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SUGGESTIONS TOUCHING MATTER AND ENERGY.

BY PAUL R. SHIPMAN.

WE SPEAK of matter and energy or force (I use these two latter words interchangeably for the purposes of this article) as if they were essentially different, when, in fact, it should seem, they are essentially the same, differing in mode only.

Speaking roundly, as well as figuratively, we may call matter funded energy—energy current matter; or matter we may distinguish, roundly, as visible energy—energy as invisible matter. Take, for example, the clod at your feet. It is matter, you say; yet analyse it, pushing the analysis as far as you may, and you get nothing but modes of energy, with a residuum that offers nothing different. Nevertheless, these parts together make the clod. Whither does this unquestioned fact point, if not to the conclusion that matter and energy are in essence the same? Nothing but energy can be got out of matter, because matter is nothing but energy more or less compounded, as energy is nothing but matter more or less resolved. Matter, one may say, bears the relation to energy, always speaking roundly, that a stocking bears to the thread of which it is knit: ravel matter, and you have energy—knit up the ravelling, and you have matter again. Energy is the simpler state of the common substance—the raw material, as it were, of which matter is the elaboration in greater or less degree.

But if matter and energy are essentially the same, it may be asked, what becomes of the vehicle of energy? The metaphor is superseded. If energy is a form of matter, it is its own vehicle. The notion that matter is the vehicle of energy is possibly a good enough working-notion for physicists, in the present state of physics, but has as little philosophical value as the notion that ice is a vehicle of water, or water a vehicle of vapor. It is secondary, not to say illusive. It relates to states of matter, without approaching its essential form; it sticks in the outer bark of things. Matter might be described as fixed energy, and energy as free matter; but this distinction, like every other of which the case admits, is accidental only. No energy can be absolutely free; no matter can be absolutely fixed—not even that which Professor Dewar, if

one may credit the exultant foes of matter, is about to lock in the cold embrace of molecular death.

If matter and energy are one, the questioner may persist, How is it that, in a given material system, the energy disappears, while the matter remains? The energy does not disappear, nor does the matter remain—if the definite article is used to signify the whole of either in the system; the energy that disappears carries with it a corresponding part of the matter, in the action whereof it consists, the matter, under stress of position, no more remaining intact than musk remains intact while diffusing its odor through a room, though the nicest balance may fail to detect the slightest loss of weight in either. In fact, the energy and the matter equally disappear—equally remain.

Energy is something moving—not the *effect* of something moving, but the *fact*. The degree of energy depends on the mass of what is moving, and the velocity with which it moves; but the energy itself consists in the moving or resisting something that is another name for existence—matter in its elementary state. Matter is not moved; it moves—is essentially active, not passive. Motion is neither an accident nor an attribute of matter; it does not belong to matter, for without it matter would have no existence, and a thing cannot, speaking accurately, possess itself or a constituent of itself—cannot be at the same time both possessor and possession. Indeed, the prevalent conception of subject and attribute, in general, not only has no objective reality, but involves this contradiction. Motion is an essential part of matter, as energy is the essential mode.

What cannot resist does not exist. Matter, it is true, exists in states wherein it is so fine and imponderable as not to offer sensible resistance, but it must be convertible into states in which it does offer sensible resistance, or cease to exist. The principle holds good everywhere and always. The *unseen* is real, provided it is convertible, theoretically or practically, into the sensible; but not otherwise. The idea that the unseen is the only real, or pre-eminently the real, is philosophico-romantic bosh. The divisibility of matter soon carries us indeed beyond the reach not only of the senses, but of the subtlest instruments by which the senses can be implemented; yet, however far it

may go, it can never carry us beyond a point at which the parts are reconvertible into the sensible whole from which they were resolved. Not the absolute unseen, but the sensible, actual or possible, is the only real. The insensible is conceivable only in terms of the sensible, into which, if real, it is transformable. Cognition of the insensible supposes cognition of the sensible, conception being possible only within the limits of possible perception. Let this truth be firmly grasped. The intellectual currency that is not redeemable in the standard coin of the realm of sense is worthless. What cannot be translated into resistance has no existence, no reality, no meaning, is nothing. Whatever resists exists, and, conversely, whatever exists resists. Resistance and existence are interchangeable terms; but resistance is synonymous with energy or force, which is the stuff of sensible matter—that of which sensible matter is the more or less complex form. For existence, be it observed, though fundamentally one, is divisible superficially into ponderable matter, or matter so named, and imponderable matter, or energy, whereof each is transmutable into the other, the two mutually blending to form the sum-total of reality.

There is thus no escape from the inference that the consumption of energy is the consumption of matter. Every act, for instance, of what we call consciousness, but which is really nothing more than a special form of interaction or responsiveness, infallibly wastes the matter of the brain, determinably or indeterminably, as exhalation wastes a grain of musk, which, notwithstanding, experiment has shown, weighs a full grain at the end of a generation. No atom moves without loss of substance; for, whatever view one may take of the relation of energy to matter, it is admitted on all hands that they uniformly vary in mutual correspondence, every change of either synchronising with a corresponding change of the other. The vibration of an atom, therefore, is attended by the expenditure of both, on any hypothesis. The table on which my eyes now open is not, in rigorous exactness, the table on which they shut an instant ago, for, even in the twinkling, it has felt that hand of change, inevitable, irresistible, irremovable, which, sooner or later, come what may, will destroy its formal identity, reducing it to its elements, and dispersing these. The distinction between reality and appearance that once cut a figure in metaphysics resolves itself into a simple distinction between the more or less permanent and the transient, which, though not always equally tangible, are equally real, and in due time equally pass away. It is ever thus; metaphysics propounds riddles, and physics reads them. Some day, thanks to physics, only one riddle will remain; and *that* the world, if guided by a sound philosophy, will give up.

But, says the physicist of to-day, atoms are constant, undergoing no change. No doubt atoms (by which I mean the organised constituents of molecules) are relatively constant, as they are relatively simple; but everything in ceaseless action undergoes ceaseless waste, and, accordingly, is on the highway to dissolution, from which nothing organised is absolutely free. The catastrophe may be remote, and, in the case of atoms, so far as I can see, it would not be rash to admit that it may come only with the general catastrophe of things under the sun, of which, in this event, it would probably mark the crisis, the elements of our system melting with fervent heat, but the atoms last of all—that atoms, in a word, are formed in some stage of the catastrophe which gives birth to a system, and dissolved in the catastrophe which ends it.

All this, however, is consistent with their incessant loss of substance throughout the stupendous interval. An atom, to be sure, is a very small thing, and this interval is indeed stupendous, yet we can fairly assign such a ratio between the momentary waste of the atom and its weight that it might endure without appreciable loss of substance for the lifetime of a planetary system, as well as a grain of musk endures in like manner for the average lifetime of man. A finite ratio, if low enough, would answer the purpose.

Besides, an atom realises, what Webster on a memorable occasion told Hayne, Benton, & Co., that there are “blows to take as well as blows to give,” causing substantial gains no less than substantial losses, and reducing the net loss of substance, it may be, to the lowest quantity possible under the law of the dissipation of energy; which would bring the assignment of a proper ratio in the case still more clearly within the limits of theoretical possibility.

For the rest, we may easily make too much of atoms, as members of the cosmos, I apprehend, since the range of existence from the infinite to the infinitesimal leaves us no choice but to admit an infinite range of magnitudes beyond atoms, with some of which, and presumably with the least conceivable of the series, nature gets in her fine work, if not, in a broad sense, her whole work. Compared to these, atoms are worlds. Anyhow, in the analysis of things atoms are not the last word.

One other objection may be anticipated. If matter is resolvable into energy, and, when pressed by analysis, yields nothing else, how can we perceive something resisting, without at the same time perceiving the resistance as resistance? The former is concrete resistance, which we perceive immediately, while the latter is abstract resistance, the product of analysis. Agreeably to a familiar law of mind, not questioned in our time, I believe, we perceive the whole of the object in perception, before we perceive its parts—per-

ceive it generally, first, and specially afterwards. The resisting something that affords our primordial consciousness, presenting itself as external and consequently as extended, is the object thus perceived in its wholeness or generally, before analysis has specialised it, bringing into consciousness the resistance as such. Resistance as such is disembodied motion; but the mind must apprehend motion embodied before it can disembody it. And embodied motion is energy,—living matter,—matter to whose essence motion pertains, and which, accordingly, like Milton's angels,

"... Vital in every part,
Cannot but by annihilating die."

Force has been called the primary attribute of body. But in what sense is this true? In a psychological sense purely, according to my judgment. It defines a subjective appearance in terms that have no objective validity. The force which at any given moment a body puts forth, or is fancied to put forth, is a partial resolution of the compounded force composing the body; for though the body and the force it puts forth are of corresponding form and the same ultimate nature, they are not of the same quantity or duration, the greater mass and permanence of the former giving rise to the distinction of subject and attribute—matter and force. The relation of matter and force is indeed the relation of subject and attribute in its most general form, and, what most concerns us here, is non-essential throughout, disappearing in the fundamental unity of things. The difference between a body and the force it is said to exert is at bottom, therefore, purely quantitative; the force is an integrant part of the body.

The plain fact is that energy, as essentially distinguished from matter, is a creature of the imagination, formed by transferring to objective changes the efficiency or causal *nexus* which that power reads into subjective ones—unreal in both: no reality answers to it in either. There is matter or existence or resistance, with its changes—nothing else. This is the bare fact; although men, not appreciating the simplicity of nature, have clothed it with the fig-leaf of energy or force. Philosophy need not tear off this covering. But it is bound to look beneath it. There it will find, if it looks deep enough, not matter and energy, but simply matter in its various modes, whereof the mode that men use the word *energy* to explain is the primary one, though no more distinguishable from the other modes or from matter than the sea is distinguishable from the billows it heaves or from the water that forms it. The primary mode of a thing, like the primary attribute, is really the equivalent of the thing; its primary mode, as comprehending its other modes, being the sum of all its modes, and consequently the thing

itself. The primary mode of a thing is the thing in its elements.

In fine, matter and energy are two names for two aspects or two states of the same thing—of that resisting something to which the former of these names is usually given, and may be given fitly enough by synecdoche or comprehension, but for which I think a better name is *existence*, or, better still, *resistance*, each of which, properly considered, has the same extension and intension as *matter* in its figurative sense. Matter in this sense, it will be noted, is indistinguishable from energy, of which matter in its common acceptation is a mode or state, energy itself being the primary state of the fundamental thing. In one of these states or in certain degrees of it, the thing is so massed and complex as to overwhelm imagination; in certain degrees of the other it is so diffused and simple as not only to elude imagination, but to dupe reason, for, while in the former state we all agree to call the thing *matter*, in the latter some of us, misled by its transcendent subtilty, are weak enough to assume that it has become nothing, naming it consequently *immaterial substance*, *incorporeal agent*, *hyperphysical being*, *spirit*, and the like, words that signify nothing—that keep the pledge of meaning to our ear, and break it to our sense.

Mr. Herbert Spencer, in his "Principles of Psychology," has a chapter on "The Substance of Mind," wherein he undertakes to demonstrate, first, that mind cannot be conscious of its substance, and, secondly, that mind is conscious that its substance is immaterial, or, what comes to the same thing, that mind *is* immaterial because it cannot be conscious that it is *material*—about as sleek a bull, to my mind, as ever pastured in the green fields of philosophy. The chapter might put one in mind of the lawyer's famous answer to the complaint that his client had returned a borrowed kettle broken. "In the first place," said he, "the kettle was cracked when my client borrowed it; secondly, it was whole when he returned it; and, thirdly, he never had it." Even Mr. Spencer's conception of the substance of mind is open to question, I think. He holds the substance of mind to be "that which persists in spite of all changes, and maintains the unity of the aggregate in defiance of all attempts to divide it." But "that which persists in spite of all changes" must be either the sum of the changes or the subject of them. If the sum of the changes, it consists of them, and cannot persist in spite of them. If the subject of the changes, it is a whole, whereof they are the parts, independently of which it has no existence, and of course no persistence, in spite of them or otherwise. The subject of the changes and the sum of the changes are in reality one and the same. A thing apart from its modes is nothing. As there is thus no such

thing it cannot be the substance of mind or of anything else, much less that which "maintains the unity of the aggregate in defiance of all attempts to divide it." The latter service, happily, in place of resting with this nonentity, is discharged by the unity of the organism, whereof "the unity of the aggregate" is the expression. The unity of the aggregate, moreover, belongs to mind as mind, and the substance of mind, it hardly need be said, is not mind, as the substance of a watch is not the watch. It is not the substance but the form of mind that gives it unity. The substance of mind, according to my view, I have already said, is ethereal stress,¹ or matter enormously subtle, vibrating with enormous velocity, and of which we are conscious as energy, mind being the specific form of stress determined by the nervous system.

If this be so, the mind, though unconscious of itself, not only is conscious of its substance (of that whereof its substance is a direct portion), but is not conscious of anything else; for visible matter we perceive only through the intermediation of the invisible matter that we call energy. The unseen is not more or less real than the seen, yet it is only the unseen (the *unseen* not the *insensible*) that we perceive immediately—of which we are conscious in the strict meaning of the word. Strictly, I am not conscious of the pen in my hand, but only of the wave lengths that it propagates to my sensorium, and which, by a train of reasoning, I trace back to it, synthesising them into the symbol of it. Of these vibrations, forming the immediate object of perception, I am momentarily² conscious through the sense of resistance—the sense that, in my opinion, comprehends all the other senses, and is in reality the fundamental mode of consciousness, every possible object of which, by the bye, in all its modes, is external, the idea that a state of consciousness is or may become an object of consciousness being a sovereign absurdity. But I am here anticipating a discussion whereon I do not now propose to enter.

Having been betrayed into saying thus much, though, I may be allowed to add certain precautionary

¹ Here obviously is an opening for the telepathist, who may suggest that ethereal stress bears the same relation to mind as the physicists say it bears to electricity—that, although it cannot think or conduct thought, it may conduct the peculiar stress set up by the thought of one mind, and capable of reproducing it in another, no matter how distant. The suggestion, it seems to me, I confess, conflicts with no known fact or principle, but rather accords fundamentally with all the known modes of communication from mind to mind. The difference, so far as principle is concerned, between communicating an idea through the air, by actual articulation, and through the ether, by ideal articulation (we think in words), is not apparent. Why may not the subtler determination, in exceptional circumstances, pass by the subtler medium, as well as the coarser determination, ordinarily, by the coarser medium? Be this as it may, the marvels of the so-called spiritual world, it is my un-doubting faith, are solely due to what we call matter, whose properties will be found sooner or later to account for all of them that are real.

² In developed mind, psychologists agree, the immediate object of consciousness, as a fleeting step in the process of acquired perception, excites no attention, and immediately lapses out of consciousness, presenting a case under the familiar law of obliviscence.

remarks. (1) Touch, I hold, may be analysed into resistance, as certainly as the remaining senses may be analysed into touch; resistance is the essence of all the senses—is for that matter the essence of mind. (2) The part commonly assigned to muscular tension and volition in the perception of resistance seems to me unwarranted; they are needed to measure resistance, but not to perceive it. (3) What Kant called the vital sense, including the sense of temperature, the sense of health, the sense of hunger and thirst, and so on, is no more than a consciousness of the several organic states which these names connote, and which do not require a separate sense, any more than hunger requires one sense, and thirst another. The same is true of muscular movement and muscular tension, which call for a muscular sense as little as love calls for an erotic sense (the elder Scaliger thought it did), or hate for a demonic one.

Consciousness in truth is its own sense, and (subjectively speaking) there is no other, what are called the senses being simply modified parts of the bodily surface, facilitating the communication of external objects with the brain centres, but ending where consciousness begins—gateways to consciousness, which, however, may be entered without trouble over the fence, through the fence, and under the fence, as well as by these "portals of the soul." Things open avenues to consciousness, or lines of least resistance, which they ordinarily travel; but, when greatly excited, they sometimes cut across lots, making nothing of barriers—strong feeling is apt to revive old habits. Yet so long as a thing gets there, and brings out from the brain that reaction or response wherein consciousness essentially consists, it matters little whether it goes by the highway of the senses or through the fields of general sensibility; the point is that consciousness is accessible both ways, and, when accosted by an object approaching either way, is (like Hamlet adjured by his father's ghost) "bound to hear." The refinings of science are very well, but so is the simplicity of philosophy, to which, one should never forget, they may all be reduced; fundamental truth is the pole-star of the thinker, and he who would not lose himself on the trackless sea of knowledge must habitually recur to it, as the mariner to his compass.

In closing this article, I may venture to recall a remark or two of Mr. Spencer's, bearing especially on the subject of it. Our experiences of matter, he observes, are "resolvable into experiences of force," adding, in another connexion, that "resistance is the primary attribute of body." If by *force* Mr. Spencer means only matter in a finer mode than that to which we ordinarily give the name, (force in the sense in which I have sought to present it,) his posi-

tion is merely a paradox—false in appearance, but true in fact; but if he means by force something immaterial, the position, I hope I may be pardoned for saying, is not a paradox, but an absurdity. For, granting that a thing may be the attribute of that which is resolvable into it, nothing can be resolvable into it without community of nature with it, such as does not exist between the material and the immaterial. If force is immaterial, and matter is resolvable into it, matter not only is destructible, but is destroyed wholesale every instant—nay, it does not exist at all, for, in this case, *matter is immaterial*. The mutual convertibility of all things existing is a corollary from the principle of which the conservation of energy and the indestructibility of matter are phases; so that if but an atom were immaterialised the whole world would run out of existence through the aperture—a single point of absolute nothing would empty the universe.

This topping contradiction of *immaterial matter* I see only one way to avoid, which is a recognition of the fact that matter and energy are interconvertible states of the one fundamental existence. Assuredly, if force is immaterial, neither of Mr. Spencer's remarks can be true. Matter, in that case, is not resolvable into force, as I have pointed out; nor can force be the attribute of matter, for a substance is equal to the sum of all its attributes, as a whole is equal to its parts, and a material whole cannot be made up of immaterial parts. Assume that energy is an immaterial effluence of matter or in harmony with matter, and you at once sink out of sight into a bottomless quicksand. Grant that it is a material agency, and, in my conviction, you stand on solid ground, with the key to a consistent and complete explanation of world phenomena. And there seems to me to be no third position. Existence is an inscrutable fact—inscrutable because infinite, the properties of infinite existence requiring for their manifestation infinite time and space, which no finite being may compass; it is the one mystery, if we may with propriety call that a mystery which is the principle of explanation—that into which we resolve things to explain them. To this one mystery immaterialism or unresistantism adds two other mysteries, which, however, may be reduced to one—namely, the action of a thing *where* it is not, by something else that *is* not. To say the least, this is unphilosophical. It falls under Occam's razor, not to mention the bludgeon of common sense. It is an obvious form of the doctrine that in our day has become, justly, the especial opprobrium of philosophy—dualism. On the other hand, resistantism, by whatever name distinguished, leaves the one mystery in its awful singleness. It is monism—monism pure and unqualified—monism in the full length and breadth and depth of the term.

THE WRONG METHOD OF HENISM.

WE publish Mr. Paul R. Shipman's article, not because we agree, but because we disagree, with him. The line of thought which he follows is exceedingly suggestive, but we regard his methods, not less than his results, as faulty. He aims to construct a monistic system, "monism pure and unqualified," as he calls it; but his philosophy is what in previous articles we have characterised as Henism,¹ or a single-concept theory, which in utter disregard of the nature of abstraction selects some one general term and subsumes under it all other ideas, whether or not they belong to its category.

A few paragraphs quoted from the "Primer of Philosophy" will suffice to explain the nature of abstraction:

"The importance of understanding the process and scope of abstraction is very great, for abstraction is the very essence and nature of man's method of thought. . . . Abstraction is a very simple process, and yet some of the greatest philosophers have misunderstood it. . . . The greatest difficulty for a child when he learns to walk is, not to stumble over his own feet. Similarly, the greatest difficulty with philosophers is, not to stumble over their own ideas. . . . The very existence of many problems proves how little the nature of abstract ideas is understood. There is, for instance, the question which has again and again been raised, whether the soul can be explained from matter or energy. The question itself is wrong, and proves that the questioner stumbles over his own ideas. We might just as well ask whether matter can be explained from energy, or energy from matter. Matter and energy are two different kinds of abstraction, and feelings, or states of consciousness, are again another kind. We cannot explain an idea by confounding it with other heterogeneous ideas. What should we say, for instance, of a man who spoke of blue or green ideas, or who attempted an explanation of mathematical problems from the law of gravitation? What should we say of a philosopher who sought to determine whether ideas could be explained from the ink in which they are written?"

"Our abstracts are stored away, as it were, in different drawers and boxes. Any one who expects to solve problems that confound two sets of abstractions, has either stored his ideas improperly, or searches for them in the wrong box."

Henists are philosophers, who, in their efforts to be monists, store away all their notions in one box, be it the category of matter, or of energy, or of spirit, or of whatever else, instead of distributing them in the places where they belong.

For our present purpose it is indifferent what definition of matter we adopt. We may define it with Kant as that which affects or can affect the senses, or we may, with the physicists, say it is that which can be acted upon by or can exert force. It is true that all our experiences are possible only because we exert force and meet resistance; reality consists of action and reaction, it is, as the Germans so appropriately call it, *Wirklichkeit*. But for that reason we cannot say that everything is resistance. We must

¹ See *The Monist*, vol. iv, No. 2, "Monism and Henism."

not forget the nature of our abstract terms. To say "matter *is* resistance" is at once a mistake. We ought to say "matter is that which resists"; for it is not the act of resistance, but that enduring something which resists. Professor Mach in his definition of matter, "zu dessen Wahrnehmung *nur* die Wirksamkeit der Sinne erforderlich scheint," very guardedly adds and italicises *nur*; for forms and motions are also perceivable by the senses; yet neither forms nor motions are matter, for indeed they are not perceivable by the senses *alone*; an element of memory and mental observation enters into the ideas of form and change of place; they are not products of mere sensation.

When we make the abstraction "matter," we select certain features of our experiences, and drop all others. When speaking of the matter of which a man is composed, we advisedly omit his feelings, his intelligence, his character, his plans, and purposes, and so forth. When speaking of motion, we mean change of place, and not mass, not matter, not spirit, nor anything else; when speaking of force, we refer to that which can produce motion and overcome resistance.

This seems clear enough, and yet how much is this elementary rule of thinking sinned against! There are plenty of henistic philosophers who are satisfied they are monists as soon as they have stored all their ideas into the one box of their favorite generalisation. Whenever they try to think their ideas to an end they become entangled in contradictions, and seeing no way out of it, they naturally turn agnostics.

Mr. Shipman's method is henistic, and we may characterise him as a materialistic agnostic. In former articles he propounded the theory that there is but one reality, viz., matter, and that is unknowable and mysterious. To-day he presents us with a number of conundrums which grow out of the henistic principle of his method. We are told that "matter and energy are in essence the same." "Force is material," yet at the same time "matter is immaterial." This being so, the old refrain follows: "Existence is an inscrutable fact."

That any one could regard "change of place" as a material thing seems impossible, but such is the consistent sequence of Mr. Shipman's materialistic henism.

There are a number of minor points in Mr. Shipman's article; e. g. "energy is something moving," while it is the actual or potential moving of something; matter and energy are "transmutable each into the other," which is a new law that if true would produce changes more wonderful than Aladdin's lamp; "energy is a form of matter, and is its own vehicle"; which sounds like, "a blow is the fist which deals the blow, and a blow is its own striker"; "no atom moves without loss of substance," an observation which, for all we know, might prove true, but where is the veri-

fication of this startling proposition? Shall we believe that the ether profits thereby and is thus constantly increasing, or is this loss of substance an absolute loss so that in the long run the world would dwindle away? "What cannot be translated into resistance has no existence." Can we translate the theorem of Pythagoras into resistance, or the ideas of truth, beauty, and righteousness? And as we cannot, have they, therefore, no existence?

It would take more space than editorial considerations will permit to unravel the stocking so ingeniously knit from the yarn of a thin philosophical abstraction. Nevertheless, who will not find much food for thought in Mr. Shipman's article, which deals with problems which prove so difficult for many profound naturalists as well as philosophers!

P. C.

THE MEANING OF FOLK-DANCE.

BY L. J. VANCE.

FOLK-DANCING is not an overdone subject. The truth is, not one person in a thousand knows what folk-dances are, what they really mean, or how they reach artistic development.

To-day, when people think or speak of dancing, they have in mind the social dances of the parlor, of ball-room, or of the theatre. But these dances have little or nothing in common with folk-dances, or with the classic dances of the ancients.

The characteristic of folk-dancing is the faithfulness with which it reflects human nature. In this respect it differs from modern social dancing, which is highly artificial in every way. If we look at cultivated people, we see that they take real æsthetic pleasure in complicated steps, in involved figures, and in unusual movement; or, they enjoy the springs, pirouettes, contortions, and high kickings of the ballet-dancer. But, if we look at a savage or a peasant, we see that they derive no great æsthetic enjoyment from these features of the modern dance. We might almost conclude, at first blush, that they have no idea of dancing whatever. And yet, when we examine folk-dances more closely, we find in them a certain æsthetic meaning and significance.

There is much to learn concerning the nature of dancing and of the æsthetic feelings which have always accompanied the dance. As yet little has been done; but enough to show that dancing is of gradual growth, and as an art is subject to a general law of mental evolution.¹

In this paper I shall attempt to point out some of the æsthetic elements of the dance, and we cannot begin better than by looking at their appearance in the lower animals. The feeling for form, rhythm, meas-

¹ See a paper on "The Evolution of Dancing," by the writer in *The Popular Science Monthly*, October, 1892.

ured sound and motion is found very low in the scale of nature; how low, we do not undertake to say. The æsthetic sense is very pronounced among the birds. Mr. Darwin refers to the rock-thrush of Guiana, birds of paradise, and some others that congregate during the mating season, and then the males show off their plumage and perform dances before the females, which, standing by as spectators, at last choose the most attractive partner. From the taste for bright colors, for musical sounds, and for rhythmical movements we get by sexual selection such highly evolved æsthetic products as the waving plumage of the bird of paradise, the song of the mocking-bird, and the remarkable performances of the spur-winged lapwing. The lapwing display, called by the natives its "dance," requires three birds for its performance. When a visitor comes to a pair, the latter advance to meet it, and place themselves behind it; then all three begin a quick march and keep step to drumming notes.

If the lower animals show a marked æsthetic enjoyment of singing and dancing performances, there is no good reason for doubting that primitive man must have possessed these elements of æsthetic feeling. He must have been endowed with a sense of form and rhythm. He must have been pleased, as Mr. Darwin argues, by musical sounds and combinations, though chiefly in the form of human song and rhythm alone. And he must have been moved to indulge in dancing performances. The spirit that moves men to shuffle their feet, kick up their heels, and leap in the air, comes from different feelings,—now from animal or exuberant emotions and vivacity of every kind, and now from joy and triumph and rage.

The savage's love of the dance is derived from that instinctive delight in form, rhythm, measured sound and motion, which is faintly foreshadowed in the lower animals. So the earliest evidences of derivative æsthetic feeling which we possess are those of rude songs and dances and ornaments. The most naked savage is exceedingly fond of dancing. People so low in culture as to have developed no musical instruments dance with passionate enjoyment to the clapping of hands and the beating of sticks together. I notice in many books of travel and reports that the lowest races of men spend half their time in dancing. Thus, we read that the chief occupation of the Indians of southern California used to be dancing, when the men were not engaged in procuring food.¹

The part played by dancing in the drama of courtship in most savage communities is not important or decisive. That is on account of the social position of woman. She is won, not by choice, but by force and strength. The men do most of the dancing, but they seldom dance in their love-making. Among many of

the lowest races the only love-dances in vogue are those performed by the women, not by the men. Such are the dances of the Polynesians, some of the Indian tribes, and the natives of Tahiti. The semi-civilised peoples of Asia, and to a greater extent the peasants of Europe, have dances of love in which the drama of courtship is set forth—the shy advances, the meeting of the lovers, the maiden modesty and retreat, the proposal, the rejection, and at last the open-armed acceptance. Such, for example, is the Csardos, the well-known folk-dance of Hungary.

There is no question that, from the beginning, dancing has been especially the expression of love and of love-making. The love-notions possessed by folk are pretty uniform in different parts of the world. However much they differ in details, all folk agree in making dancing a necessary part of the drama of courtship. The Greeks regarded Cupid, the god of love, as an expert dancer; and the early painters, in all their pictures of love, figure Cupid ever smiling and looking upon dancers. Burton, in his quaint chapter on "Symptoms of Love," makes dancing the most prominent symptom.¹ It is a sure sign. Dancing still is, says he, a necessary appendix to love matters, and "young lasses are never better pleased than when they may meet their sweethearts and dance about a May-pole or in a town-green under a shady elm."

The folk-dances of love-making have served to quicken the sense of personal beauty. By the common consent of poets, painters, and sculptors, the standard of beauty for mankind is to be found in the form of a lovely woman. So, when dancing falls into the hands of women, it becomes more and more beautiful, more and more artistic.

In different ways has dancing been the means of developing man's æsthetic feelings. This is shown, at first, in the use of ornaments and decorations for the person. Clay and ochre are used for painting or staining the body; perforated shells and animals' bones for necklaces, and so on. Feathers are made into head-dresses by the North American Indians, and into magnificent cloaks by the Hawaiians. Flowers are favorite objects of decoration with the South Sea Islanders and the Polynesians. When the savages dance they always array themselves in fantastic style; they color their naked bodies; they wear wampum beads around the neck, ornaments about the knees or ankles and the waist; they often have large and unwieldy coiffures; they carry carved sticks or wands, rattles, whistles, and weapons in their hands. The habit of wearing painted or carved masks, and the employment of odd, grotesque, or fantastic costumes in the dance is found the world over.

The more elaborate the decoration and the para-

¹ *United States Geological Survey Under Lieutenant Wheeler*, vol. vii, p. 29.

¹ *Anatomy of Melancholy*, part iii, sect. 2.

phernalia, the more important is the dance. The "medicine dances" of the lower races are characterised by a display of color, ornament, and costume. Then, at a higher level of culture, we have the dances with which people celebrate their religious festivals. These are often elaborate and spectacular affairs. Such, for example, is "The Mountain Chant" of the Navajo Indians.¹ This ceremonial, lasting nine days, presents in a dance or series of dances a myth of the Navajos and shows a great advance in dramatic development. In the use of mechanical devices, in the scenic effects, in the skilful jugglery, in the employment of the Shaman, or priest, as stage-manager—in all these we see the germs of the popular drama.

The mystical ceremonies of the ancient Greeks were dances, or series of dances, setting forth the story of some god or some person. Thus, the Eleusinian Mystery was a spectacular miracle-play, representing the sorrows and consolations of Demeter, "She of the harvest-home." At the Bacchic festivals the ancient Greeks were no better than a mob of Navajo Indians. The dancers covered their bodies with the skins of beasts, smeared themselves with wine-lees, put on masks, and assumed the parts of fauns and nymphs and satyrs. And yet, as every schoolboy knows, out of the dances with which the people of Hellas celebrated their religious festivals was evolved the marvelous structure of the Greek drama.

In ancient times, the connexion between dancing and religion was very close. The medicine-men or chiefs of the tribe are the leaders of the dance. According to Mr. Beckwith, "the high priest in the religious ceremonies of the Dakotas is invariably a chief, who, through these dances, retains his influence in the tribe." In India the priests led the dances around the sacred altars. India's heaven was the scene of dancing, and every temple kept its band of dancing girls. The kings of Israel were all distinguished dancers, none more so than David, who danced before the Ark. The Greeks, who were the greatest dancers the world has ever seen, brought dancing to its highest pitch. They made dancing part and parcel of their religion. Plato, in his "Commonwealth," advocated the establishment of dancing-schools in the ideal state. The Romans had dances in honor of the pastoral gods, vine-dances and harvest-measures. "You cannot find a single ancient mystery," says Lucian, "in which there is not dancing."

The connexion between dancing and religion continued even in Christian times. The early Fathers had no serious objection to dancing; in fact, Gregory Thaumaturgus introduced dancing into the ritual. Later on, the Church endeavored to suppress pagan dances, which had become coarse and immodest. On

the other hand, she fostered miracle-plays in which moral stories and Bible stories were told to the folk, to the unlettered public. These plays were simply choral songs and dances, and, in some cases, mere spectacular shows. Finally, as a survival of the *autos sacramentales*, or miracle-plays, we have the Corpus Christi dances, which are performed to this day during carnival season in the Seville cathedral. Every evening at five o'clock the little choir-boys dance before the Host.

Such, then, is the meaning of folk-dance—passing from the region of history and religion into the region of poetry and frivolity, and thus following a general law of mental evolution, namely, that practices which occupy an important place in the minds and daily doings of people in a savage stage of culture,¹ survive only as matters of amusement, or of æsthetic feeling in a period of civilisation.

CONSCIOUSNESS.

BY CHARLES ALVA LANE.

Sleep said : From thine own soul I loosen thee,
And lo ! a sense thou art that sense knows not
To trace the metamorphoses of thought
Within thy spaceless spirit's mystery :
As though a God, with potent alchemy,
Were crystallising Being from the naught,
Behold the phantom-miracles enwrought
Within thy vast of living vacancy :

From dewdrop, pinioned on star-hilted ray,
The thought in mountains 'rose athwart the day ;
Then slipt to tone, as touched with alkahest
Through all the mass. It grew a flower straightway,
Or will or pain, but never came to rest,
And on through myriad modes of Being pressed.

¹ Dancing is a very serious affair to the savage. Among the Kwakiutl Indians, on certain occasions, the dancer who makes a mistake is killed. The ancient Mexicans did not mind putting an awkward dancer out of the way.

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¹ Described in *Fifth Ethnological Report*, pp. 384-468.