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BIBLIOTHECA SACRA

ARTICLE I.

RECENT SCIENCE AND THE SOUL'S SURVIVAL.

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WITH the outbreak of the great European war and its unparalleled tragedies, a longing for the consolations of faith in the survival of the soul has returned. In anticlerical France, the consciousness of a spirit in man surged up in a surprising way in the hearts of classes lately quite skeptical, if not downrightly materialistic. In socialistic ranks, also, so great a change has been occurring that many of its foremost leaders have been frankly expressing the idea that "behind nature there is a Power unseen but felt"; that "beyond death there must be a something"; "else were life on earth a mere wastage."

If there be a moral Ruler controlling mankind and human destiny, can that Ruler allow the unscrupulous men who have been responsible for the terrible sufferings and destruction of so many millions of fellow beings to escape any just retribution for their international crimes by dropping with their innocent victims into one common, indiscriminating, all-devouring, all-unconscious dustheap?

Perhaps we cannot say *what Divine Justice* in the hereafter requires. But at least we can affirm something as to

what mental and moral consistency requires in view of the intense convictions as to duty, veracity, and integrity which all noble — yes, all decent — men hold. On the materialistic theory, what a silly error is the voluntary death for the defense of his fellows of every noble patriot or soldier or self-sacrificing martyr who has died for his religion, his home, or justice in the society to which he belongs! Unless we accept as the types of wise men those who brazenly throw overboard all inconvenient scruples about integrity and disadvantageous mercy, and affirm that Jesus and Paul, Savonarola, John Huss, and Abraham Lincoln were but despicable fools who under the hallucination of duty squandered the one life granted to them, then we must accept the great moral instincts of noble men as pointing to a real spiritual world beyond the grave, whose steady gravitation draws the human heart, at whatever cost of the fleshly life and sensation, to obey these higher laws of duty and virtue.

But, ask the men of science, how is it possible for human life and mind to continue after the mortal dissolution of the body? This, of course, is the great modern objection which I desire to discuss. For to-day no Scripture text or church authority or past belief weighs with the twentieth-century man. Even the old-time philosophic doctrines of Aquinas, Descartes, Locke, Kant, and Hamilton have been consigned to the dustheap. They are incredible because, it is said, they are dualistic, and modern science and philosophy can accept only a monistic explanation.

This monistic theory of the relation of the soul to the body was shadowed forth two centuries ago by Spinoza; but it was fully formulated and given successful ascendancy amongst scientific and philosophic thinkers less than a century ago.

Its essence is that all sentient states, thoughts, and consciousness are no realities, distinct from the physical energies and motions in nerve and brain, but they are only the inner aspects of these physical activities. The physical and the mental (or sentient) circuits are not two realities, but one. Their apparent doubleness arises from the physical being observed from the outside, and the feeling, thought, and consciousness being known from within. They are no more diverse or separable realities, either here or hereafter, than the concavity and convexity of one and the same curve. Their difference and independence, in fact, are merely apparent. As the flame of a candle is only an apparition and impression from the candle's combustible processes, so the mind of a man is merely the totality of his successive brain processes.

For half a century this monistic view of mind and body has carried all before it in scientific circles, and savants of considerable reputation have even called it a view that has been verified. As a common inference from it, the decomposition of the body and the dissolution of its atoms have been thought to involve the non-survival of the human soul.

But psychologists and physicists of late have found this theory unsatisfactory. In the first place, it has been noticed that it is impossible of verification. The great fact on which it relies, that bodily and mental processes accompany each other, and that the physical energies, organism, and processes always condition the mental, is a concomitance quite well explained by very different theories.

Again, reflection on the monistic solution shows that it is not in fact a solution, but only an enlargement of the mystery and a pushing of it further back.

The reason why the monists reject dualism is because of the alleged incompatibility of supposing unextended, impon-

derable, and intangible mind to dwell together in and interact upon extended, ponderable, and tangible matter. The monists are very sarcastic upon the believers in soul who seem to think that there is a reservoir of psychic fluid somewhere, ready to be tapped by the occurrence of childbirth, and bring a soul out of the fairyland of the supernatural into every human body. For a solution they put the two alleged incompatible elements, i.e. the material and the spiritual, into every cell and every atom. Every cell, they say, has a cell soul. Every atom has a rudiment of feeling. And, now that the two incompatible elements are called double sides or twin aspects, it is claimed that they can nestle and work together, and there is no longer any incompatibility of thought in their coöperation.

Plainly the mystery is not explained: it is only pushed further back and made bigger. A philosopher at breakfast eats and drinks some atoms of caffeine, water, starch, and salt. Before they enter the stomach and blood they have, as Professor Clifford said, only a dull rudiment of sentiency. Their mentality is even less than the embryotic or subconscious feeling of a protozoan or a sunfish. But when these chemic atoms get into the brain of the professor, and are there aggregated, compounded, and organized, then they reason, compare, deduce, memorize, synthesize, and evolve the profoundest mathematic and philosophic problems. Is it not as incredible as if, by squeezing together into the skull of a skeleton a colony of polyps or plant lice, you should expect to get the wisdom of a Newton or the intelligence of an Edison? This marvelous swelling up of the mere rudiment of lowest feeling in the salt or caffeine atoms into the exalted reason of the thinking mind is quite as much bringing reason out of fairyland as is the theory of the soul as a

real thing, fundamentally different from any group of atoms.

Especially full of difficulty for the monistic explanation of the mind are the results of scientific investigation as to the discontinuity of matter in the human body. The monistic theory arose at a time when chemistry was the key to problems. In accordance with the conventional language of the past, men of science still talk to-day about the collisions of the molecules of gas, and how they strike the walls of the vessels in which they are contained. Well-informed modern physicists, however, know that the molecules never succeed in touching each other, any more than planets touch the sun, but are driven back by their inherent repulsive energies long before contact.

The current estimates of the sizes of molecules and atoms and the interspaces between them which are to be found in encyclopedias and scientific manuals have been derived from data which give us, instead of the circumference of the atom or molecule, the very much larger dimension of its sphere of energies in relation to its neighbors. The far more accurate electric measurements of the size of the orbits, which the electrons, connected with the atoms, describe, demonstrate that the real dimensions of the atomic group, composed of positive and negative electrons, and especially the real size of the atomic nuclei, are exceedingly more minute, and that their distances apart are many times greater, comparatively, than had been supposed a few years ago.

By the ultra microscope and a minute beam of Röntgen-ray light, molecules of gold, one millionth part of a millionth of a half foot, can be observed, dancing like fireflies. By the still more delicate electrometer the observer can count the needle jumps of this instrument as helium atoms pass through a film of mica. By mathematical deductions from the action

of these instruments the infinitesimal size of the helium particles can be determined. In Risteen's work upon molecules (now for many years a standard authority), the distance from the center of one molecule to the center of its neighbor is put, on the average, as ten times the molecular diameter. In many common liquids it is estimated as three to four times the supposed average molecular diameter. In other substances and by more recent calculators the distance is held to be very many times greater than this, as compared with the molecule's own diameter. The molecule is no longer regarded as a form more or less solid and bounded by a continuous surface or fixed outline. It is simply a group of atoms, united by electrical or other energies. The component atoms are immensely smaller than the circumference of the molecule, and in their turn they are composed of still smaller components, called electrons or corpuscles. These are so minute that a single negative electron has been found, by a dozen diverse methods of computation, to have a mass less than one thousandth part of the mass of the atom. The nucleus of the atom is an exceedingly minute particle. The orbits in which the negative electrons revolve around it have diameters so much greater that the cubic space inclosed within these orbits is ten thousand to a hundred thousand times greater than the volume or space occupied by the material components of the atom.

According to the eminent English physicists, Sir Ernest Rutherford and Professor Nicholson, the nuclei of atoms have diameters whose length is only one thousandth part as long as the diameter of the outer electron orbit of the same atomic system. The distance from one atomic nucleus to the nucleus of the atom nearest to it is undoubtedly several multiples of this latter distance. The estimates, also, of Dr.

K. Fajans of Germany, John C. Dean, Professor Albert C. Crehore of New York, and of Professor W. H. Bragg of Australia (who has recently been honored with a Nobel Prize for his remarkable researches into the structure of crystals), — all of these experts put the distances between the nuclei of the atoms as dimensions ranging from a hundred to a thousand times the length of these diameters.

Summing up, then, these scientific results, we may conclude that a conservative estimate of the material components, called the molecules, in a cubic inch of brain would find that only one hundredth part of that volume is actually molecular.

Secondly, out of the cubic volume of the brain molecule, not more than one five thousandth part (and probably much less) of that molecular space is actually occupied by what is called the atoms, and supposed to be material substance.

In the third place, out of this latter cubic volume (the atomic magnitude, measuring to the outermost orbit of its farthest electron) only a very infinitesimal fraction is occupied by the corpuscles or material particles. Sir Oliver Lodge affirms that even in such an exceedingly solid atom as that of mercury, the space within the atom which is not occupied by material particles or negative corpuscles is more than a million times greater than the cubic space occupied by material substances. Experts such as Professors Rhigi, Fajans, Rakestraw, and J. C. Dean agree in affirming that the discontinuity and relative minuteness of the components of the atoms may quite reasonably be likened to the isolation and pettiness of the planets in our solar system as compared with the total cubic magnitude of that system. J. J. Thomson has said that the size of a negative electron in a hydrogen atom is no greater in comparison to the size of its atom than

a pinhead is to the interior of St. Paul's choir. Similarly, Sir Oliver Lodge says that the negative electrons in an atom are relatively as minute, isolated, and infrequent as a handful of sand tossed into the middle of a church auditorium.

The common notion of the scientific materialists that the brain is composed of solid flesh which has "a mind side," or "inner aspect," somewhat as a melon has a fluid interior, or an electric coil has "an inner temperature," — this is a pure illusion. In fact, not one part in a million out of the cubic volume of a brain is composed of material particles, and these are no more continuous than a swarm of midges whirling about at railroad speed in the summer air of a baseball pavilion.

Now, in the light of these scientific facts, how worthless is the current materialistic and monistic argument that when death occurs and flesh decomposes, the atoms of the brain (no longer kept in aggregation and coöperation by the vital chemic functions) must dissolve, and that therefore it is impossible for the soul to survive the consequent dissolution of the cells and atomic groups of the body. Already while we live and breathe, the atoms of the body are in dissolution, thousands of times as far apart as their diameters. Of the space occupied by the brain pulp or any so-called "solid flesh," at least 999,999 parts are occupied, in fact, by something else than atomic matter.

Again, when we bear in mind this extraordinary isolation of the atoms, does it not (as Professor Paulsen has suggested) make incredible that materialistic explanation of the development of consciousness out of a mere aggregation of the atoms and a composition and interaction of their rudimentary elements of feelings, which is the basic theory of the monists? Here are these embryotic feelings in the brain atoms, each

possessed of an "urge" (to use the monistic slang) to concentrate their longings, instincts, and sensations into thoughts and judgments and evolve full-blown consciousness. But the nerve fibrils, joining the brain cells and nerves (by whose conduction of mental currents the monists explain the association of our ideas and the comparison of our sensations), are quite as lacking in supplying scientific corroboration as they are deficient in reasonable explanations of mental activity. For these fibrils themselves have no more real continuity than a line of migrating birds in the air. The atoms in the various sense centers (whose mind sides are supposed by the materialists and monists to form mental judgments and comparisons by their respective associations, contrasts, or fusions) are actually as far apart, proportionately to their relative sizes and distances, as the earth is from the moon or from the planet Mars. These atoms are destitute of sense organs; speechless, without lettercarriers, telephones, or other means of intelligent communication. How can they, then, compare sensations, unite thought with thought, link premises with conclusions; recall the experiences of the fellow atoms who left them years ago, and concentrate their isolated conceptions into a consistent memory and unitary self-consciousness? Even for the simplest comparison of two diverse sensations (such as a sound and a color) or the simplest classification of a number of perceptions into a general thought, the mind must be thought of as more continuous and unitary than a discrete aggregation of the dimly sentient mind sides of a number of isolated atoms, each a 100 or a 1,000 diameters removed from its next neighbor; each belonging to different sense centers, distant several millions of times their atomic diameters.

If, as the materialists say, the dissolution of the atoms at

death prevents the activities of life and mind from continuing, it ought likewise to prevent during life the disconnected atoms from at all performing such mental functions as comparison, synthesis, classification, and memory. If the monistic theory is true, and memory and self are only aggregations and compositions of the isolated mind sides, attached to the constantly changing atoms, then every morning when we wake out of sleep, it is a new consciousness and self that appears. Yesterday's consciousness passed away with yesterday's atoms. The continuance of memory and the conviction that the self which remembers to-day what a man saw yesterday is one and the same self, — these facts are entirely incompatible with the monistic theory.

Whether or not it is objections like these that have lately led to a growing disfavor in scientific circles to the two-aspect monism; or whether it is only another illustration of the love of new theories, I cannot say. But, at any rate, the recent trend of scientific speculation as to life and mind has turned to a different theory.

One of the leaders was Professor Ostwald in his famous exposition of energism as the great reality. All mental processes were presented in his new scheme of cosmic activity as the interplay of the psychic energy with other forms of energy, a transformation from the physical forces into vital and mental states and back into physical energies.

Haeckel, in his last popular exposition of the monistic philosophy, "The Wonders of Life," followed suit, and presented the inner sensation of sight and hearing as only a conversion of force. The human soul was described by the notable leader of German monism as "only a special form of energy," not essentially different from the physical energies and naturally caused by them.

In the United States and England, also, able scientific leaders have recently been undertaking researches to identify experimentally the nervous currents with some form of electrical energy. Books have been published, advocating the electrical origin and character of life and mind; and physicians of distinction have affirmed in scientific journals the identity of psychic energies with electrical or other physical energies.

Now this theory has many plausible points. It may be an improvement on the "two-aspect" form of monism. Physical energies, it is urged, are more universal, more penetrating, rapid, and far-reaching in their activity, than are the "sides of atoms" or "duplex aspects" of the rigid, infrequent, and infinitesimal material particles. Just as currents of heat or certain chemic attractions are transmuted into electricity, and electricity or magnetism is transmuted back into motion, pressure, or light, so, also, the monists claim, these physical energies may be transformed into feeling, thought, and will.

In a notable passage in the "Wonders of Life" (p. 446) Professor Haeckel expounds his latest monistic theory and, taking sides with Professor Ostwald, says: "The conversion of the outer stimulus (waves of light, sound, etc.) into an inner sensation (sight or hearing) is regarded by monistic physiology as a conversion of force, a transformation of photic or acoustic energy into specific nerve energy." "Consciousness itself is only a special form of nervous energy."

Why, then, may not a candid inquirer, acquainted with modern science, regard the vital and mental energies as merely converted phases of the physical energies?

Without dwelling upon the many philosophic objections to this view, I am content to judge it by the established scientific tests that may either verify or condemn it. I mean,

of course, those accepted laws as to the correlation and conservation of energies, formulated long ago by Joule and Mayer, the discoverers of these scientific processes, — laws which have been accepted by all leading men of science.

In the first place, it is agreed, there must be a strict proportionality and equivalence between the initial sum of physical energy before the transformation, and the subsequent resultants of this energy. The sum total of energy, actual, kinetic, and potential, must be constant. It is "unchangeable" is the affirmation of Professor Haeckel.

Secondly, whenever one mode or species of energy disappears it is replaced by an equivalent sum of energy in the succeeding transmuted resultants. When a new form of energy appears in the transformation cycle, a corresponding quantum of energy must have disappeared in the previous link in the chain.

Now, do these things occur as facts when mental states and physical energies succeed or interact? No such equivalence is found to occur, at least, in any such exactness as to supply due verification. A thunder-clap throws a nervous woman into terrible excitement. By the absorbed student, on the contrary, the deafening noise is hardly noticed; but a whisper, gently murmured by a sympathetic friend, may excite in him profound agitation. The mental significance of a sound, a sight, or a touch is immensely more weighty in determining the subjective effect than its physical quantum of energy. How clearly does this come out in such an illustration as Dr. McDougall has used! A mother gets a telegram from two married friends, saying, "Our son is dead." As a friend, she feels a moderate, friendly feeling; but no very agitating emotion is the result of the transformation of these twelve pen strokes on the paper and of their

incident physical effects on her nerves into a mental emotion. But let one more pen stroke precede these twelve letters, viz. that representing the letter *y*, so that it reads: "Your son is dead," — then, what terrible mental agitation now occurs as the result of this infinitesimal addition to the physical vibrations in nerve fiber and brain cell! What an incredible discordance is there between the infinitesimally small additional physical stimulus and vibration in the atoms of the brain cell, and the crushing, overwhelming mental emotion that perhaps makes the mother insane for life!

Plainly it was not the very minute change in the physical energy that caused the emotion; but the meaning of it, discerned by the mind.

Of course it will be said that the discrepance was due to certain associations of ideas, connections of memories or feelings, that made certain minute sights and sounds act, like hair triggers in a pistol, to set off a great explosion. Yes; but what is this but to refer the discrepance back to the mental qualities of the inner self? This explanation seeks refuge in the rational meaning, the intelligent purpose, habit, or interpretation of the non-physical attributes of the soul, and it tacitly admits that the disproportionate emotion was due to these mental qualities, and not to the physical.

Or take the very simplest cases of relation between the stimuli and the consequent psychic state where disturbance by the meaning of the stimulus is (as far as possible) eliminated. The modern psychologists have made innumerable experiments; and, as a result, have so constantly found a disproportion between the physical stimulus and the resulting sensation that they call it a "psycho-physical law." Examples of it are such as the following: To increase a sensation one fourth, we must increase the stimulus more than a fourth.

When a stimulus is soon repeated, we must further increase it to get the same sentient result. But when the stimuli are contrasted and alternated, the sentient results are intensified.

Contrasting tastes and colors increase the sentient effects. As Van Norden found in the researches recorded in his "Psychic Factor," it is not the quantity of increase in the stimulus, but the nature of the preceding or accompanying sensation that determines the intensity of the sensation. A very gradual increase of electric stimulus upon a nerve may be carried so far without accompanying sign of sensation as actually to destroy the nerve before pain is felt. Attention radically modifies the usual working of Weber's law of nervous reaction so as both to increase sensation and to lessen reaction time while the incident stimulus is still the same.

In pain, also, as a distinguished English investigator, Mr. Cyples, has pointed out, the law that the intensity of the sentient state is proportionate to the incident physical energy of which it is a transformation, is violated. For pain is found to occur chiefly as an accompaniment of diminished vitality, a disintegration of the nerve grouping, or a discontinuance of former full-nerve activity. These tests, then, prove that when the physical precede, the law of correlation and conservation is not kept by the mental.

Similarly, when the experimenter begins with the mental, and next measures the resultant physical energy, the law is not kept. In the exceedingly detailed and careful investigations of H. L. Wells and Alexander Forbes upon the correlation of emotional reaction to electrical processes, it was found that the electrical test was distinctly superior in delicacy to any other objective criterion of emotional reaction. Nevertheless, it was found, as a result of hundreds of tests, that a No. 1 grade of emotion, introspectively determined,

was not plainly nor necessarily accompanied by increased galvano-metric deflection in nerve reaction. In some experiments, these electric accompaniments either failed altogether or were so minute as not to be measurable.

Let us turn then to the latter half of the law of conservation, viz., the constancy of the sum total. Professor Haeckel says this sum total is unchangeable. When a conscious state appears, then, it must do so at the expense of a corresponding loss of energy in its physical predecessor. Does it? As a matter of fact, however, as Dr. Bastian has testified, "physicists have not been able to show that there is evolved during brain action an amount of heat or other mode of physical energy any less than there would have been had not the sensations been felt and the thoughts been thought." If consciousness be evolved, it is not (so the scientists say) at the expense of a single oscillation of a muscle, disappearing from the object world. Dr. Atwater's minute measurements of the chemical intake and output of animal and human bodies show that the physical credit and debit are so closely balanced that there appears to be no adequate margin for supposing consciousness to consume physical energy.

Conversely, let us inquire if, when the conscious energy disappears and is supposed to turn back into some physical energy, — motion, heat, electricity, or chemic power, — there is corresponding physical energy thereby liberated, and if this physical energy actually emerges in such proportionate resultants (as it should on the theory) as to keep the sum total of energy constant? The experiments disprove this. In case consciousness is suppressed, either by drugs, sleep, trance, pressure on the brain or the fourth artery, or permanently by a musket ball, there is not any such rise of temperature, or such liberation of electricity, or other reap-

pearance of the physical energy, dormant in the potential mode of the preceding feeling or thought, as theory requires.

Let me quote again from Mr. Cyples: "Neither does the beginning of consciousness consume the physical capital of energy, going its round in the body; nor does the disappearance of consciousness add to that sum. The physical energies round their circuit of transformation, passing directly from one to another physical form and not through a link of feeling."

In the radical scientific journal, *Bed Rock,* for January 14, 1916, Hugh Elliot, the prominent English skeptic as to the soul's existence, admits that "no item of evidence has ever been found to show that physical energy has ever been transformed into latent will . . . the general structure of the nervous system is such as to offer insuperable difficulties to any such hypothesis." Professor Noel Paton of Scotland in a recent article in the *Hibbert Journal,* called "A Physiologist's View," giving the conclusions of modern science as to life and mind and as to how far the physical and chemic laws of dead matter can account for them, says: "It is impossible at present, and I think it always must be, to apply them to the explanation of consciousness." "The most severe mental work causes not the smallest increase in the evolution of energy." By this, as the context shows, he means an increase or transformation of physical energy; for in the next sentence he says: "There is no evidence that consciousness is an essential of living matter."

As a result of these and many other serious objections, cautious men of science agree with John Fiske and Sir Oliver Lodge that such a transformation of physical and mental energies, one into the other, is incredible. As all physical energies are held by scientific authorities to be forms of

motion, he who is tempted to believe in these transformations from motions into mental processes, and *vice versa,* better begin with a little preliminary practice in conceiving such a simple case as the passing of a current of such transmutations across a pond, filled with fish, in which the initial aqueous motions are converted into emotional states in the fish and these changed back into aqueous vibrations; and so the protean process continues in alternate metamorphoses from aqueous to volitional phases, from volitional to electrical, from electrical to cogitative, from cogitative to aqueous, until the chameleon process ends at the opposite shore by presenting a total outcome of energy, equivalent to the intake of dynamic energy at the start.

But will you, some critic will doubtless ask, deny that the mental activity is an energy? or that it is dependent upon and conditioned by the bodily energies? Surely not. The two kinds of energies accompany each other and are quite as correlated with each other as the electric processes and mechanism in a telephone central are conditioned and correlated in their successful working with the alertness, intelligence, and faithfulness of the telephone operators, and *vice versa.* But the two kinds of energy in the brain are no more identical than the two kinds of energy (the mechanical and the personal) in the central office of a telephonic system. The correspondence often is most noticeable: they require each other's aid. As Browning so pithily said, "Nor flesh needs soul now, more than soul needs flesh." But that does not imply that the activity of the mental worker is superfluous or identical with the physical energy of the body.

The essential thing about feeling and thought is their activity and their usefulness. In monism, as in materialism, only one of the two partners in the living whole, viz. the physical,

is held to be active. The mental and spiritual is doomed to ignominious passivity. It is called an epi-phenomenon, a useless by-product; a mere shadow, echo, or helpless attendant on the atomic changes and physical processes. In the parallelistic theory and in usual forms of spiritual philosophy the absence of natural relation and mutual service and activity between body and mind is also lacking. Experience, however, shows that while life lasts, the two factors, both the physical and the mental, interact. Although constantly fused, during life, these two factors of a living man are always present, each a real agent, neither of them lacking in influence or modifying power over the other.

So far from our mental activities being but automatic reflexes, shadows, or echoes, consequent upon the preceding physical stimuli, daily observation shows that in no small number of cases, the feeling and thought precede. It is first the funny thought and then the laugh or abdominal undulation. It is not first the blush and later the felt shame or modest emotion, but just the reverse. The scientific monists, such as Carus, Morton Prince, and Elliot, tell us that mere emotion cannot move a cell or nerve. But a host of recent experiments shows how preceding fear draws the blood from the viscera into heart, brain, and muscles. Without the power of the lovers' emotion to draw the blood into the sexual organs, human reproduction would cease.

There are medical cases on record which show that even when a whole half hemisphere of the brain has been decayed, the vital repairer has set the corresponding centers of motion, speech, or thought in the other hemisphere to carrying on the functions of the disabled hemisphere, performing new activities which they had never before this time been accustomed to perform. Musical study during a few years actually

multiplies the fibers of Corti in the ear, and a college course grows new cerebrum centers and deepens the furrows in the brain. Let the surgeon cut out from a dog's brain the motor centers which move the paws, or a disease disable or destroy a man's speech centers, yet repeatedly it has been found that the constructive vitality will grow new brain centers and restore the power of motion or speech. Such self-repairing processes plainly bespeak intelligence. No material mechanism ever repairs itself or can intelligently do so.

Mental medicine and a multitude of kinds of psychotherapeutics have now attained quite a legitimate scientific standing. What has given the recent psychological writings of Professor Freud their standing has been their convincing exposition of mental activities.

But of what, ask our scientific friends, are they activities? Do they belong to any substance? Are they realities of the cosmos, such as science deals with? Or are they outside space and time, postulates of faith, supernatural entities, miraculously injected into the physical organism? What seat or grip in the network of the objective world have they? If they have none, why should we believe that these souls of living things persist, or even exist, really?

That is a fair question, — especially as I have declined to believe that souls are either inner sides of atoms or converted forms of heat, electricity, or other physical energy.

Is there, then, anything else left that is real? Is there anything else in the cosmic system recognized by science in which I can seat my supposed souls or to which I can attach them as activities? Is not every advocate of soul necessarily that very unscientific ignoramus — a dualist?

On the contrary, if he be a dualist, he need not be ashamed of it. For every well-informed physicist, also, is a dualist,

or else he has so made over his conception of the atoms that he must conceive of them as consisting of something else than of that ponderable, tangible, and extended thing which has hitherto been known as matter. Every modern physicist knows that in the human body there is something (in fact, the greater part of his body) more subtle than matter; different in its laws and properties from ponderable and tangible matter; and that without it he could neither feel nor see nor be aware of an electric current. There is something in every human being which forms a continuous substance, active, invisible, the home and medium of countless energies, and therefore peculiarly fitted to act as the seat of continued life. Of course, this is that interstellar and interatomic ether which is now recognized as the most universal, most primal thing in the cosmos — implied by the undulations of all the natural energies and everywhere present. It pervades even the molecules and atoms, whose repulsive spheres of energy contain within them numerous still smaller revolving bodies, called electrons, of which about all we know is that they are centers of electric charges or more condensed or twisted foci of ether. By the supposition of whirlpool motion in the continuous fluid or jelly of the cosmic ether, the mathematicians can explain without difficulty the evolution of atoms and molecules, rendered rigid by their gyroscopic motion. But however smaller and smaller and more numerous you suppose the solid material particles to be (infinitesimal groups within more infinitesimal groups), yet you can never escape the impossibility of interaction across empty space between your smallest particles. You can never escape this difficulty unless you suppose some continuous substance, such as a cosmic non-atomic ether, as the medium to carry energies across from one particle to its neighbor particle. Nothing, as Newton long

ago stated, can act in an absolute void. Men of science like Sir Oliver Lodge and Lord Kelvin, therefore, say that the cosmic ether (or some still subtler continuous medium) must be more primal and more universal than the atoms and molecules of the visible world. The well-informed physicist must then either admit that it is entirely scientific to accept dualism and admit another great primal reality everywhere present in addition to matter; or else, in his effort to save the name of monism, he must reduce matter to a secondary development out of the older and more general cosmic ether. The latter is the present trend of scientific theory. But now, if monism be saved by considering atomic matter as a special form which the cosmic ether has taken under the influence of certain cosmic energies, then one may properly ask, why also it is not permissible to explain mental and spiritual life as another special form or branch of that universal ether, which objectively may be called the body of God, and whose indwelling life and mind is the cosmic soul or the Spirit of God.

An American professor has been quoted by Dr. C. T. Stockwell as saying that "conscious states are modes of motion of the ether or such as affect the ether." That indeed is suggestive; but I do not think the phrasing very happy. However, it shadows forth a deep truth. By a multitude of striking experiments, continued now for years, telepathy has been established as a method of communication, from mind to mind, independent of the fleshly senses, occurring under exceptional conditions and in the case of people of exceptional temperament. But for thoughts thus to pass without material media or signals across considerable spaces there must be some substantial medium in which the mental activities pass. Now the only explanation which seems reasonable for this

communication (independent of usual material intermediaries) is that it occurs (like wireless telegraphy) by passing in and through the cosmic ether. Analogy therefore suggests that the seat of the mind, or the substance in which thoughts and feelings subsist, is also an etheric reality, a special differentiation of the primal ether. We may call it a "mentiferous ether," or spiritual organism, such as Paul divined when he said in Corinthians that within the natural body there is a "spiritual body." The supposition of such a mentiferous ether as that "something in man" (which Prof. McDougall of Oxford says is needed to hold together the states of consciousness and explain their interaction) is entirely in line with the reasoning which has led all men of science to believe in a luminiferous ether as implied by the peculiar undulations of light and electricity. That needed bond or intermediary between flesh and pure thought which psycho-physics demands is best explained by this supposition of a mentiferous ether as the imponderable substratum or spiritual organism in which mental activities are centered.

To transmit messages across the omnipresent material voids (which so immensely predominate in every brain) and to account for the spontaneous activity and selective power of will and thought, as contrasted with the inertia, rigidity, and absolute determination, characteristic of atoms and molecules, — to account, I say, for these things, the most fitting explanation is that of an imponderable, psychic ether. To account again for the unity of consciousness and the self-identity of memory through the ceaseless shifting of successive incoming and outgoing atoms, and the remarkable differences between the laws and processes of matter and those of mind, for this also we need a continuous immaterial substratum for the soul. Such an immaterial substratum gives us an element which,

by its diffusion through brain and nerves, puts the soul naturally into relation with all bodily parts and processes. Best of all, perhaps, it relieves the advocate of the soul and its survival from supposing for the soul a miraculous origin outside of the laws and facts known to science; and it relieves spiritual faith from the suspicion, consequently, that the soul is not a genuine cosmic reality. For it is a reasonable inference that this mentiferous ether organism, the substratum or seat of the human soul, is a normal specialization of that universal ether ocean which is the intermediary and source of all mundane energy. Perhaps it is the product of such a fluent concentration of that primal ether as may avoid the rigidity which atoms get from their gyroscopic whirl, and yet is so constituted that it may evolve and liberate the indwelling vitality and psychic forces of the primal substance to those highest expressions which we find in personality.

Of course this is a mysterious origin. But it is no more miraculous nor mysterious than the emergence in the human mind of sensation or thought, when a nerve impression stimulates consciousness.

Every possible theory of the origin of consciousness starts in some equally dark mystery. Professor Haeckel has said that there are three great realities in the cosmos, all three of which are eternal, viz. matter, ether, and force, in which latter he includes both physical energy and psychic action. Modern science, however, by its minute and amazing investigations of radium and radio-active substances, has proved that matter is continually disintegrating. The atoms are repeatedly splitting up, losing or gaining properties, and getting more inert, obstructed, and neutralized by their antagonisms or gyroscopic motions. Grant Allen, in his notable work on "Force and Energy," shows how all mundane motions, phys-

ical energies, and separative powers of the material system are being progressively radiated off and transferred to the bosom of the interstellar and interatomic ether, and swelling the energy of this great storehouse of all force and power. The cosmic ether with its attendant energies is therefore the grand eternal reality, free from disintegration and dissipation; the only thing whose sum total of energy is conserved and indeed growing.

Now the radical peculiarity of mental activities (as contrasted with material and physical activities) is similar. In material energies oppositions or combinations result in mean resultants or average neutralizations. In psychic activities, on the contrary, the combinations of diverse or opposite forces result in increased resultants. In the cosmos, therefore, the psychic, like the etheric activity, is always increasing, developing, and resurrecting itself out of all temporary declines and decayings. All evolution, i.e. all true progress, comes through the psychic and the etheric.

The continuance and upward progress of the soul, it seems to me, therefore, is in harmony with the great law of evolution. In the psychic "ether organism," during life, there is present a soul body, a non-atomic substance, an active, coherent, continuous, and constructive energy, not liable to be destroyed or rendered impotent by the decomposition of the material body.

When the earthly end comes to the body, what then? Professor Henderson of Boston in a recent book on the "Chemical Environment" has stated that he "does not know of a biological chemist to whom the mechanistic origin of a living cell is scientifically imaginable." Professor Robert K. Duncan, in "Chemical Problems of To-day," says that "if by Life is meant a spiritual entity that abides within the body

and to a limited extent guides and directs its activities, without interfering with its energetics, we cannot possibly deny its existence" (p. 82). As the life principle in the beginning constructed the corporeal organism, so when the atoms dissolve at death and the Vital Power cannot sufficiently repair this particular organism, is it not quite probable that the architectonic spiritual organism within the material body may escape without destruction? It is not the shell that makes the cell, but the cell that makes the shell. It is the antecedent life and inherited memory in the cell that initiates and directs within it those complicated pairings and splittings of the rods and centrosomes, those successive doublings and halvings of nuclei, so many times repeated, that mystic and amazing dance of the various vital groups and parts which at length evolves the sentient embryo, conformed to its racial type.

Is it not entirely probable, then, that in accordance with scientific laws and natural processes, such a psychic etheric organism might both survive and build up for itself a new physical body, and might betake itself to some other environment where a fuller development and happier existence might be its destiny? Perhaps it might remain on the earth for a while, as long as the friends of the departed still linger here. Well-vouched-for cases of apparitions, near the hour of death, in which spectral forms of the departed appear to their friends are at least so extraordinarily numerous as to be with difficulty explained as mere hallucinations. This theory, to be sure, may seem to men of science a somewhat bold one. But it is one which our steady progress in wider knowledge of an invisible world, close about us, and the startling discoveries, made every year as to the strange constitution of the universe in which we live, is rapidly commending to many

of our leading thinkers as well as to intelligent Christian believers. That the things which are seen are the transitory and illusory, and the things which are not seen are the real and the abiding, is the life experience of all successful investigators.

The theory that the soul of man has no more unity or reality than a candle flame and that when the disconnected atoms lose at death their combustible activity there is nothing left of the saint or martyr but a handful of ashes is not only morally unthinkable but scientifically incredible.

> **"What is excellent,**
> **As God lives, is permanent.**
> **Hearts are dust? Hearts' loves remain.**
> **Hearts' loves will meet us again."**