say; but, if it be such as has been assigned to them by the Spiritualists, it is a dark look-out for us indeed. What is the nature or essence of that Agent, or Substance, or Being, or Entity, or Force, underlying all phenomena, but whose mode of action only is known to us, we do not know. By force or power we mean the cause of all things—that which can and does produce all phenomena; but this power is as inseparable from its

source, or that to which it belongs, as motion is from the thing that moves. If unity is claimed for the mind, it lies in that which underlies *all* phenomena, and not in its mode of action, alone known to us; and however varied these phenomena, it may be that a few simple laws underneath—attributes of the Source of all power—produce all the variety: “Pleasure and pain being to voluntary motion what attraction and repulsion are to inorganic matter, and the Science of Morality to the analysis of pleasure and pain what the Science of Chemistry is to the different substances that compose this globe.”* This unity of the noumenon, &c., may also account for all that at present seems so mysterious to us in clairvoyance and other normal and abnormal conditions of mind.† Whether we have any powers or intuitions which enable us to see “through phenomena to laws,” and through laws to the Lawgiver, is yet matter for investigation. It would seem as if there were occasional gleams through small chinks which will widen with the ages. We have

* Philosophy of Necessity, p. 21, second edition.

† Professor Tyndall says, “The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable.” Probably that is because the Professor has inverted the problem, and turned it the wrong way upwards. Let him turn it the other way and it may be more intelligible. The objects of knowledge are ideas, not things; as Hume says, “We never really advance a step beyond ourselves, nor can perceive any kind of existence but those perceptions that have appeared in that narrow compass.” Neither do we require to know any other kind of existence. We have not the least reason to suppose that “the physics of brain,” that is, the power of the brain, differs in any way from the force or power which underlies our consciousness. The passage we have to make is from consciousness to the powers of the brain, and not from the brain to consciousness, and this is intelligible in the same sense as all other things are intelligible. All things among physicists are gradually resolving themselves into force; as Huxley says, “Every form is force visible; a form of rest is a balance of forces; a form undergoing change is the predominance of one over others.” Now, force and power are the same, and all power, as far as we know, and in all that we know, is derived, not inherent or self-created; and when we are asked “who or what impressed upon molecules the necessity of running into organic forms?” we say, I think truly, will-power, because this action upon molecules has a definite purpose. I think we are obliged to agree with W. R. Grove, that “All power is will-power,—the will of God,” that “Causation is the will, creation the act of God;” and, judging from the analogy of individualised minds, may we not infer that this will, which originally required a distinct *conscious* volition, has passed, in the ages, into the *unconscious* or automatic, thus constituting the fixed laws and order of nature, and making intelligible the passage from our own consciousness to the unconscious “physics of the brain?”

“ a noumenal integer phenomenally differentiated into the glittering universe of things ;” and to pass from one to the other, to be absorbed in universal being, is the great aim of the Buddhist, whose one infallible diagnostic is the belief in the infinite capacity of the human mind. The natural eye, he says, takes account only of appearances ; it requires the severest discipline for a man to behold the reality. Prayer, fasting, and solitude constituted this discipline, and certainly as the brain is emptied of its natural force by these means, it is filled with force from without, often inducing a state of trance in which the barrier between individual and general mind seems at least to be partially broken down. But whatever may be the powers of man, and the relation of the concentrated forces which constitute his individuality, to the natural forces around him, we can scarcely be said yet to have placed their investigation on anything like a scientific basis ; and Mr Le Gros Clark, in a lecture recently delivered to the council and members of the Royal College of Surgeons, said that the nature and functions fulfilled by the electric fluid in the sustaining of animal and vegetable life is still as profound a secret as was the law of gravitation before the days of Kepler and Newton. When this is done, and the light of science is let into this department, we shall at least be able to do for the onward progress in mind as much as steam has done for mere material civilisation. The power of the ancient magician, the miracles of all religions, the powers of clairvoyance are real, and we have only to bring them under law to make them serviceable,—not, as heretofore, to chicanery and superstition, but to a great advance in mental science. Surely this is the legitimate function of the Anthropological Society. The Society’s *Review*, April, 1867, says, “ To whatever cause it may be attributed, let us begin with the rather humiliating confession, that anthropology, both in its classification and terminology, is in a miserably confused and almost chaotic condition.” This, I fear, is too true, although the last number of the *Review* and *Journal* (July, 1868) shows a more living interest. Would not the objects of the society be better promoted if “ The Science of Man ” were divided into departments, and committees were appointed to *investigate* and report not on what man

was, and how and when and where he began, but on what he is now, here present, and what he may become under scientific development?