

engaged the co-operation of electricity to accomplish it. Phosphorescent animals are often made serviceable to man, in directing his steps through wild and uncultivated countries where these animals abound. One of the most powerful evolutions of this light is seen to proceed from the lantern-carrier (*fulgora lateriaria*), as it is called, from the useful purposes to which this insect is applied in South America. "This fly is of a very considerable size, measuring nearly three inches and a half from the tip of the front to that of the tail, and about five inches and a half from wing's-end to wing's end when expanded: the body is of a lengthened, oval shape, and divided into several rings or segments; the head is nearly equal to the length of the rest of the animal, and is oval, inflated, and bent slightly upwards. The ground colour is an elegant yellow, with a strong tinge of green in some parts, and marked with numerous bright red-brown variegations, in the form of stripes and spots; the wings are very large, of a yellow colour, most elegantly varied with brown undulations and spots, and the lower pair is decorated by a very large eye-shaped spot on the middle of each, the iris or border of the spot being red, and the centre half-red and half-yellow, with longitudinal red stripes. This beautiful insect is a native of Surinam, and during the night diffuses so strong a phosphoric splendour from its head or lantern, that it may be employed for the purpose of a candle or torch; and it is said, that three or four of the insects tied to the top of a stick are frequently used by travellers for that purpose. The celebrated Madame Merian, in her work on the insects of Surinam, gives a very agreeable account of the surprise into which she was thrown by the first view of the flashes of light proceeding from these insects. 'The Indians once brought me,' says she, 'before I knew that they shone at night, a number of these lantern-flies, which I shut up in a large wooden box. In the night they made such a noise that I awoke in a fright, and ordered the light to be brought, not knowing whence the light proceeded. As we found it came from the box, we opened it, but were still much more alarmed, and let it fall to the ground in a fright, on seeing a flame of fire come out of it; and as many animals as came out, so many flames of fire appeared. When we found this to be the case, we recovered from our fright: and again collected the insects, highly admiring their splendid appearance.'"

The light is so brilliant in the *elater noctilucus*, or fire-fly, that with eight or ten of them a book may be read with the same facility as with the light of a candle. Cuvier says, by it the women of the country pursue their work, and ladies even use it as an ornament, placing it in their hair during the evening pasco. The Indians fix them to their feet, to light them in their nocturnal journeys.

And yet such a manifestation of the Almighty power and goodness, in causing the meanest of his creatures to minister to the use of man, forms only one of those innumerable tokens which every where present themselves, of his fostering care over the human family, and the ample provision made for the supply of its wants. How desirable is that frame of mind which induces us to behold in the works of nature the operations of a wise and gracious Being, whose omnipotence is clearly manifested in the construction of the meanest reptile, and which leads us to contemplate the Almighty as the God of grace no less than of nature, able and willing by the light of his Holy Spirit, to lead and to guide into all truth!

For the Pearl.

PHYSIOLOGY.—No. III.

The present paper will be devoted to the consideration of organization and life. There is a class of Physiologists who contend that life is a consequence of organization; that is, that certain elements meet in a determinate way, constituting organization, and that then life is superinduced; but as they fail to explain the agency by which this disposition of parts is effected, (for every effect must have a cause) there is necessarily an error in the very outset, and consequently all the deductions are wrong. For although the principle of life cannot be demonstrated to the senses unconnected with matter, yet this is no evidence of its non-existence: and the objectors have uniformly failed to detect the existence of organized matter unconnected with the phenomena they impute to it: and without this first cause as a conductor, we soon wander astray, groundless conjectures taking the place of facts, and hypotheses of induction. To the doctrine of a vital principle then must we turn, as the only safe and sufficient explication of the interesting phenomena observable in living organized beings. In contrasting organic and inorganic bodies, it was shewn that the elements were the same,—the number and mode of combining constituting the difference; but this is only viewing organization in the abstract, for in connection with all living bodies is this principle of life: every action of which is in accordance with an undeviating design, and every organ which it creates is intended to further and complete that design. The famous Kant observes, that "The cause of the particular mode of existence of each part of a living body resides in the whole, while in dead masses each part contains this cause in itself." And in this observation of the philosopher is contained the answer to the question, why a part, when separated

from a living body, and therefore possessing organization, generally ceases to live? We say generally, because some animals which have a great many similar parts, may be reproduced like plants from slips, each segment of the animal possessing all that is requisite to support an independent existence; likewise a branch, separated from the parent plant, under favorable circumstances produces a new and independent individual, exactly like the parent:—but in these cases the parts are very similar, and easily changed one into the other; for instance, the branches of some trees when covered with earth soon become roots,—the stamens of the flower are easily convertible into petals, etc., and this is the case with the more simple animals above mentioned; but observe, in all these experiments one essential thing must be attended to:—the separated part must possess all the requisite organs for an independent life, or it cannot be sustained. If you strip the bark from the branch it soon dies, because in it are contained the vessels which were to have assisted in the formation and transmission of nourishment, etc. and in the animals above alluded to, unless the separated portion contain all the parts to be found in the perfect individual, such as intestine, nerves and blood-vessels, it cannot maintain a separate existence.

In the more complex animals there are certain parts performing peculiar offices, which cannot be dispensed with, as the brain, heart, stomach, the destruction of which are fatal to life—it ceases instantly; these organs are single, but many parts occur more frequently, and not being essential to the existence of the whole, may be removed without serious damage, but none of these parts when so separated can continue to live, for the reasons already stated. But the power of separate existence resides in the germ, although at the time of separation from the parent being, it may not possess all the parts requisite to the perfect individual: and this fact brings us to the position from which we started, namely, the existence of a first cause or principle of life, which pre-existing, governs the formation of the whole out of parts bearing no resemblance to the resulting being.

From the facts above stated, it will be seen that this principle of life—or formative principle, as it may be termed, is not, like the mind, connected to one organ; it resides as it were in each, directing its peculiar action, and rendering it subservient to the one great object—the preservation and reproduction of the individual. Thus the stomach receives and prepares the food which it transmits to the intestines, there the absorbents extract the principle which is to become blood when carried to the heart, from thence it goes to the lungs to be rendered fit for the brain, which is then enabled to animate all the other organs through the medium of the nerves; so that they may repeat their peculiar function; and from this combination of actions results the phenomenon which we term life, or rather, we should reverse it, and say—that this combination of action is the result of the formative and governing principle which we have been considering.

C***.

MAN ANSWERABLE FOR HIS KNOWLEDGE OF DIVINE TRUTH.—It must be obvious to every one who reflects upon the actual state and condition of man, that he is responsible to his Creator for the manner in which he exercises his intellectual faculties in examining the credentials of divine revelation; and when upon satisfactory evidence he is convinced of its truth, he is equally responsible for the manner in which he endeavours to decipher the genuine import and meaning of the inspired record. He will most unquestionably have to render a solemn account of the way in which he has improved the means placed within his reach of arriving at sound and accurate conclusions; while, therefore, he is morally accountable for the mode in which he exercises the right of private judgment, that right is neither abrogated nor suspended. So far is this from being the case, that the principle is recognised, and an appeal made to it in the sacred volume. What was the injunction given by our blessed Lord himself? "Search the Scriptures, for in them ye think ye have eternal life; and they are they which testify of me."—*Archdeacon Broune's Charge*, 1838.

MR. PERCEVAL.—O wonderful power of Christianity! Never can it have been seen, since our Saviour prayed for his murderers, in a more lovely form than in the conduct and emotions it has produced in several on the occasion of poor, dear Perceval's death. Stephen, who had at first been so much overcome by the stroke, had been this morning, I found, praying for the wretched murderer; and thinking that his being known to be a friend of Perceval's might affect him, he went and devoted himself to trying to bring him to repentance. He found honest Butterworth trying to get admittance, and obtained it for him; and Mr. Daniel Wilson, whom, at my recommendation, he had brought with him. The poor creature was much affected, and very humble and thankful; but spoke of himself as unfortunate, rather than guilty, and said it was a necessary thing—strange perversion!—no malice against Perceval. Poor Mrs. Perceval, after the first, grew very moderate and resigned; and, with all her children, knelt down by the body, and prayed for them, and for the murderer's forgiveness. O wonderful power of Christianity! Is this the same person who could not bear to have him opposed by any one?—*Wilberforce's Journal*.

LIFE OF CHRIST.

BY ANN S. STEPHENS.

The life of Christ presents in itself a succession of sublime pictures, every one blending in tint and harmony with the other, till a perfect character is formed. Nothing is wanting, nothing is overdone; we must believe in its truth, because the most vivid imagination fails to pourtray any thing so perfect. The ideal of the most lofty mind stands rebuked by the calm, gentle, unobtrusive majesty of the real. Search for a character of similar consistency any where among the haunts of men, and is it to be found? Shakspeare, with his vast conception and almost super-human knowledge of the heart; he who could pourtray a Hamlet and create an Ariel, has he ever conceived of a being so consistent, so human, and yet so Godlike? Milton, whose mind seemed to comprehend Heaven and exalt earth, with all his sublimity and depth of thought, has conceived of nothing that can approach to a character like that of Christ. If the imagination of master minds like these has failed to pourtray perfection like his, where else in the realms of thought shall we seek? Where shall we look for it among the ideal?—where among the real? Turn to the records of the past. Let the great men of by-gone ages appear in review before the mind. Men, who have wrenched diadems from anointed brows, and have lavished them abroad as if they had been garlands of withered flowers—whose footsteps have shaken the foundation of empires, and whose power has been felt to the remotest corners of civilized life, sweep by with the iron seal of war upon their foreheads, and garments dyed deep in the blood of nations. Statesmen, who have wielded the destiny of empires by the might of mind alone—pilgrims, who have made life a penance and a toil—martyrs, who have sealed their faith in fire and death, and who have gone into eternity shrouded in the glory of their own self-sacrifice—holy men and holy women—the great and the good of all nations and of all ages, glide by, purified and exalted by the shadowy glory of the past; yet the mind turns away from the solemn procession unsatisfied with a greatness which is merely human, and dwells with a love which is of the faith and of the reason, upon that being who stands among the history of the world alone, unapproached and unapproachable.—The Great and the Good.

The great men whom history or life presents, we feel to be so only in a series of acts called forth by circumstances, or in the concentration of strong energies on a given object. The prominent traits of character which place them before the world are blazoned in a glowing outline, but the filling up, is wanting, or if shadowed forth, we find great acts arising from unworthy motives, strength combined with weakness, and in every instance, some one fault to mar the harmony of the whole. We can find men perfect in some one quality, but not one faultless in all things. In the character of our Saviour, the mind and the heart rest satisfied; the more it is studied the more holy and beautiful it becomes. Does the mind ask for submission, seek it in his childhood, while he was subject to his parents—for youthful dignity—see him standing in the midst of the temple, sublime in youth and power, reasoning with the doctors and lawyers with a wisdom which astonished even those who questioned him on subjects which had been to them the study of a life time. Does it ask for humility and christian forbearance, find him washing his disciples' feet, and sitting at the same board with publicans and sinners—for true and gentle charity—listen to his voice when he says to the sinful woman, "Woman, where are thy accusers? Go in peace and sin no more." Does it ask a heart full of gentle and domestic sympathy, follow him to the grave of Lazarus, or to the bier of the widow's son—for benevolence, let the mind dwell for a moment on the cleansed leper, on the blind restored to sight, and on that heart-stirring scene where he stood in the midst of a multitude while the sick were let down through the roof that he might heal them—for firmness, go to the wilderness where the Son of God fasted and was sorely tempted forty days and forty nights—for energy, witness it in the overthrowing of the money-tables, while those who had desecrated the temple were cast forth from the place they had polluted—for wisdom, read it in every act of his life, and in every line of his sermon on the mount—for prudence, see it in his answer given to the chief priests when they brought him the tribute-money—for patience, forgiveness, and all the gentle attributes which form the Christian character in its perfection, follow him to the garden; witness his prayer and his agony of spirit; dwell on his patient and gentle speech when he returned from that scene of pain, and found even his disciples asleep. Reflect on his meekness and forbearance when the traitor's kiss was on his cheek—on the hand so readily extended to heal the ear of the maimed soldier. Go with him to the place of trial, and to that last fearful scene which caused the grave to give up its dead, and the solid earth to tremble beneath the footsteps of his persecutors. Dwell upon his life and upon every separate act of his life, and the soul must become imbued with a sense of its truth, beauty and holiness. It will be made better by the study; for it is sweet to reflect upon perfect goodness—sweeter to feel that the heart can be turned to pure and useful thoughts by the musical combination of three words, "Cana of Galilee."

* See Drs. Hunter and Lane's translation of "Tiedemann's Physiology of Man," in note, p. 269.