

## WHAT IS LIFE?

A SUNDAY ADDRESS.

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THERE are two noble concerns of man. One is to know his duty in life, and to do it. The other is to understand the great world about him, to understand himself as a part of the world.

Religion has always in some fashion met these concerns. It has not only given a rule of life, it has sought to make existence intelligible. It has aimed to banish the sense of strangeness which man has as he confronts the Universe, to make him feel at home in it. The religions that lie directly back of us did this in a very simple way. They told us of a Creator of the world; they explained the steps of the process,—in six days it was all done. They explained evil; they explained death. They pictured the Creator ever watching over, and now and then interfering in his world,—and one of them pictured him as sending down a Son from the heavenly heights in which he lived to rescue man from evil and from death, and point the way to heaven where man might go and live forever. How finite and comprehensible seemed the world in such a view! How simple was life! And in a way how affecting and beautiful the whole story!

And now that science makes us doubt whether the world ever was created, whether a hand from without ever interfered in it, whether Jesus was more heaven-sent than other men, and whether heaven itself is more than boundless space and innumerable planets and suns, how strange the world again becomes! The old familiar house in which we lived has been torn down, or rather melted in thin air, and we have to get our bearings and take our reckonings anew. It was, as we see, a kind of fairy-tale in which we believed, a sort of dreamland in which we were living,—and the world is other, vaster, more mysterious than we thought.

And yet the human mind has the same need as ever. It raises the same wondering questions. It has the same deep strong desire to know, to understand this wondrous frame of things, to be at home in it, to be a child of the universe, instead of a stranger. A religion for to-day must meet this need. It must face the new world and give some reasonable account of it. It is a great thing, the greatest thing, to inspire men with a vision of the right, and with courage to do it and dare for it; but it is only second to this to make men serene, at peace with the world because they see their place in it, happy in existence, fighting their battle for the right and the just in the light, and not in darkness.

It is with the hope that I may contribute, if ever so little, towards making those who come here feel at home in the world, that I am taking up the subjects for these two Sundays, "What is Death?" and "What is Life?" I would help you see the meaning of both. I would have you not shrink from the thought of death or regard it as an outlaw or a blot on the fair face of the world, but as a normal and even happy and beneficent part of it. I would have you see with Whitman and say with him: "Beautiful . . . that the hands of the sisters, Death and Night, incessantly, softly wash again and ever again this soil'd world." I would have you not merely submit, but consent and even praise "Our Sister Death," as all the great processes and forces of nature. My guide is science. I wish to admit everything it teaches. I wish to hold nothing and to hope for nothing that is inconsistent with it. I wish to follow the full sweep of all the physical, chemical, biological, psychological research and results of our time. It was said of Faraday that when he went into his oratory he turned the key of his laboratory. His science was one thing and his religion another. But the two things should interpenetrate. I have faith in the possibility of a religion that shall have part of its inspiration from science. I think that the conflict of the two is a passing phase—not that by a sort of hocus-pocus now becoming familiar, science will play into the hands of the old religion, but that religion will have a new birth through science, that knowledge itself will suggest what is beyond knowledge, that what we see and what we rationally dream of will be recognised as of one texture, so—

"That mind and soul according well  
 May make one music as before,  
 But vaster."

What can we say about life? It is of course premature to

speak of any final, finished doctrine,—yet there are hints, partial aspects of the truth, that we may gather together.

Life is of course a quality or attribute of many things. There is not only our human life, but animal life. Still lower down the scale there is vegetable life. Man, animal, plant,—all alike, though so different, live. What do we mean by saying so?

In the broadest sense anything may be said, I suppose, to be alive that moves of itself, instead of being pushed from without. If any of the wretched flying papers of which our Chicago streets and vacant lots are full on a windy day, were to take to flying when there was no wind, we should be amazed and think that somehow they must be alive. They are dead things, only because it takes something else to move them. The waves on our lake are pushed by one another, and all together they are pushed by the wind, but if they arose without any wind, and above all if one arose by itself and no other had caused it, if there were a spontaneous rising and swelling of the water, we should say the water there must be alive. Of course, none of these things happen, and it is something of a strain on our imagination to picture them, but they serve in a simple way to bring out the idea that is, I think, in all our minds when we speak of life. If you come on some strange object as you are walking along a country road, and can't make out whether it is alive or dead, you perhaps poke it or shove it, and if it moves only as you make it move you call it dead (perhaps it never was a living thing), and if it moves of itself you call it alive. Movement from within,—that is life.

Well, strange as it may seem, there is, in this broad general sense of the word, more life in the universe than we are at first aware of. There is a vast deal of movement that is produced by other movement, but, as we examine carefully, we find that every now and then we come upon movement that there are no outside causes to explain. When, for instance, you throw a ball up into the air, the upward movement is intelligible enough, for it is caused by the movement of your arm, but what causes the downward movement that sooner or later takes place? Is there somebody up there that gives the ball a push back? What even makes the ball stop? For there is evidently more than the friction of the air that hinders it from going up indefinitely. The real fact seems to be that the ball comes down, not because anything else makes it come down, but from its own intrinsic attraction or gravitation or weight. In the strict sense of the word, so far as I can see, it moves itself. It moves because it is so constituted, because its matter is not

mere matter, but a seat of living force. "Attraction," "gravitation," "weight," are not properly explanations of the movement, but other ways of describing it. All we can say truthfully is simply that the movement comes from within,—that the attraction, gravitation, and weight are inherent, not produced from without. And so it is wherever the so-called law of gravitation holds good,—so it is with all bodies throughout the wide world (so far as we know it). Movement is taking place every day, freshly beginning every day, movement is indeed eternally going on,—which is not caused by other movement, but arises from depths of energy within each object itself. In a sense, then, the whole universe is alive, for the earth and the sun and the stars and the whole choir of heaven, yes, and the tiniest fragment of dust under our feet, move, not because of anything that pushes them, but because of unexhausted and inexhaustible supplies of energies within themselves. You can throw up a ball again and again, and again and again, and it will always repeat the downward movement; it never tires or wearies of doing so; its action can be mathematically predicted—that is what we have in mind when we speak of the law of gravitation, but the law does not make it move, it is only an abstract statement of the fact and way in which it does move. So with the earth and the sun—as masses they may disintegrate, but the essential particles of which they are composed will never cease to have their inner vital attractions. They may make and remake worlds without end, and be as fresh as on creation's morn.

Must we not say the same of those infinitesimal movements by which neighboring particles of a like substance draw near to one another and refuse to be separated—to which we give the name cohesion? Are we to imagine external influences, hidden vises of some sort, pressing them together, or is it their own attractions that are at work? What, too, of the delicate movements that result in the formation of crystals—the wondrous little pyramids, for instance, which a solution of common salt may run into as it evaporates, and which almost seem, Tyndall said, a mimicry of the architecture of Egypt? Are not these movements, too, spontaneous? Is there any external force to which we can attribute them? Surely no one will say, to use an explanation which Tyndall only cited to dismiss, that there are invisible workmen in between the molecules piling them up in the order they assume. All we can say is, that there is this tendency, this architectural instinct (so to speak), this wonderful living movement, in the particles themselves. They are not dead particles that have to be put together by a hand out-

side them, but are instinct with a life and motion of their own, and with this very definite and beautiful type of life and motion—at least with one having these beautiful results.

We have been dealing with masses and little masses (or molecules); but the same considerations apply to the union of the atoms themselves,—the union called chemical. When two atoms of hydrogen and one of oxygen rush into one another's arms, as it were, and form a molecule of water, no one thinks of any outside force pushing or compelling them. The force, the spring of the movement, is in themselves; they have a positive affinity, one might almost say a craving, for one another, and, when circumstances allow, their mutual movement and union are inevitable. In other words the processes of chemical union are, equally with the other types of movement I have referred to, in a sense, living processes.

All about us then, even in the lower inorganic world, are store-houses, springs, fountains of life. They are store-houses that never grow old, springs that never weary, fountains that are ever fresh. A chemical element never loses its specific attractions, its inherent power of movement, any more than a particle of earth ever loses gravity. It may combine a hundred times, a thousand times, ten thousand times,—each time as readily, as powerfully, as exactly as the last; its energy is an unfading, undying, immortal thing.

Yet there is somewhat more wonderful in the world still. In the broad sense of spontaneous movement, life is everywhere in the world—and really in the last analysis, all derived movements rest on original, native, movements. But there are more wondrous potencies than those we have described. These are life, but there is a more-life—a deepening and multiplying of inward potency, and this is what we call life in the narrower, specific sense.

I have spoken of atoms uniting in a chemical compound. But suppose there were a compound which on being broken up to any extent tended to restore itself, which somehow managed to get new atoms to replace those that are lost, and thus preserved its form though its substance was altering and kept its identity in the midst of change, that would be a wonderful compound indeed, and its potencies far higher than those involved in the mere formation of a compound in the first place. Yet that is essentially the meaning of life, in the specific sense. Suppose water, on suffering any loss of its oxygen or hydrogen, at once reached after fresh oxygen or hydrogen to make good the loss, suppose the molecules were somehow bent on keeping themselves whole, and became thus a seat of

alternate destructive and constructive activities, I make bold to say that in the essence of the matter water would be as truly a living thing as a plant or an animal is. It happens, however, that the only compound that has this marvellous inner potency is that exceedingly complex compound made up of carbon, hydrogen, oxygen, and nitrogen, to which the name protein is sometimes given. It is the substance of protoplasm—that semi-fluid matter which is in every plant and every animal, which Professor Huxley styled the “physical basis of life.” This compound is ever suffering loss and yet it ever seeks to make good the loss—and this is the essential process of life.<sup>1</sup> We may suppose that, in the course of time, it has adapted itself and organised itself<sup>2</sup> better and better to serve the purpose of keeping itself whole. The outcome of the process has been to make it a sort of machine, with various parts working together for an end. Our bodies are a kind of machine, and those infinitesimal structures of which our bodies are composed, that we call cells, are machines.<sup>3</sup> The difference from ordinary machines is, as I explained last Sunday, that they are self-feeding machines, self-repairing machines, and, within limits, self-reproducing machines. That is, they are *living* machines, in contradistinction to those which man makes, which are in every case dead machines—having to be operated by something or somebody outside themselves.

The single cell from which every living thing starts, and from which man's bodily organism starts as well,—the seed or germ as more familiarly called—is a machine, i. e., a contrivance for an end, the end being to maintain itself—and, perhaps it should be added, to grow and reproduce itself.<sup>4</sup> I need not go into details—though they make a fascinating study. The simplest cells are made up of parts—nucleus and nucleolus, cell-substance and centrosome, are some of the technical names—and students of the subject are gradually learning or divining their respective functions, just as we learn the functions of the organ of the body as a whole. From start to finish in the living or organic world there is mechanical contrivance—only it is inwardly, not outwardly, produced, or, as we might

<sup>1</sup>This is beautifully brought out in an article “To Be Alive, What Is It?” by Dr. Edmund Montgomery, in *The Monist*, Vol. V., pp. 166 ff.

<sup>2</sup>Or made use of and perpetuated “accidental” variations arising within it that were favorable to this end.

<sup>3</sup>See *The Story of the Living Machine* by H. W. Conn (New York, D. Appleton & Co., 1899—a remarkably lucid little book).

<sup>4</sup>Is growth a sort of surplus maintenance, or is there an instinct of growth in addition to the instinct of maintenance? Reproduction would appear to be simply an incident of growth.

say, it is begotten, not made. The living machine itself grows—that is the wonder of it; it has grown; it has made itself,<sup>1</sup> led, forced, driven from within. There is nothing like it in the world—a parallel would be if a locomotive engine got its own fuel, grew and increased in size, made its own repairs and detached from itself parts of its structure, that grew into new locomotives.<sup>2</sup> There are architectural forces in nature; there are machine-making forces in nature. The impossible, the inconceivable to man, nature accomplishes.

" Not human art, but living gods alone  
Can fashion beauties that by changing live."

Our energy comes from the food we eat. But the deeper mystery of life consists in this,—that by our voluntary action we appropriate food, that we have an elaborate mechanism for doing so. The question of life is the question of the origin of this mechanism. The food that passes into it comes from the environment; but the mechanism itself does not come from the environment; it is fashioned from within, it is the outcome of specific chemical attractions, appetencies, impulses, demands. When you can account for the attractions of the chemical elements by their environment, when you can account for the gravity of bodies by their environment, then may you hope to account for the essential phenomena of life by surrounding forces. The truth is, there are, as there must be, original factors in the world, *Bausteine*, and life (or chemical activity and appetency) is like gravity, one of them. If we wish to account for *them*, we have to go back to the maker of all things (if there be a Maker), not to any of the other things that are made.

I have spoken of the life man has in common with animals and plants. We can hardly understand ourselves, save as we perceive the large essential outlines of this common life, in which the humblest amœba and the humblest speck of vegetable protoplasm share as well. Yet man is more than vegetable protoplasm, more than an amœba. How? In that the inner springs of his life are deeper, wider, richer. Man differs from the lower orders, because to their sensibility he adds more sensibility, because to the dim, groping instincts of the plant and the half-conscious processes of the animal, he adds a fuller consciousness—adds reason and knowledge and moral perception. These give man an additional independ-

<sup>1</sup> Not excluding a taking advantage of "accidental" variations.

<sup>2</sup> Cf. *General Biology*, by Sedgwick & Wilson, p. 4.

ence with respect to the outside world—they make him still more a living being. In a sense, the downward motion of a ball is a living motion, because it comes from the ball's own nature and is not caused from without. For all that, a ball may be kicked and thrown and tossed, and be practically unable to resist. How different a man! Where the ball has only gravity with which to counteract disturbing influences, man has a host of powers—by his perception and intelligence he may outwit them or escape them, by his muscular energies he may even attack them, and by concert with his fellows he may win a victory where he would fail by himself. If man were merely the passive creature of his environment, if he had no will or energy of his own, he would not really be a living thing. The very meaning of life is a more or less original, independent attitude towards surrounding influences. The only things in the world that may be entirely shaped by circumstances are dead things—if indeed there are any absolutely dead things. Life, as I have shown, is, from beginning to end in the scale of ascent, self-movement, *reaction* from a store of energy within. The exciting stimulus may no more of itself account for the effect, than a spark accounts for the explosion of a magazine of gunpowder. Even inanimate things are store-houses of independent energy; much more so man.

Hence we see what progress of life means for man. It is in becoming more and more a self-centered being. It is in getting more and more a fund of thought, of will, of principle, by which he may, within limits, shape forces about him instead of being shaped by them. Life is action from within, and more life means more "within" to act from. It is the feeble, unvitalised man who does simply as others want to have him do, or who goes with the crowd and cannot stand alone, or who swears by his party or his Church or his newspaper and does not examine into things, or who is the victim of his last book or the last set of circumstances in which he finds himself. If I want an example of strong self-sustained life, I think of Goethe who though lapped in luxury, the favorite of a court, and the idol of his countrymen, remained, as Huxley has remarked, through all the length of his honored years, a scholar in art, in science, and in life. I think of Huxley himself, ardent, devoted, unworldly, in his constant pursuit of scientific truth. I think of Herbert Spencer, turning neither to the right nor to the left, but finishing at eighty the work he set out to do at forty. Yes, I think of that pagan saint Marcus Aurelius, who though an emperor and tempted to all vanity, could write the "Med-

itations," and who could meekly say "Even in a palace life may be led well." The power of the inward over the outward—that is the power of life. And it is shown in humble men, in men we never heard of, as well as in men like these.

And yet life starts in desire, and progress begins with vague, hovering ideals. Who can tell what an *amœba* is after when it sticks out its pseudo-podia or feelers, and draws neighboring objects into its jelly-like, filmy mass? We can only say it has a rude, dim instinct to live. Who can tell what slumbering, vague desires are in the protoplasm of a plant with its unceasing motion, with its firm determined bent to make up for every loss in its substance—even to increase and grow? Dissatisfaction, want are the parent of every achievement. But if so, why should we human beings discredit the vague, ill defined hopes and yearnings that may be in our hearts now? The dreams of one age may gradually become the realities of the next. The vague hopes of humanity now may be prophetic of what humanity shall sometime be. First, desires, wants, dumb inarticulate strivings, afterwards thoughts, clear perceptions, firm will—this marks the ascent of plant to man and of man to the higher man. More and higher life means more desires, greater thoughts, more and more determined will. This is the vital method of progress, as opposed to those mechanical devices on which men sometimes lay such stress. Institutions, says Huxley, do not make men, any more than organisation makes life.<sup>1</sup> The only firm institutions are those which men make, as the only stable combinations of matter are those arising from inner, vital attractions. When the will and thought and energy of a people go into an institution, then it is there to stay. The only salvation for society as for the individual, is from within—it is more life.

Will life end with our planet? In a sense, yes; but if the energies that make for life really belong to nature and are inherent in it, strange would it be if they should never again assert themselves. In new worlds it is reasonable to believe that there will be new life. There may be different forms of life, there may be other chemical compounds than those with which we are familiar, but they will be alive in the same sense that ours are, in case they move from inner springs, lose their substance only to restore it, and perpetuate themselves in a series if they cannot in an individual. It is not a special set of elements that make life; life is rather a kind of union, of organisation of elements, a kind of process among them, whatever the elements be—namely, a kind resulting

<sup>1</sup> *Science and Culture*, etc., p. 72.

from inner forces, from the spontaneous and native attraction of the elements themselves. And the future forms of life may develop consciousness,—feeling, thought, and will,—as truly as those with which we are familiar now do. If feeling, thought, and will really belong to nature, if they are as truly, though not as universally, a part of its living energy, as chemical attraction or gravity is, then must they, when the occasion arises, appear again.

But how about *our* consciousness,—does it live on or, at least, rise again? I take for granted that it is interrupted at death. It sometimes lapses during life, and it surely does or may at death. Some day the consciousness of the race will end, and every day and every second some individual consciousness is ending. But is it an absolute end? There would be no meaning to such a question, if consciousness were born of the elements through which it expresses itself, and which it more or less controls. But the truth seems to be that it is a fresh expression of nature's inner resources. Chemical attraction is not derived from gravity, it is a new form of living energy; and consciousness is not derived from chemical attraction,—it is a fresh and independent expression of the forces lying at nature's heart. The unity our minds crave is not in the various forms of energy that appear, but, if there be unity, in the hidden well from which all alike stream.

If so, it does not follow that our consciousness stops absolutely, because our physical life ceases. It may, but it may not,—there is no inherent necessity for its cessation as there would be if it were but a form of physical or chemical energy. If one is bent on treating consciousness as some sort of physical or chemical activity, he may be led to doubt whether it exists outside himself, for in all the minutest processes of the body or brain of other persons he never discovers it,—and he may with entire rationality conclude that they are automata (without consciousness).<sup>1</sup> He might doubt its existence in himself, did he not directly experience it. Consciousness is *sui-generis* and unlike all in the world beside, unlike even the most delicate tissues and movements of man's own bodily substance. Science, exact science—and the more exact the better—discovers nothing inconsistent with the possibility of a resurrection of our consciousness after death. This added spring of life may be a spring for other forms of life as well as for that which has its ending here.

But why *should* our consciousness go on? The answer lies, so

<sup>1</sup> How well such a position may be argued, readers of Huxley are aware. See his "On the Hypothesis that Animals are Automata, and its History," in *Science and Culture*, pp. 206 ff.

far as an answer can be given, in the unfinished nature of our present state. Man is an uncompleted being. It is quite possible that the whole race will come to an end before it, or any part of it, reaches the perfection which it is possible to think of, and the potencies of which really exist. Cohesion may be perfect at once. Chemical attraction may be perfect at once—the first time hydrogen and oxygen come together they may form as perfect a molecule of water as they can ever form. But a human soul is never perfect. When we know the world as it has been imagined God knows it,—know it in all its infinite sweep, in all its hidden depths and measureless possibilities,—when we attain in life and character all we should like to attain, when we have come to the end of our ideal, then indeed we may come to the end of ourselves,—but not till then.

Why *should* we live again? What a question! Is life then as we know it enough to us? Is there nothing we are trying for and cannot reach? Is there nothing we crave to see and do not see? Have we no visions, no haunting ideals? Are we not homesick at times for a beauty, a perfection we do not find on earth? Or are we afraid to let these slumbering ideals awaken in us, do we stifle them and deaden them! Oh, I say to you, trust your soul, open the windows of your heart and look away to the unattained!

And if you wish something that would seem like a positive reason or ground for expectancy, I point you to the world itself. I point you to what it has itself brought forth, since the earth parting from the sun began to “spin its way through the awful depths of space.” I point you to the teeming energy of the world, to its ascending scale of life, to all that is fair and beautiful already here. Who would have dreamed it in those dim days of long ago? If not, the future may surpass all the dreams we can have now. These thinking, feeling, aspiring selves of ours belong to the world—they are not strangers in it, but are born out of it—their aspirations and all the essential ideals they conceive are an outgrowth of their essential being—and who will say that we cannot reach our end and be satisfied, that human society, spiritually conceived and taken in its essential sympathies and loves, cannot rise to the ideal that is prefigured in its nature and become elsewhere if not here (though it can become more and more so here) a veritable “Kingdom of God”? It is our sense of the infinity of the world that gives us hope. When we see that it is really a question of whether the universe is big enough to give satisfaction to our souls, then every sense of what is generous and vast in nature seems to encourage

us. The very capaciousness of space, the very boundlessness of time, give us large and tranquil thoughts.

It is an old saying that in the midst of life we are in death,—indeed, the truth of science is that it is by daily dying that we live. Our life substance is being continually destroyed; only because this is so are the constructive activities of life called in play. Destruction makes way for construction; death is a kind of call on life. Who knows but that that greater death which sooner or later overtakes us all, is another gracious minister and starts energies into play deeper than we had known before,—that it is the death of the body, and freedom, new birth to the soul?

“Some parturition rather, some solemn immortal birth;  
On the frontiers to eyes impenetrable  
Some soul is passing over.”