

# FIGUIER LOUIS

THE DAY AFTER DEATH  
(NEW EDITION). OUR  
FUTURE LIFE  
ACCORDING TO  
SCIENCE

**Louis Figuier**  
**The Day After Death (New  
Edition). Our Future  
Life According to Science**

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*The Day After Death (New Edition) / Our Future Life According to Science:*

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# **Louis Figuier**

## **The Day After Death (New Edition) / Our Future Life According to Science**

### **INTRODUCTION**

READER, you must die. You may perhaps die to-morrow. What will become of you? What shall you be, on the day after your death? I do not now allude to your body; that is of no more importance than the clothes which it wears, or the shroud in which it will be buried. Like these garments, like that cerecloth, your body must be decomposed, and its elements distributed among Nature's great reservoirs of material, earth, air, and water. But your soul, whither shall it go? That which was free within you, that which thought, loved, and suffered, what shall become of it? Of course you do not believe that your soul will be extinguished with your life on the day of your decease, and that nothing will remain of that which has palpitated in your breast, vibrating to the emotions of joy and sorrow, to the tender affections, the numberless passions and disturbances of your life. Where shall that sensible, existing soul, which must survive

the tomb, go to? What will it become, what shall you be, my reader, the day after your death?

To the consideration of this question this book is devoted.

Almost all thinkers have declared that the problem of the future life defies solution. They have argued that the human mind is powerless to foresee so profound a mystery, and that therefore the only rational course is to abstain from the endeavour. This is the reasoning of the majority of mankind, partly from carelessness, or partly from conviction. Besides, when we venture to look at this tremendous question closely, we find ourselves immediately surrounded with such thick darkness that we lack courage to pursue the investigation. And thus we are led to turn away from all thought of the future life.

There are, nevertheless, circumstances which force us to reflect on this dark and difficult subject. When one finds oneself in danger of death, or when one has lost a dearly beloved object, there is no escape from meditation upon the future life. When we have dwelt long and earnestly upon the idea, we may be brought to acknowledge that the problem is not, as it has so long been believed, beyond the reach of the human mind.

During the greater portion of his life, the author of this book believed, in common with everybody else, that the problem of the future life is out of our reach, and that true wisdom consists in not troubling our minds about it. But, one dreadful day, a thunderbolt fell in his path. He lost the son in whom centred all the hope and ambition of his life. Then, in the bitterness

of his grief he reflected deeply on the new life which must open for each of us, above the tomb. After long dwelling on this idea in solitary meditation, he asked of the exact sciences what positive information, on this question, they could furnish him with, and subsequently, he interrogated ignorant and simple people, peasants in their villages, and unlettered men in towns, an ever precious source of aid in re-ascending towards the true principles of nature, for it is not perverted by the progress of education, or by the routine of a commonplace philosophy.

Thus the author of this book succeeded in constructing for himself an entire system of ideas concerning the new life of man, which is to follow his terrestrial existence.

But his system is all contained in nature. Each organized being is attached to another which precedes, and another which follows it, in the chain of the living creation. The plant and the animal, the animal and the man, are linked, soldered to one another; the moral and physical order meet and mingle. It results from this, that any one who believes himself to have discovered the explanation of any one fact concerning this organization, is speedily led to extend this explanation to all living beings, to reconstruct, link by link, the great chain of nature. Thus it was with the author of this book. After having sought out the destination of man, when dismissed from his terrestrial life, he was led to apply his views to all other living beings, to animals, and then to plants. The power of logic forced him to study those beings, impossible to be seen by our organs of vision, by which

he holds the planets, the suns, and all the innumerable stars dispersed over the vast extent of the heavens, to be inhabited. So that you will find in this book, not only an attempt at the solution of the problem of the future life by science, but also the statement of a complete theory of nature, of a true philosophy of the universe.

It may be that I am deceiving myself; it may be that I am taking the dreams of my imagination for serious views; I may lose myself in that dark region through which I am trying to grope my way; but at least I write with absolute sincerity, and that is my excuse for writing this book at all. I hope that others may be induced by my example to attempt similar efforts, to apply the exact sciences to the study of the great question of the destinies of man after this life. A series of works undertaken in this branch of learning, would be the greatest service which could be rendered to natural philosophy, and also to the progress of humanity.

After the terrible misfortunes of 1870 and 1871, there is not a family in France which has not had to mourn a kinsman or a friend. I found, not indeed consolation for my grief, but tranquillity for my mind, in the composition of this work; and I have therefore hoped that, in reading its pages, they who suffer and they who grieve might find some of the same hope and assurance which have lifted up my stricken heart.

Society is in our day the prey of a deadly disease, of a moral canker, which threatens it with destruction. This disease is materialism. Materialism, which was preached first in Germany,

in the universities, and in books of philosophy, and the natural sciences, afterwards spread rapidly in France. With brief delay, it came down from the level of the *savans* to that of the educated classes, and thence it penetrated the ranks of the people; and the people have undertaken to teach us the practical consequences of materialism. Little by little they have flung off every bond, they have discarded all respect of persons and principles; they no longer value religion or its ministers; the social hierarchy, their country, or liberty. That this must lead to some terrible result it was easy to foresee. After a long period of political anarchy, a body of furious madmen carried death, terror, and fire through the capital of France.

It was not patriotism which fired the illustrious and sacred monuments of Paris, it was materialism. Nothing can be more evident than that, from the moment one is convinced that everything comes to an end in this world, that there is nothing to follow this life, we have nothing better to do, one and all of us, than to appeal to violence, to excite disturbance, and invoke anarchy everywhere, in order to find, amid such propitious disorder, the means of satisfying our brutal desires, our unruly ambition, and our sensual passions. Civilization, society, and morals, are like a string of beads, whose fastening is the belief in the immortality of the soul. Break the fastening, and the beads are scattered.

Materialism is the scourge of our day, the origin of all the evils of European society. Now, materialism is fiercely fought in



this book, which might be entitled, "Spiritualism Demonstrated by Science." Because this is its aim, and its motive, my friends have induced me to publish it.



# CHAPTER THE FIRST

## MAN THE RESULT OF THE TRIPLE ALLIANCE OF THE BODY, THE SOUL, AND THE LIFE. WHAT CONSTITUTES DEATH

BARTHEZ, Lordat, and the Medical School of Montpellier have created the doctrine of the *human aggregate*, which, in our opinion, affords the only explanation of the true nature of man. This doctrine of which we shall avail ourselves, as a guide in the earlier portions of this work, may be defined as follows:—

There exists in man three elements:—

1. The body, or the material substance.
2. The Life, or as Barthez calls it, the *Vital Force*.
3. The Soul, or as Lordat calls it, the *Intimate Sense*.

We must not confound the soul with the life, as the materialists and certain shallow philosophers have done. The soul and the life are essentially distinct. The life is perishable, while the soul is immortal; the life is a temporary condition, destined to decline and destruction; while the soul is impervious to every ill, and escapes from death. Life, like heat and electricity, is a force engendered by certain causes; after having had its commencement, it has its termination, which is altogether final.

The soul, on the contrary, has no end.

Man may be defined as *a perfected soul dwelling in a living body*.

This definition permits us to specify what it is that constitutes death.

Death is the separation of the soul and the body. This separation is effected when the body has ceased to be animated by the life.

Plants and animals cannot live except under certain conditions: plants in the air or in the water, animals in the air, fish in the water; and if they are deprived of these conditions, they perish immediately. Again, there are existences which require special conditions for their support within the general ones.

Certain polypoid-worms can live only in carbonic acid, or azotic gas; the germs of cryptogams produced by damp can be developed only in aqueous infusions of vegetable matters; the fish which live in the sea, die in fresh, or only moderately salt, water.

Every living being has then its special *habitat*. The soul does not form an exception to this rule. The place, the *habitat* of the soul is a living body. The soul disappears from the body when this body ceases to live, just as a man forsakes a house when that house has been destroyed by fire.

Such is the doctrine of the triple alliance of the body, the soul, and the life, as formulated by the School of Montpellier, and such, as a consequence of this doctrine, is the mechanism of death.

It must be added that this triple alliance of the body, the soul, and the life, is not peculiar to man; it exists also in all animals. The animal has also a living body, and soul; but the soul in animals is much inferior to the soul in men, in the number and extent of its faculties. Having few wants, the animal has a very small number of faculties, which are all in a rudimentary condition. It is only in the very considerable development of the faculties of the soul that man differs from the superior animals, to which he bears a strong resemblance in his physiological functions, and his anatomical structure.

It must be remarked that the Montpellier School does not admit this view of the condition of animals. In another part of this work,<sup>1</sup> a fuller explanation of the distinctions which divide man from animal will be found.



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<sup>1</sup> Ch. [XV](#).



# **CHAPTER THE SECOND**

## **WHAT BECOMES OF THE BODY, THE SOUL, AND THE LIFE, AFTER DEATH**

AFTER death, the body, whether of a man, or of an animal, being no longer preserved from destruction by vital force, falls under the dominion of chemical forces. If the body of a dead animal, or a human corpse be kept in a place where the temperature is below  $0^{\circ}$ , or if it be shut up in a space entirely air-tight, or if it be impregnated with antiseptic substances, it will remain intact, as at the moment at which life has abandoned it. Such is the process of embalming. The effect of the various chemical substances with which a corpse is impregnated, is to coagulate the albumen of the tissues, and thus to preserve the animal substance from putrefaction. A similar result will be obtained if the corpse be placed between two layers of ice, or in a coffin entirely surrounded with ice constantly renewed. If kept at a temperature of  $0^{\circ}$ , the body will not be subject to decomposition, because putrid fermentation cannot take place at so low a temperature.

This was the process by which the entire carcasses of the mammoths, or extinct elephants, which belonged to the

quaternary period, were preserved. In 1802 a perfectly preserved carcass of this gigantic pachyderm was found on the bank of the Lena, a river which runs into the Arctic Sea, after traversing a portion of the Asiatic continent in the vicinity of the North Pole. The frozen earth and the ice which covers the banks of the river into which the mammoth had plunged, had so effectually preserved it from putrefaction, that the flesh of the huge creature, dead for more than a hundred thousand years, made a feast for the fishermen of that desert place. In northern countries, if one would preserve the body of a man, it could be effectually done by simply keeping it constantly wrapped in ice.

When the body of a man, or of an animal, is exposed to the combined influences of air, of water, and of a moderately high temperature, it undergoes a series of chemical decompositions, whose final term is its transformation into carbonic acid gas, and some compounds, gaseous or solid, which represent the less advanced products of destruction. Gases of various kinds, carbonic acid, hydrosulphuric, and ammoniac, and the vapour of water, spread themselves through the atmosphere, or dissolve into the humidity of the soil. At a later stage these compounds, thus dissolved into the water which bathes the earth, are absorbed by the little roots of the plants which live on it, and aid in their nutrition and development. As for the gas, it begins by spreading through the air; and then falling to the earth again dissolved in the rainwater, it also equally supplies the needs of vegetable life. The ammoniac and carbonic acid in the water which penetrates

the soil, is absorbed by the roots, introduced into the tubes of the plants, and supplies them with nourishment.

Thus, the matter which forms the bodies of men and animals is not destroyed; it only changes its form, and under its new conditions it aids in the composition of fresh organic substances.

In all this the human body does but obey the common laws of nature. That which it undergoes, every organized substance, vegetable or animal, exposed to the combined influences of air, water, and temperature, equally undergoes. A piece of cotton or woollen stuff, a grain of wheat, a fruit—they all ferment, and reduce themselves to new products, exactly as our bodies do. The cere cloth which enfolds a corpse is destroyed by precisely the same process which destroys the corpse.

But, if the material substance which forms man's body does but transform itself, journeying through the globe, passing from animals to plants and from plants to animals; it is quite otherwise with life. Life is a force. Like the other forces, heat, light, and electricity, it is born, and it transmits itself; it has a beginning and an end. Like light, heat, and electricity—the physical agents which make us comprehend life, and which have certainly the same essence and the same origin—life has its producing causes, and its causes of destruction. It cannot rekindle itself when it has been extinguished; it cannot re-commence its course when its fatal term has arrived. Life cannot perpetuate itself; it is a simple condition of bodies, a fugitive and precarious condition, subject to countless influences, accidents, and chances.



The life is therefore greatly inferior in importance to the soul, which is indestructible and immortal. The soul is the essential element in all nature. It has active and positive qualities in all respects where the two other elements, the body and the life, have only negative qualities. Whilst the body dissociates itself and disappears, while the life becomes annihilated, the soul can neither disappear nor become annihilated.

We have seen what becomes of a man's body after his death, and also of his life; let us now examine into the condition of his soul.

No philosopher, no learned man, none of those who know the immensity of the universe and the eternity of the ages, can admit that our existence on the earth is a definite thing,—that human life has no link with anything above or beyond itself. Man dies at thirty, or twenty years old; he may live only a few months, or a few minutes. The average length of life, according to Duvillard's tables, is twenty-eight years. At present it is thirty-three. One fourth of mankind die before their seventh year, and one half do not outlive their seventeenth. Those who survive this time enjoy a privilege which is denied to the rest of the human race.<sup>2</sup>

What is so short an interval, compared to the general duration of time, to the age of the earth and of the worlds? It is one minute in eternity. Our brief life is not, cannot be anything but an accident, a rapid and passing phenomenon, which hardly counts for anything in the history of nature.

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<sup>2</sup> Rambosson. "The Laws of Life." *Paris*, 1871. P. 121.

On the other hand, the physical conditions of terrestrial life are detestable. Man is a martyr, exposed to every sort of suffering: owing partly to the defective organization of his body, incessantly menaced with danger from external causes, dreading the extremes of heat and cold; weak and ailing, coming into the world naked, and without any natural defence against the influence of climate. If, in one portion of Europe, and in America, the progress of civilization has secured comfort for the rich, what are the sufferings of the poor in those very same countries? Life is perpetual suffering to the greater number of the men who inhabit the insalubrious regions of Asia, Africa, and Oceania. And then, before there was any civilization at all, during the period of Primitive Man, a period so immense that it stretches back to a hundred thousand years before our epoch, what was the fate of humanity? It was a perpetual succession of suffering, danger, and pain.

The conditions of human existence are as evil from the moral as from the physical point of view. It is granted that here below happiness is impossible. The Holy Scriptures, when they tell us that the earth is a valley of tears, do but render an incontestable truth in a poetic form. Yes, man has no destiny here but suffering. He suffers in his affections, and in his unfulfilled desires, in the aspirations and impulses of his soul, continually thrust back, baffled, beaten down by insurmountable obstacles and resistance. Happiness is a forbidden condition. The few agreeable sensations which we experience, now and then, are expiated by the bitterest

grief. We have affections, that we may lose and mourn their dearest objects; we have fathers, mothers, children, that we may see them die.

It is impossible that a state so abnormal can be a definitive condition. Order, harmony, equilibrium reign throughout the physical world, and it must be that the same are to be found again in the moral world. If, on looking around us, we are forced to acknowledge that suffering is the common and constant rule, that injustice and violence dominate, that force triumphs, that victims tremble and die under the iron hand of cruelty and oppression; then it must be that this is only a temporary order of things. It cannot be otherwise than a moment of transition, an intermediary period which Providence condemns us to pass through rapidly, on our way to a better state.

But, what is this new condition, what is this second existence which is to succeed to our terrestrial life? In other words, what becomes of the human soul after death has broken the bonds which held it to the body? This is what we have to investigate.

That being, superior to man in the scale of the living creatures which people the universe, has no name in any language. The *angel* acknowledged by the Christian religion, and honoured by an especial *cultus*, is the only approach we have to a realization of the idea. Thus Jean Reynaud calls the superior creature, who is, he believes, to succeed to man after his death, an *angel*. But we will put aside the word altogether, and call the perfected creature who, in our belief, comes after man in the ascending series of

nature, the *superhuman being*.



# CHAPTER THE THIRD

## WHERE DOES THE SUPERHUMAN BEING DWELL?

WE have seen that of the three elements which compose the *human aggregate*, one only, the soul, resists destruction. After the dissolution of the body, after the extinction of the life, the soul, detached from the material bonds which chained it to the earth, goes away, to feel, to love, to conceive, to be free, in a new body, endowed with more powerful faculties than those allotted to humanity. It goes away to compose that which we call the superhuman being. But where does this new creature dwell?

All students of nature know that life is spread over our globe in prodigious proportions. We cannot take a step, our eyes cannot glance around us, without everywhere encountering myriads of living beings. The earth is nothing but a vast reservoir of life. Examine a blade of grass in a field, and you will find it covered with insects, or inferior animals. But your eyes will not suffice for this examination; you must have recourse to the microscope. With the aid of the magnifying glass, you will discover that this blade of grass is the refuge of an active population, which are born, multiply, and die with prodigious rapidity on their almost

imperceptible domain.

From this blade of grass you may draw inferences and conclusions respecting the vegetation of the entire globe.

The fresh waters which flow upon the surface of the earth are also the receptacle of a prodigious quantity of organic existence. Without mentioning the plants, and the animals which live in the waters of the rivers and streams, and are visible to the naked eye, if you take a drop of water from a pool, and place it under the microscope, you will see that it is filled with living beings, who, though so small that they escape our unassisted vision, are none the less active, and all hold their appointed place in the economy of nature. We know how thickly peopled with inhabitants is the great drop; but, without speaking of beings visible to all, the fishes, the crustacea, and the zoophytes, or of the marine plants, creatures, invisible except under microscopical examination, abound to such an extent in sea water, that one single drop of it, so examined, displays innumerable quantities of these microscopic animals and plants.

From this drop of water you may draw inferences and conclusions respecting the entire mass of waters which occupy the basins of the seas, and form three-fourths of the surface of our globe.

In order that some conception may be reached of the enormous numbers of the living beings contained in the seas now, and formerly, we may fitly recall in this place a fact well known to geologists. It is, that all building stone, all the calcareous earth

of which chalk hills and banks are formed, are entirely composed of the pulverized and agglomerated remains of the shells of mollusca, visible or microscopic, which, in the most remote ages of the existence of the globe, peopled the basin of the seas. The whole of this formation is composed of the accumulation of shells. If life has been lavished with such profusion in the waters during the geological periods, it must be equally lavished now, in almost similar ways, because the actual conditions of nature do not differ from what they were in the primitive ages of the globe.

The air which surrounds us is, like the earth and the seas, a vast receptacle of living creatures. We see only a few animals cleaving the aërial space, but the *savant*, who looks beyond the simple appearance of things, discovers myriads of existences in the air.

The air seems to us very pure, very transparent, but only because it is not sufficiently illumined by light to enable us to perceive the particles, or foreign bodies, which are floating about in it. When we allow one ray of daylight to penetrate into a closed room, one thread of solar light, we can discern a luminous streak flung across the chamber, while the remaining portion is still in darkness. We all know that, thanks to the powerful light, and its contrast with the surrounding obscurity, the luminous streak is seen to be filled with light, slender floating bodies, rising, descending, fluttering with the motion of the air. That which is perceptible in the atmosphere of a brightly-lighted room is necessarily existent in the entire atmosphere surrounding our

globe, so that the air is everywhere filled with these specks of dust.

Of what are these specks of dust formed? Almost entirely of living creatures, of the germs of microscopic plants (cryptogamia), or of the eggs of inferior animals (zoophytes). So-called spontaneous generation, so largely discussed of late in France and other countries, is merely due to these organic germs which fill the atmosphere, and which, falling into the water, or into the infusions of plants, give birth to forms of vegetation, which have been imputed to spontaneous generation; that is to say, to a creation without a germ, a generation without a cause, which is an error. Every living thing has parents, which are always discoverable by science and attention.

Those animals and plants which are called parasites furnish another example of the extraordinary profusion with which life is distributed over the earth. Animals and plants which live on other animals or on other plants, and which feed on the substance of their involuntary entertainers, are called *parasites*. Each of the mammals has its parasites, such as fleas, lice, &c., and man has the flea, the louse, and the bug. So each vegetable has its parasite. The oak gives shelter and food to lichens and various cryptogamia, and even on its roots we find particular kinds of cryptogamia, such as the truffle. Thus we see that life plants itself, grafts itself upon life.

But, more than this, these parasites in their turn have their smaller parasites, so minute as only to be microscopically



discerned. Take a lichen off an oak and examine it with a magnifying glass, and also examine a flea, or a nit, and you will behold the curious spectacle of a parasite attached to another parasitical creature, and living upon its substance. From the great vegetable the alimentary substance passes to the visible parasite, and from that to the invisible. In this little space life is superposed and concentrated. Such a fact proves with what prodigious abundance life is spread over our globe.

Thus, then, we see that the surface of the globe, the fresh waters, and the salt seas, and, finally, the atmosphere, are inhabited by immense numbers of living beings. Life abounds on the earth, in the waters, and in the air. Our globe is like an immense vase, in which life is accumulated, pressed down, and running over.

But, the earth, the air, and the waters are not the only places at the command of nature. Above the atmosphere there extends another region, with which astronomers and physicists are acquainted, and which they call *ether* or *planetary ether*. The atmosphere which surrounds our globe, and is drawn with it in its course through space, as it is drawn with it in its rotation upon its own axis, is not very high. It does not extend beyond thirty or forty leagues, and it diminishes in substance in proportion to its elevation above the earth. At three or four leagues in height the air is so rarefied that it becomes impossible for men or animals to breathe it. In aërostatic ascents it is impossible to go beyond seven or eight kilometres, because at that height the air

loses so much density, is so highly rarefied, that it no longer serves for purposes of respiration, nor counterbalances the effect of the interior pressure of the body on the exterior. After that height, the density of the air decreases more and more, until there is absolutely no air. At that point begins the fluid which astronomers and physicists call *ether*.

This ether is a true fluid, a gas, analogous to the air we breathe, but infinitely more rarefied and lighter than air. The existence of the planetary ether cannot be disputed, since astronomers take account of its resistance in calculating the speed of heavenly bodies, just as they take account of the resistance of the air in calculating the motions of bodies traversing our atmosphere.

Ether is, then, the fluid which succeeds to atmospheric air. It is spread, not only around the earth, but around the other planets. More than this, it exists throughout all space, it occupies the intervals between the planets. It is, in fact, in ether that the planets, which, with their satellites, compose our solar world, revolve. The comets, too, in their immense journeys through space pass through ether.

The uneducated mind is disposed to believe that above the air which surrounds the terrestrial globe, there is nothing more, that all is void. But no void exists anywhere in nature. Space is always occupied by something, whether it be by earth, by water, by atmospheric air, or, finally, by *planetary ether*.

It has just been said that life abounds upon the globe, swarms upon the earth, clusters in the air and in the waters. Is the ethereal

fluid which succeeds to our atmosphere, and which fills space, equally inhabited by living beings? This is a question which no *savant* has ever yet asked himself. In our opinion, it would be very surprising that life, which we may say overflows in the waters and in the air, should be absolutely wanting in the fluid which is contiguous to the air. Everything, then, indicates that the ether is inhabited. But who are the beings who dwell in the planetary ether? We believe that they are those *superhuman beings*, whom we consider to be resuscitated men, endowed with every kind of moral perfection.

The chemical composition of planetary ether is not known. Astronomical phenomena have taught us its existence, but not its components. We believe it may safely be asserted that the ether does not contain oxygen. In fact, oxygen is the fundamental element of atmospheric air; and as, in proportion as they ascend into that air, the respiration of men and animals becomes more and more difficult, it is, in our opinion, presumable, that this difficulty is caused by the approach of a description of gas impossible to breathe; and which, therefore, excludes human life from the superior regions of the air. A man, rising in a balloon towards the ether, is like a fish half drawn out of the water, half exposed to the air. The fish is breathless and palpitating in a place which is fatal to him; thus it is with man, when he rises by degrees through our nether atmosphere, and draws near to the ether. It seems to us that we may, at once, conclude, from this, that there is no oxygen in planetary ether.

It seems not unlikely that the planetary ether may be composed of hydrogen gas, excessively rarefied, that is to say, of an extremely light gas, still further rarefied, and rendered infinitely more subtle by the absence of all pressure. We are induced to conclude that the ether in which the planets revolve is hydrogen, because, from observations made of late years during the solar total eclipses, it has been ascertained that the sun is surrounded by burning hydrogen gas.

In the language of every nation, the space which lies beyond our atmosphere is called by the same name, that of *heaven*. It is, then, in the universally recognized *heaven* that we place our superhuman beings. In this we are in accord with popular belief and prejudice, and we recognize this argument with satisfaction. These prejudices, these presentiments are frequently the outcome of the wisdom and the observation of an infinite number of generations of men. A tradition which has a uniform and universal existence, has all the weight of scientific testimony.

In accordance with this phrase, and the immemorial tradition, the most widely-spread modern religions, Christianity, Buddhism, and Mahometanism, assign *heaven* as the sojourn of the elect of God.

Thus, we find science, tradition, and religion at one on this point; and that it was a scientific truth which found utterance by the lips of the priest who said to the martyred king upon the scaffold: "Son of Saint Louis, ascend to heaven."



# CHAPTER THE FOURTH

**DO ALL MEN, WITHOUT DISTINCTION, PASS, AFTER DEATH, INTO THE CONDITION OF THE SUPERHUMAN BEING?—RE-INCARNATION OF IMPENITENT SOULS.—RE-INCARNATION OF CHILDREN WHO HAVE DIED IN INFANCY**

DEATH is not a termination, it is a change. We do not die; we experience a metamorphosis. The fall of the curtain of death is not the catastrophe, it is only a deeply moving scene in the drama of human destiny. The agony is not the prelude to annihilation, it is only the obligatory suffering which, throughout all nature, accompanies every change. Every one knows that the insect world, the cold and motionless chrysalis, rends itself asunder that the brilliant butterfly may come forth. If you examine the butterfly a moment after it has left its temporary tomb, you will find it trembling and panting with the pain of bursting through the trammels which had held it. It needs to rest, to calm itself, and to collect its strength before it soars away into the air which it is destined to traverse. This is a symbol of our death agony. In order that we may cast aside the material covering which we leave behind us here below, and rise to the unknown spheres which

await us beyond the tomb, we must suffer. We suffer, in the body, from physical pain, and in the soul, from the anguish with which we contemplate our approaching destiny, wrapped, as it is, in the most appalling darkness.

But here a difficulty presents itself. Do all men, without distinction, pass into the condition of the superhuman being? An infinite range of qualities and of moral perversion is an attribute of humanity. To it belong good and evil, the honest man and the criminal. Let us inhabit whatsoever spot of earth we may, let the culture of our minds be what it may, whether we be savages or civilized men, learned or ignorant, whether we contemplate contemporary generations or those of far distant times, there exists one universal morality, one law of absolute equity. Everywhere, in all times, it has been a bad action to kill one's neighbour, to take another's goods, to ill-treat one's children, to be ungrateful to parents, to live on bad terms with one's wife, to conspire against the liberty of others, to lie, and to commit suicide. From one end of the earth to the other, these actions have been esteemed evil.

There exists, therefore, in the sphere of nature, and in the absolute meaning of the words, good souls and perverse souls. Must we believe that both the good and the wicked are called, without distinction, to undergo the change of nature which elevates us to the condition of superhuman beings? Are both classes admitted, upon the same footing, to the felicity of the new life, which is reserved for us beyond the tomb? Our conscience,

that exquisitely accurate sentiment which dwells within us, and which never deceives, tells us that this could not be.

But how is the separation of the good grain from the tares to be effected by natural forces only? How is the process of sorting, in itself extremely difficult to explain, when one takes into account the complication of the natural question by the mingling of moral and physical influences, to be carried out? We can only state our individual sentiment, not in the dogmatic sense of imposing it on any one, but simply as a testimony to be registered.

It seems to us that the human soul, in order to rise to the ethereal spaces, needs to have acquired that last degree of perfection which sets it free from every besetting weight; that it must be subtle, light, purified, beautiful, and that only under such conditions can it quit the earth and soar towards the heavens. To our fancy, the human soul is like a celestial aërostat, who flies towards the sublimest heights with swift strength, because it is free from all impurity. But the soul of a perverse, wicked, vile, gross, base, cowardly man has not been purified, perfected, or lightened. It is weighed down by evil passions and gross appetites, which he has not sought to repress, but has, on the contrary, cultivated. It cannot rise to the celestial heights, it is constrained to dwell upon our melancholy and miserable earth.

We believe that the wicked and impenitent man is not called to the immediate enjoyment of the blessed life of the ethereal regions. His soul remains here below, to re-commence life a second time. Let us remark, at once, that he re-commences this



life without preserving any recollection of his previous existence.

It will be objected to this, that to be born again without retaining any remembrance of a past life, would be to fall into the nothingness to which we are condemned by the materialists. In fact, it is identity which constitutes the resurrection; and without memory there is no identity. The individual, therefore, as an individual, would fall into nothingness if he were born again without memory.

This remark is just. If, after our resurrection to the state of superhuman beings, we were to lose, absolutely and irreparably, all remembrance of our former life, we should be, indeed, the prey of nothingness. But, let us hasten to add, that this loss of memory is of but short duration. Oblivion of our past life is only a temporary condition of our new existence, a sort of punishment. The remembrance of his first terrestrial life will return to each individual, when, by perfecting processes meet for the needs of his soul, he shall have merited the attainment of the condition of a superhuman being. Then he shall recall the evil actions of his first existence, or of his numerous existences, if it has been his lot to have several probations, and the thought of those evil deeds will still be his chastisement, even in the blissful abode to which he shall at length have attained.

To such persons as refuse assent to these views, we would remark that the question of rewards and punishments after death is the rock upon which all religions and all philosophers have split. The explanation of the punishment of the wicked which

we offer, is at least preferable to the hell of the Christian creed. A return to a second terrestrial life is a less cruel, a more reasonable, and a more just punishment than condemnation to eternal torment. In the one case the penalty is in proportion to the sin. It is equitable and indulgent, like the chastisement of a father. It is not eternal punishment for a sin of short duration, it is a merciful form of justice, which places beside the penalty the means of freedom from the sin. It does not shut out all return to good by a condemnation without appeal to all eternity, it leaves to man the possibility of retracing the road to happiness from which his passions have led him astray, and of recovering, by deserving them, the blessings which he has forfeited.

Thus, in our opinion, if the human soul, during its sojourn here below, instead of perfecting, purifying, and ennobling itself, has lost its strength, and its primitive qualities,—if, in other words, it has been misused by a perverse, gross, uncultivated, mean, and wicked individual,—then, in that case, it will not quit the earth. After the death of that individual, the soul will tenant a new human body, losing all recollection of its previous existence. In this second incarnation the imperfect and earth-laden soul, deprived of all noble faculties and bereft of memory, will have to re-commence its moral education. This man, born again as an infant, will recommence his existence with the same uncultivated and feeble soul which he possessed at the moment of his death.

These *re-incarnations* in a human body may be numerous. They must repeat themselves until the faculties of the soul

are sufficiently developed, or until its instincts are sufficiently ameliorated and perfected for the man to be raised above the general level of our species. Then only the soul, purified and lightened of all its imperfections, can quit the earth, and after the death of the flesh soar into space, and pass into the new organism which succeeds that of man in the hierarchy of nature.

We must add, here, that the fate of children who die young, either while at the breast or only a few months old, before the soul has undergone any development, is analogous. Their souls pass into the bodies of other children, and re-commence a novel existence.



# CHAPTER THE FIFTH

## WHAT ARE THE ATTRIBUTES OF THE SUPERHUMAN BEING?—THE PHYSICAL FORM, SENSES, DEGREE OF INTELLIGENCE, AND FACULTIES OF THE SUPERHUMAN BEING

NOTWITHSTANDING the daring of such an attempt, let us now endeavour to form some idea of the radiant creatures which float in the mysterious and sublime regions of that empyrean which hides them from our view. Let us try to discern the attributes, form, and qualities of the superhuman being.

Like the human, the superhuman being possesses the three elements of the aggregate, the body, the soul, and the life. In order to gain some idea of him, we must examine each of these three elements separately.

*The Body of the Superhuman Being.*—We might perhaps conceive a superhuman being without a body; we might imagine that the soul, purely spiritual, constitutes the blessed dweller in ethereal space. But it is not thus that we do conceive him. Absolute immateriality appears to us to apply only to a being much more elevated in the moral hierarchy than the superhuman

one—a being of whom we shall speak hereafter. We believe that the inhabitant of the ethereal spaces has a body; that the soul, leaving its terrestrial dwelling, incarnates itself in a body, as it did here below. But this body must be provided with qualities infinitely superior to those which belong to the human body. First, let us inquire what the form of this body may be. The painters of the Renaissance, whom modern artists follow in this respect, give to the angel the form of a young and handsome man, furnished with white wings, which bear him through the air on his celestial missions. This image is both coarse and poetic. It is poetic because it responds to the idea which we have of the radiant creature who dwells in ethereal space; and it is coarse, because it gives to a being far superior to man the physical attributes of man, which is inadmissible.

Painters who, like Raphael, represent the angel by the head of a child, with wings, give a far more profound expression to the same thought. By suppressing the larger portion of the body, and reducing the seraphic being to the head, the seat of intelligence, they indicate that in the angel of the Christian belief the spiritual dominates, in immense proportion, over the material part.

We shall not be expected to delineate the form of the dwellers in the realms of ether. We can only say, that, as ether is an excessively subtle and rarefied fluid, it necessarily follows that the superhuman being who is to float and fly in its light masses, must be wonderfully light, must be composed of extraordinary subtle substances. A slight material tissue, animated by life,

a vaporous, diaphanous drapery of living matter, such do we represent the superhuman being to our fancy.

How is this body supported? Does it need food for its maintenance, like the bodies of men and of animals? We may reply with confidence that food—that tyrannous obligation of the human and the animal species—is spared to the inhabitants of the planetary ether. Their bodies must be supported and refreshed by mere respiration of the fluid in which they exist.

Let us consider the immense space occupied in the lives of animals by their need of alimentation. Many animals, especially those which live in the water, have an incessant need of food. They must eat always, without intermission, or they die of inanition. Among superior animals, the necessity for eating and drinking is less imperious, because the respiratory function comes to their aid, bringing into the body, by the absorption of oxygen and a small proportion of azote, a certain amount of reparative element, as a supplement to alimentary substances. Man profits largely by this advantage. Our respiration is a function of the highest importance, and it bears a great share in the reparation of all our organs. The oxygen which our blood borrows from the air in breathing, contributes largely to our nutrition. The respiratory function in birds is very active, and the organs which exercise it are largely developed, and in their nutrition also oxygen counts largely, and takes the place of a certain quantity of food.

It is our belief that the respiration of the ether in which

he lives, suffices for the support of the material body of the superhuman being, and that the necessity for eating and drinking has no place in his existence.

I do not know whether my reader forms an exact conception of the consequences which would result from the theory, that the superhuman beings whom we are contemplating are exempted from all need of food. Those consequences will be most readily comprehended, if we consider that it is the pressing obligation of procuring food which renders the lives of animals so miserable. Forced incessantly to seek their subsistence, animals are entirely given up to this grovelling occupation; thence come their passions, their quarrels, and their sufferings. It is much the same in the case of man, though in a less degree. The necessity for providing for the aliment of every day, the obligation of earning his daily bread—as the popular phrase has it—is the great cause of the labours and the sufferings of the human species. Supposing that man could live, develop himself, and sustain his life without eating—that the mere respiration of air would supply the waste of his organs—what a revolution would be effected in human society. Hateful passions, wars, and rivalries would disappear from the earth. The golden age, dreamed of by the poets, would be the certain consequence of such an organic disposition.

This blessing of nature, refused to man, assuredly belongs to the superhuman being. We may conclude also that the evil passions, which are a sad attribute of our species, would be unknown in the home of these privileged creatures. Released

from the toil of seeking their food, living and repairing their functions by the mere effect of respiration—an involuntary and unconscious act (as the circulation of the blood and absorption are unconscious acts in men and animals)—the inhabitants of the ethereal spaces must be able to abandon themselves exclusively to impressions of unmixed happiness and serenity.

The forces of our body become rapidly exhausted; we cannot exercise our functions for a certain time without experiencing fatigue. In order to transport ourselves from one place to another, to carry burthens, to go up or down any height, to walk, we are obliged to expend these forces, and lassitude immediately ensues. We cannot exercise the faculty of thought for more than a certain time. At the end of a short period attention fails, and thought is suspended. In short, our corporeal machine, beautifully ordered, is subject to a thousand derangements, which we call diseases.

From the sense of fatigue, from the continual menace of illness by organic derangement, the dwellers in the ether are free. Rest is not for them, as for us, a necessity ensuing on exercise. The body of the superhuman being, inaccessible to fatigue, does not need repose. Unembarrassed by the mechanism of a complicated machine, it subsists and sustains itself by the unaided force of the life which animates it. Its sole physiological function, probably, is the inhalation of ether, a function which, it is easy to conceive, may be exercised without the aid of numerous organs, if we see a whole class of animals—the Batrachian—for whose respiration the bare and simple skin suffices.



If we admit, that the only function which the superhuman being has to exercise is that of respiration, the extreme simplicity of his body will be easily understood. The numerous and complicated organs and apparatus which exist in the bodies of men and animals, have for their object the exercise of the functions of nutrition and reproduction. These functions being suppressed in the creature whom we are considering, his body must be proportionably lightened. Everything is reduced to respiration, and the preservation and maintenance of the faculties of the soul; all is in harmony with those ends. We admire, with good reason, the wise mechanism of the bodies of men and animals; but, if human anatomy reveals prodigies in our structure, marvellous provision in securing the preservation of the individual and his reproduction, what infinitely greater marvels would, if we were but permitted to study it, be revealed by the organization of the body of the superhuman being, in which everything is calculated to secure the maintenance and the perfection of the soul. With what astonishment should we learn the use and the purpose of the different parts of that glorious body, discover the relations of resemblance or of origin between the living economy of the human, and the living economy of the superhuman being, and divine the relations which might exist between the organs of the superhuman being and those which he should assume in another life, still superior, in which he should be the same being, again resuscitated in new glory and fuller perfection!

The special organization of the being whom we are describing would give him the power of transporting himself in a very short space of time from one place to another, and of traversing great distances with extraordinary rapidity. We are but simple human beings, and yet by thought we devour space, and travel, in a twinkling, from one end of the globe to another; may we not therefore believe that the bodies of superhuman beings, in whom the spiritual principle is dominant, are endowed with the privilege of passing from one point in space to another, with a rapidity which the speed of electricity enables us to measure?

The superhuman being, who does not require to eat or drink, or rest, who is always active, and incessantly sensible, has no need of sleep. Sleep is no more necessary for the reparation of his forces, than food for their creation. We know that man is deprived of one third of his existence, by the imperious necessity for sleep. A man who dies at thirty years of age, has in reality lived for twenty only; he has slept all the rest of the time! What a poor notion this conveys of the condition of man! Whence arises this need of sleep? It arises from the fact that our forces, impaired by their exercise, require inaction and motionlessness for their repair—this is attained in the kind of temporary death produced by the suspension of the greater portion of the vital action, in sleep. During sleep, man prepares and stores up the forces which he will require to expend during the ensuing period. He devotes the night to this physical reparation, as much in obedience to what he observes in all the other portions of creation, as in

obedience to the customs of civilization. But it is probable that all the forces of the superhuman being are inexhaustible, and that they do not require sleep, which is one of the hardest conditions of human existence. Everything leads us to believe that perpetual wakefulness is the permanent state of the superhuman being, and that the word "sleep" would have no meaning for him.

Darkness must be equally unknown to all those beings who float in the ethereal spaces. Our night and day are produced alternatively by the rotation of the earth upon her axis, a rotation which hides the sun from her view during one half of her revolution. This rotatory motion draws our atmosphere with it, but its influence extends no further, the ether which surmounts our atmosphere is not subject to it. That fluid mass remains motionless, while the earth and its atmosphere turn upon their axis. The superhuman beings, who, according to our ideas, inhabit the planetary ether, are not drawn into this motion. They behold the earth revolving beneath them, but, being placed outside its movements, they never lose sight of the radiant sun-star.

Night, we repeat, is an accidental phenomenon, which belongs to the planets only, because they have a hemisphere now illumined, and then not illumined by the sun; but night is unknown to the remainder of the universe. The superhuman beings, who people the regions far above the planets, never lose sight of the sun, and their happy days pass in the midst of an ocean of light.

Let us pass on to the consideration of the senses which these superhuman beings probably possess, premising:

1. That the superhuman being must be endowed with the same senses which we possess, but that those senses are infinitely more acute and exquisite than ours.

2. That he must possess special senses, unknown to us.

What are the new senses enjoyed by the superhuman being? It would be impossible to return a satisfactory reply to this question. We have no knowledge of any other senses than those with which we ourselves are endowed, and no amount of genius could enable any man to divine the object of a sense denied to him by nature. Try to give a man born blind an idea of the colour, red; and he will answer: "Yes, I understand! It is piercing, like the sound of a trumpet!" Try to give a man born deaf an idea of the sound of the harp, and he will answer: "Yes! It is gentle and tender, like the green grass of the fields!" Let us renounce, once for all, any attempt to define the senses with which nature endows the beings who people the ethereal plains; these senses belong to objects and ideas the mere notion of which is forbidden to us.

There is a well-known story of a man born blind, upon whom the famous surgeon Childesen operated. Having recovered his sight, the patient was a long time learning the use of his eyes; he was obliged to educate those organs, step by step, and by slow degrees to form his intelligence. Equally well known is Condillac's beautiful fiction, in which he imagines a man born into the world without the senses of sight, speech, and hearing,

and who is, therefore, destitute of ideas. By degrees, he is endowed with each of these senses, and the philosopher thus composes, bit by bit, a soul which feels, and a mind which thinks. This philosophical idea has been greatly admired. Like the man-statue of Condillac, we are only, while here below, imperfect statues, endowed with but a small number of senses. When, however, we shall have reached the superior regions destined to our ennobled condition, we shall be put in possession of new senses, such as our reason dimly perceives, and our hearts long for.

We cannot, as we have previously said, divine what the new senses which shall be granted to the superhuman being are to be, because they belong to objects and ideas of which we are ignorant, and to forms which are exclusively proper to worlds at present hidden from our eyes. The kingdom of the planetary ether has its geography, its powers, its passions, and its laws; and the new senses of men, resuscitated to that glorious existence, will be exercised upon those objects.

The only thing which we can safely prognosticate is that all the senses which we now possess will then exist in their full perfection—sight, hearing, touch, taste, and smell. It is allowable to deduce this process of future perfection by reasoning from the extraordinary development of certain senses in the case of animals.

The sense of smell is developed in the hunting dog to a degree which surpasses our imagination. How can we understand this

quite ordinary fact, that the dog perceives the scent which has emanated from a hare or a partridge which has passed by the place at which he is smelling many hours previously, and is now several leagues away! The perfection of sight in the eagle and other birds of prey astonishes us equally. These birds, floating at an immense height, see their prey upon the earth, creatures much smaller than themselves, and descend upon them without deviating from the perpendicular line of their flight. The bat, accidentally deprived of sight, supplies this deficiency so well by the sense of touch, by means of his membranous wings, that he guides himself through the air, and finds his way to the interior of human dwellings, as unerringly as if he had the full use of his eyesight. To such a degree of exquisite sensibility has the sense of hearing attained among native Indian tribes, that a man, laying his ear against the earth, will detect the tread of an enemy at the distance of a league. Among musicians, also, how must the sense of hearing be cultivated by a man, who, partly by a natural gift, and partly by practice, comes to be able to detect the most minute difference in the tone of one instrument among fifty different kinds, all played at once, in an orchestra. Supposing that the senses of the superhuman being should have acquired the degree of extraordinary activity which is common to animals, and, in certain cases, to man, we can form some estimate of the power and extent of such a sensorial system.

We can also arrive at some idea of the perfection of the senses attained by resuscitated man, by considering the accession

of power which our own senses may receive by the assistance of science and art. Before the invention of the microscope, no one ever imagined that the eye could penetrate the mysteries of that world in miniature well named the *Infinitely Little*, until then absolutely unknown; no one had ever divined, for instance, that in one drop of water might be seen myriads of living beings. These beings have existed throughout all time, but man has been able to contemplate them for only two centuries. Our visual power over microscopic beings was until then unknown. The least enlightened, the most careless student of this day, regards with indifference things which Aristotle, Hippocrates, Pliny, Galienus, Albertus Magnus, and Roger Bacon could not have contemplated, or even suspected to exist. The discovery of the telescope, in the days of Kepler and Galileo, hurled back the boundaries of the human intellect and threw open to its investigation a domain hitherto sealed from its sight. There, where Hipparchus and Ptolemy had seen nothing, Galileo, Huyghens, Kepler, made, in a few nights, by the aid of the telescope, discoveries of hitherto unsuspected celestial splendour. The satellites of Jupiter and Saturn, a multitude of new stars, the phases of Venus, and, at a later period, the discovery of new planets only to be seen by the telescope, the observation of spots on the sun, and the revolution of the nebulae into collections of stars, were the almost immediate consequences of the invention of the telescope. Thus we learned that, by the aid of art, the human eye can penetrate the most

distant regions of heaven.

Let us now suppose all the powers of the telescope and all those of the microscope concentrated in the sense of vision; that is to say, that in addition to all objects placed at ordinary distances, it can discern all microscopic objects, and at the same time all the celestial bodies invisible to the naked eye, and you will have an idea of what the sense of sight is, in the superhuman being.

There is no occasion to dwell upon the extraordinary proportions which our accumulated knowledge would assume, if our sight could enjoy those extraordinary powers of extension, if it could perform simultaneously the functions of the telescope and the microscope. Science would march forward with the tread of a giant. What enormous progress would be made by chemistry if our eyes could penetrate into the interior of all bodies, beholding their molecules, estimating their relative volume, their arrangement, and the form and colour of their atoms. A glance would reveal to us secrets of chemical solutions such as the genius of a Lavoisier could not penetrate. Physics would contain no further mysteries for us, for we should know, by simply using our eyes, everything which we are now painfully striving to divine by reason, and by the aid of difficult and uncertain experiments. We should *see* why and how bodies are warmed and acquire electricity. We should have the explanation of the mathematical laws in obedience to which the physical forces, light, heat, and magnetism are exercised. Our eyes would suffice for the solution



of those physical and mechanical problems before which the genius of such men as Newton, Malus, Ampère, and Gay-Lussac stands still.

We do not doubt that the superhuman being is endowed with sight thus marvellously perfect.

We might carry this argument out in detail, applying it to all the other senses, but enough has been said to illustrate the exaltation and perfecting of those senses which man possesses only in their rudiments, in the favoured dwellers in a superior sphere. We will only add, that the result of such a degree of perfection of the senses is, that the superhuman being can move with a rapidity, of which light and electricity only can give us some notion, that is to say, that these perfected senses can be used at great distances, and with great promptitude. If the entire body of the superhuman being can transport itself with wonderful rapidity from one place to another, as we have already admitted, his senses can also act from, and at great distances. We do not think we can err in comparing the actions of the dwellers in the invisible world which we presume to investigate, with the phenomena of light and electricity.

Does sex exist in the superhuman being? Assuredly not. The Christian religion defines its absence in the angel. The angel of the Christian creeds has the features of either man or woman, the mild face of a youth, or the pathetic beauty of a girl. Sex is suppressed, the individual is androgynous. Thus, too, it must be in the case of the superhuman being. The reciprocal affection

which reigns among the blessed dwellers in the ether does not require diversity of sex.

The affections undergo a purifying process, according as they are elevated, from those of the animals to those of man. The animals have but little of the sentiment of friendship. Love, with its material impulses, is almost all they know. The sentiments of affection possessed by animals, apart from their carnal instincts, reduce themselves to those of maternity, which are strong and sincere, but of short duration. Their young are the objects of attentive care and caresses while their helplessness demands such aid, but as soon as they can live on their own resources they are abandoned by the mothers, who no longer even recognize them. There is no constant, lasting affection in animals, except the sentiment of love, which is caused by their sexual necessities. The sentiments of affection entertained by man are numerous, and frequently noble and pure. We love our mothers and our sons as long as our hearts beat in our breasts. We love our brothers, our sisters, and our relations with a sentiment in which there is nothing carnal, and which is deeply rooted in the soul. If love is often inseparably attached to physical desires, it can, nevertheless, shake itself free from them, and a disinterested friendship frequently survives the extinction of sensual feeling. In this respect we are far superior to the animals. Let us go a step further, even to the supernatural being, the next link in the chain to ourselves, and we shall find the sentiment of affection entirely detached from the consideration of sex. In that sublime

and blessed realm which they inhabit, superhuman beings are all of the same organic type. They need not, in order to love one another, to belong to two opposite sexes, or different groups of organization: their tenderness is the result of the serenity of the infinite purity of souls, of the sympathy evoked by common perfections.

On the other hand, the ethereal region which awaits us is the scene of the reunion of those who have loved one another in this world. There the father will find the son, and the mother will rejoin the daughter, torn from each by death, there husbands and wives will meet, and the separation of friends come to an end. But, under their new form, in the perfected body wherein their regenerated souls shall dwell, there is no more sex, and love is for all an ideal, noble, and exquisitely pure sentiment.

How blind and self-interested is love here below! How narrow and egotistical a sentiment is friendship. It cannot enlarge itself without pain and difficulty, to embrace the totality of the human kind. Why is it so hard for it to lift itself up to the sublime Creator of the worlds? Why do we not love God as we love our neighbours? In the upper world it will be far otherwise. Our faculty of loving, limited here by fleshly bonds, will be set free there, from every sensual restraint. Man, resuscitated to glory, will love his wife as he loves his children, his friends, and his brethren. His affections will never more be degraded by his senses. The happiness which this purified sentiment, constantly received from ever living sources, will afford him, will suffice to

fill and satisfy his soul. His power of loving will be extended to all nature, it will be spread abroad over the most elevated spheres; his soul will be exalted by the sublime sensations of this universal love, this wide sympathy with the whole creation. True charity, comprehending the entire universe, will burn in all hearts. The love of God will rule over all these multiplied affections, from the height of His infinite power, and the fervour of our sentiments of love for our kind will be crowned by our sublime adoration of the Creator of all.

But, it will be said, if superhuman beings are of no sex, how are they to be reproduced, how is the species to be kept up, and multiplied? There will be no need of reproduction, the species of the superhuman being will not require to be maintained, or multiplied. The reproduction, the preservation of his species is the business of the inhabitants of the inferior worlds, of the earth and the planets. Such is their lot, such the task imposed upon them by nature. But reproduction is unknown and unnecessary to the fortunate beings who dwell in the planetary ether. From the earth and the other planets fresh and ever fresh phalanxes are despatched to them. The battalions of the elect are recruited by arrivals from the lower worlds. Below is the multiplication of individuals; above is the sojourn of blessed beings, who have no need of maintaining their species, because the laws of their destiny differ from those which rule the lot of terrestrial man. Reproduction is the task of inferior worlds, permanence is the inheritance of the world above.

*The Soul of the Superhuman Being.* In an excellent volume of popular science, the *Universe*, by Dr. Pouchet, director of the Museum of Natural History at Rouen, we find a striking definition. Dr. Pouchet informs us that a German naturalist, Bremser, lays down, as a principle, that, in man, matter and spirit exist in almost equal parts; that is, to say, that man is half spirit and half matter. Bremser, in advancing this proposition, takes his stand upon the fact that, in man, it is sometimes spirit which governs and subdues matter, and sometimes matter which dictates laws to spirit, with equal power and success on the side of each.<sup>3</sup>

Admitting, with the German philosopher, that this relation is

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<sup>3</sup> "We must consider," says Bremser, "that man is not a spirit, but only a spirit limited, in different ways, by matter. In a word, man is not a god, but, notwithstanding the captivity of his spirit in his corporality, it retains sufficient freedom to enable him to perceive that he is governed by a spirit more exalted than his own, that is to say, by a God." "It is to be presumed, in the supposition that there will be a new creation, that beings far more perfect than those produced by preceding creations will see the light. In the composition of man, spirit holds to matter the proportion of fifty to fifty, with slight occasional differences, because it is now matter, and again spirit which predominates. In a subsequent creation, should that which has formed man not prove to be the last, there will apparently be organizations in which spirit will act more freely, and be in the proportion of seventy-five to twenty-five." "It results from this consideration that man, as such, was formed at the most passive epoch of the existence of our earth. Man is a wretched intermediary between animal and angel, he aspires to elevated knowledge, and he cannot attain to it; though our modern philosophers sometimes think so, it is really impossible. Man wishes to make out the primary cause of all that exists, but he cannot get at it. With less intellectual faculty, he would not have had the presumption even to desire to know these causes; and, if he were more richly endowed, they would have been clear to him."—*L'Univers*, pp. 760-761.

true, we would say, that, while in man the proportion of the soul is fifty in one hundred, this proportion, in the superhuman being, is undoubtedly from eighty to eighty-five in one hundred. Of course we only employ this valuation to make our idea comprehensible, and give these figures only to prove that facts in the intellectual order may be submitted to weight, measure, and comparison, all which the world supposes to be impossible.

The soul has a preponderating share in the superhuman being. That is what we need to know, and to remember. Let us now endeavour to analyze the soul of the superhuman being, as we have analyzed his senses.

If the senses of the superhuman being are numerous and exquisitely acute, the faculties of his soul, which are intimately allied to the exercise of the senses, and depend on their perfection, must also be singularly active and powerful. We know that in men the faculties of the soul are feeble and limited. We have so short a time to pass upon the earth, that very powerful faculties would be of no use to us; they would not have time to be developed, or efficaciously employed. But everything is magnified and elevated in the superior world which awaits us; consequently the faculties of the thinking creature who inhabits the realms on high must be numerous and of vast extent.

We must repeat, concerning the faculties of the soul of the superhuman being, what we have just said concerning his senses. The superhuman being must be provided with new faculties, and also those faculties which he has brought with him from the

earth must be singularly perfected. To determine the nature and the object of the new faculties bestowed upon the superhuman being would be impossible, because those faculties belong to the superior world which is unknown to us; they respond to moral wants of which we have no conception. Let us, therefore, renounce all idea of discovering the nature of those new faculties, and content ourselves with examining the degree of perfection which may be attained by those faculties of the soul which actually belong to man.

Attention, thought, reason, will, and judgment, all which render us what we are, must acquire special force and sureness in the superhuman being. La Bruyère has said that there is nothing more rare in this world than the *spirit of discernment*; which means that judgment and good sense are excessively rare. When we have lived for a while among men, we recognize how thoroughly well founded the saying is. We may safely assert, without being over-misanthropical, that among a hundred men there will be not more than one or two possessed of sound judgment. In the majority of instances, ignorance, prejudices, and passion contend with judgment, so that, as La Bruyère says, good sense is much more rare than pearls and diamonds. This great and precious faculty of judgment, in which the majority of human beings are deficient, cannot be wanting in the inhabitants of the other world; there it must be the universal rule, here it is the exception.

The most precious of all faculties, enabling us to form large

and lofty ideas and comparisons, whose outcome is knowledge, is memory. But how imperfect, changeable, weak, and, one may say, sickly, is our memory! It is absolutely mute respecting the whole period which preceded our birth, and during which, nevertheless, we existed. It is also as silent respecting all that concerns the early portion of our life. We retain no recollection of the care which was lavished upon our childhood. A child who loses its mother in infancy has never known a mother; for it, the mother has never existed. If those who saw us in the cradle did not recount our actions during that period, we should be entirely ignorant of them. We have to witness the successive stages of infancy, the sucking child, the long clothes, the staggering steps, the little go-cart, in order to realize that we too have been like that infant, have gone through those stages of being. Memory, which is not developed at all in man until he is a year old, and which becomes extinct in old men, is subject, even when it is at its highest point of activity, to innumerable weaknesses, caused by illness or the want of exercise, so that in fact our hold of this faculty is always precarious. We cannot doubt that in the other life it will have the power, the certainty, and scope which it lacks here below.

At the same time, our memory will be enriched by a number of new subjects. The soul, beholding and understanding the worlds which surround it, will be able to fix the geography of all those different places in its memory. It will know the physical revolutions, the populations, and the legislation of these thousand



countries. The superhuman being will know what exists in such planets and their satellites as come within his reach, or as he shall visit. Just as, in order to gain information, we visit America or Australia, so the superhuman being visits Mars or Venus, and furnishes his memory with millions of facts, which it retains and reproduces at will. What immense power must memory, always supplied and always ready at call, bestow on the mind and reason!

Languages are only the expression and the assembling of ideas. Condorcet has said that a science always reduces itself to a well-constructed language. The mathematical sciences employ a language which is perfect, because the science of mathematics is perfect. The language spoken in the planetary spaces must be perfect, because it expresses all the knowledge of superhuman beings, and this knowledge is immense. The more the mind knows, the better it expresses:—the superhuman being, who is highly informed, will have a very expressive language, which will also be universal.

The language of mathematics is understood by the peoples of both hemispheres. Algebra can be read by a Frenchman or a German, as well as by an Australian or a Chinese, on account of the simplicity and perfection of the conventional signs which it uses. The language of mathematics, which is truly universal, makes us infer that the language spoken in the planetary space must be also universal, and common, without distinction, to all the inhabitants of the ethereal worlds.

Owing to the immense scope of their faculties, and to

the perfection of their language, in itself a certain means of increasing and exalting their knowledge, superhuman beings have a power of reasoning, and a clearness of judgment, which, added to the immense number of facts stored in their memory, place them in possession of absolute science. Arduous questions, before which the mind of man humbly confesses its powerlessness, or which drive him mad if he persists in the effort to solve them, such as the thought of the Infinite, the idea of the First Cause of the Universe, the Essence of Divinity, all these problems, forbidden to us, are easily accessible to these mighty thinkers. He who is regarded by mankind as a genius of the first order, an Aristotle, a Keppler, a Newton, a Raphael, a Shakespeare, a Molière, a Mozart, a Lavoisier, a Laplace, a Cuvier, a Victor Hugo, would be among them a babbling child. No science, no moral idea is above their conception. Beneath their feet rolls the earth, with the splendid train of the planets, its sisters; they behold the planets of our solar system gravitating in harmonious order round the great central star, which deluges them with its light. From the height of their sublime abode they witness the infinitely various spectacles furnished by the elemental strife of our poor globe, and those which resemble it; and, happier than terrestrial humanity, they admire the works of God, while knowing the secret of their mechanism. In the moral order they have penetrated the great *Wherefore!* They know why man exists, and why they themselves exist. They know whence they come, and whither they are going; and we, alas!

know neither. Where, to our eyes, there is only confusion, they perceive harmony and order. The designs of God are distinctly apparent to them, and also the events of the lives of nations and individuals, which often seem to us cruel, unjust, and bad on the part of God; but they understand that these events are just and useful, and worthy of our heartfelt gratitude.

We also think, that in the ethereal spaces time is an element which does not count. We believe this, because time does not exist for God, and all superhuman beings approach, by their perfections, the entirely spiritual nature, and consequently approach God. We are confirmed in this belief by the fact, that very profound grief resists time, that there is no limit in duration to the great blows struck at the human soul, that the loss of a beloved being is felt as keenly after a long interval as when he was taken away.

Thus, time, which is everything to man, which is not only, according to the English adage, "money," but is also the instrument of our wisdom, our studies, and our attainments—far otherwise precious than money—time does not count in the life of the superhuman being. He awaits, without impatience and without suffering, the arrival of the beings whom he has loved and left upon the earth at his peaceful abode; and when their re-union takes place, he and they enjoy happiness which no inquietude concerning the future can ever trouble. Enabled to despise, to put aside the idea of time, the superhuman being looks on with unutterable serenity, tranquillity, and majesty, at

the majestic spectacle, always new and always marvellous, of the revolutions of the stars, and the great movements of the universe.

*The Life of the Superhuman Being.*—In completion of our speculation upon the attributes of the superhuman being, we shall consider the life which animates him and gives his body its active qualities.

We have said that, in our belief, the superhuman being proceeds from the soul of a man which has domiciled itself afresh, in a new body, in the bosom of the world of ether. Is this body destined, at the end of a more or less prolonged period to perish, to be dissolved, to restore its elements to matter, as they are restored by the human body? Shall life be withdrawn from the body of the superhuman being, and shall the soul take flight thence?

We believe that it will be so. Life everywhere implies death, and is its necessary term. We do not cast anchor in the current of the waters of life. If the soul of the superhuman being resides in a living body, this body must die, and its material elements must return to the common reservoir of nature. The torch of life is extinguished in the spaces, as it is extinguished upon earth.

We believe the superhuman being to be mortal. After an interval, whose duration we shall not attempt to fix, he dies; and the soul which dwelt within him escapes, like a sweet perfume from a broken vase. What becomes of the soul which has torn itself away from the body, cold in death? We shall seek after the answer to this question in our next chapter.



# CHAPTER THE SIXTH

## WHAT BECOMES OF THE SUPERHUMAN BEING AFTER DEATH?—DEATHS, RESURRECTIONS, AND NEW INCARNATIONS IN THE ETHEREAL SPACES

IN the living nature which surrounds us, there is a continually ascending scale of gradual perfection, from the plant to man. Taking mosses and algæ, which represent the rudimentary condition of vegetable organization, as our point of departure, we pass on through the whole series of the perfecting processes of the vegetable kingdom, and we reach the inferior animals, zoophytes and mollusca. From thence we ascend to the superior animals by insensible degrees, and thus fully attain to man. Each step of this ladder is almost imperceptible, so finely arranged are the transitions and the shades; so that there is a really infinite chain of intermediate beings, at one end of which are the algæ, and at the other ourselves. And yet we think it possible that between us and God there should be no kind of intermediate being! that in this scale of continual progress, there should be an immense void between man and the Creator! We think it possible that all nature, from the lowest vegetable to mankind,

should be arranged in successive and innumerable degrees, and that between man and God there should exist only a desert, an immeasurable hiatus. Evidently, this is impossible, and that such an error should ever have been countenanced by religion and philosophy is only to be explained by ignorance of natural phenomena. It is impossible to doubt that between man and God, as between the plant and the animal, the animal and man, there exist a great number of intermediate creations, which establish the transition of humanity into the divinity which governs it, in infinite power and majesty.

That these intermediate beings exist, we are certain. They are invisible to us, but, if we refused to admit the existence of everything which we cannot see, we should be very easily refuted. Let a naturalist take a drop of water from a pond, and, shewing it to an ignorant person, tell him, "this drop of water, in which you do not see anything, is filled with little animals, and with miniature plants, which live, are born and die, like the animals and plants, which inhabit our farms." The ignorant person would probably shrug up his shoulders, and consider the speaker crazy. But if he were induced to apply his eye to the magnifier of a microscope, in order to examine the contents of the drop of water, he must acknowledge that the truth had been told him; because, in this drop of water, in which he could at first see nothing, his eye, when assisted by science, would discern whole worlds.

A great number of living beings can therefore exist where we

see nothing, and it is feasible to science to open the eyes of the multitude in this respect.

We desire to assume the position of the naturalist of whom we have spoken. Between man and God, the ignorant crowd and a blind philosophy perceive nothing; but, when we replace the eyes of the body by those of the spirit, that is to say, when we make use of reason, analogy, and education, these mysterious beings come to light.

We have already, in studying the superhuman being, described one of those intermediate creations between man and the divinity, and defined the existence of one of those landmarks placed by nature on the high-road of infinite space. But the ladder does not break off at its first step, and we are convinced that numerous living hierarchies intervene between the superhuman being and the radiant throne of the Almighty. We have said elsewhere, that, in our belief, superhuman beings are mortal. What becomes of them after their death? Let us now take up the thread of our deductions.

We believe that—the superhuman being having died at the end of a term whose duration we have no means of knowing—his soul, perfected by the exercise of the new faculties which it has received, and the new senses with which it has been endowed, enters into a new body, provided with senses still more numerous and more exquisite, and endowed with faculties of still greater power, and thus commences a fresh existence.

We call the being who succeeds to man *angel*, or superhuman;



we may call his succession in the ethereal realm, *arch-angel*, or *arch-human*.

The actual moment of the passage from one life to another, must be, as it is in the case of man, a time of moral and physical pain. The supreme periods at which a metamorphosis takes place in a sensible being are crises full of anguish and torment.

We will not endeavour to penetrate the secrets of the organization of the new being whose existence we thus trace, and who is superior to the superhuman being in the natural hierarchy; because our means of investigation fail us at this point. We have ventured to form some conjecture respecting the body, the soul, and the life of the superhuman being, because in that case, however adventurous our excursion into unknown spheres, we had a point of comparison and induction in the human species. But all induction respecting the arch-human being who succeeds the superhuman, is wanting, for we could only perceive the latter by means of conjectures and analogies which we must not carry farther.

We will, therefore, abstain from pursuing this kind of investigation, permitting the reader to exercise his own imagination upon the form of the body, the number and perfection of the senses, and the extent of the faculties of the happy creature who succeeds to the superhuman being, and who dwells, like him, in the immensity of ethereal space. We will only add that we do not think a second, a third, or a fourth incarnation arrests the succession of the chain of sublime creations, which

float in the infinitude of the heavens, and which proceed from a primitive human soul, which has grown in perfection and in moral power. It surpasses our faculty to define, by the unassisted light of our reason and our knowledge, the number of these beings who go on succeeding one another in ever-increasing perfection. We can only say that we believe the creatures, which compose this ladder of perfections in succession, must be very numerous.

At every stage of his promotion in the hierarchy of nature the celestial being beholds the growth of those wings which symbolize his marvellous power to us. Each time his organs become more numerous, more flexible, have greater scope. He acquires new and exquisite senses. He acquires more and more power of extending his beneficent empire, of exercising his faculty of loving his fellows and all nature, and, above all, of comprehending and reading the designs of God. Deeper and deeper affections engage his soul, for the tenderness and the happiness engendered in its pure satisfaction, are granted to him to console him for the sufferings of death, to which he is always condemned. It is thus that the happiness of the elect is augmented. It is thus that the beings who inhabit the boundless plains of the invisible world employ each of their lives in preparing for the life which is to follow, in securing by a wise exercise of their freedom, industrious culture of their faculties, strict observance of morality, and continuous beneficence, a more noble, more animated, and happier destiny in the new

spaces which await them, in the development of their sublime destiny.<sup>4</sup>

Nevertheless, as everything comes to an end in this world, so must everything have an end in the surrounding spheres. After having traversed the successive stages and rested in the successive stations of their journey through the skies, the beings whom we are considering must finally reach a defined place. What is this place, the ultimate term of their immense cycle across the spaces? In our belief, it is the sun.



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<sup>4</sup> On this subject see the book of Dupont de Nemours, *"Philosophie de l'Univers,"* quoted by M. Pezzani in his *"Pluralité des existences de l'âme,"* pp. 216-218.

# CHAPTER THE SEVENTH

## PHYSICAL AND GEOGRAPHICAL POSITION OF THE SUN

ACCORDING to our system of thought the sun is the central place in which souls which come from the ethereal spaces are finally gathered together. After having undergone the successive incarnations which we have described, souls, primitively human, finish by reaching the sun, by dwelling within the borders of the star-king.

This, then, is a fitting place for a description of the sun from the physical and astronomical point of view. Such a description will at once reveal the entirely sovereign part played by that globe which has no fellow. The astonishing attributes which belong to it, the unimaginable power which it wields, will sufficiently explain the place at the summit of the ascending scale of nature, which we assign to the sun.

In the first place, the sun is totally different from the other stars of our world. He resembles nothing, and nothing can be compared with him. Neither planets, satellites, asteroids, nor comets can give us any idea of him. His immense volume, his physical constitution, his exceptional properties place him in a

totally separate rank, and afford full justification to those who claim for him a separate and sovereign place.

The enormous mass of the sun at once proclaims his supremacy. The sun is sufficiently vast to receive everything which could come to him from all the other planets. He surpasses in volume the united size of all the celestial bodies which revolve around him. He is six hundred times larger than the entire assemblage of the planets with their satellites, of the asteroids and the comets which compose what is called the solar world; that is to say, the world of which we form a part. The proportion in which the sun exceeds the earth in volume is, then, necessarily enormous; since he is larger than all the other stars put together. He is *one million three hundred thousand* times larger than our globe.

It is only by drawing that we can give an exact idea of the comparative sizes of the sun and the other planets. The reader will find in the accompanying illustration (Fig. 1) a figure which exactly represents the comparative dimensions of the sun, and the largest planets of our world. The earth, represented by a dot, gives an idea of what Mars, Mercury, and Venus, which are smaller than the earth, must be.

It takes three years to circumnavigate the earth. To circumnavigate the solar globe, under similar conditions, would take three hundred years. If human life be not more prolonged in the sun than on the earth, an existence would not suffice to enable a traveller to become acquainted with the surface of the

globe he inhabits.

# THE SUN



Jupiter



Saturn



Uranus



Neptune

Earth

## Fig. 1.—Comparative Dimensions of the Sun and the Planets.

Weight is thirty times more intense on the surface of the sun than on the earth. We know that a body which falls upon the earth traverses, in the first second of its fall, a space of four metres, nine centimetres. In the sun a falling body traverses 144 metres in the first second of its fall. It follows from this, that a human body, if transported to the sun, would weigh about 2000 kilogrammes, the weight of an elephant. The body of a dog or of a horse would weigh twenty-eight times as much as upon our earth, so that these animals would remain fixed to the surface. The conditions of nature must therefore be entirely different in the sun from what they are in the group of planets to which the earth belongs.

The sun sheds rays from perpetual fire, a characteristic that appertains to him alone among all the stars of our world. Of himself he burns, and sheds abroad light and heat. The other stars are neither warm nor luminous, and if the sun did not exist, they would be plunged into eternal darkness and eternal cold. This privilege alone ought to make us comprehend the immense importance of the central star.

The light and heat which emanate from the sun are constant; they are never interrupted, and they never lose their force. Thus, a second characteristic—constancy of illumination—separates the sun from all the other celestial bodies of our world.

The intensity of the real heat of the sun has been measured by the physicists. This result was attained in an endeavour to



determine by experience the quantity of heat which accumulates in a given time, upon a certain portion of the earth's surface, exposed to the sun's rays, and adding to that element the quantities of heat which would be absorbed by the atmospheric air, the ethereal spaces, and the soil.

Pouillet, the French physicist, who undertook this critical investigation, arrived at certain results, which he states as follows:

"If the total quantity of heat emitted by the sun was exclusively employed to melt a layer of ice applied to the solar globe, and covering it completely in all its parts, that quantity of heat would be able to melt, in one minute, a layer of eleven metres, eighty centimetres, and in one day a layer of seventeen kilometres in thickness."

"'This same quantity of heat,' says Professor Tyndall, 'would boil 2900 milliards of cubical kilometres of water, at the temperature of ice.'"

The astronomer Herschel found, that, in order to extinguish the sun, to prevent his "giving out caloric," according to the scientific phrase, it would be necessary to dash a stream of iced water, or a cylindrical column of ice, eighteen leagues in diameter, against its surface, at a rate of speed of 70,000 leagues per second. A comparison adopted by Professor Tyndall gives us an amazing view of the intensity of the calorific force of the sun. "Imagine," says he, "that the sun is surrounded by a layer of peat, seven leagues in thickness, the heat produced by its combustion would be the same as that produced by the sun in one year."

The physicists have measured the intensity of the sun's light with exactitude, as they had previously measured his heat.

It is known that the solar light is 300,000 times stronger than that of the full moon, and 765,000,000 stronger than that of Sirius, the most brilliant of the stars.

Bouguer discovered, by experiments made in 1725, that the sun, at a height of  $31^{\circ}$  above the horizon, gives a light equal to that of 11,664 candles, placed within 43 centimetres of the object to be lighted, and equal to 62,177 candles placed within one metre.

According to this result, if we take account of atmospheric absorption, and of the law of the variation of the intensity of light, which decreases in inverse ratio to the square of distance, the light given by the sun at its zenith would be 75,200 times greater than that of a single candle, placed within one metre. Wollaston had arrived at a similar conclusion. By means of experiments of another kind, made during the months of May and June, 1799, Wollaston found that 59,882 candles, at one metre, give as much light as the sun. Supposing the sun to be in the zenith, the lightening power of that great star would be equivalent to 68,009 candles.

There is but little difference between this valuation and that of Bouguer, who states the result at 75,200 candles.

Whatever may be the intensity of the light of the sun, we now possess other sources of light which approach to it. Such is the oxyhydric light, produced by burning hydrogen gas by means of a current of oxygen gas, or air, a method of lighting

which has recently been employed in Paris and in London. This light is equal in power to more than 200 candles. A thread of magnesium burning in the air, develops a prodigious quantity of light, which may be taken as equivalent to that of 500 candles. The electric light produced by a voltaic battery of from 60 to 80 coils, produces a luminous arc equal to the light of 800 or 1000 candles. In the latter instance the voltaic arc, according to Bouguer and Wollaston, would give 75 times less light than the sun, supposing the luminous electric point to be placed at a distance of one metre.

With very powerful batteries, it has been possible to go further, and produce a light not much inferior to that of the sun. Messieurs Fizeau and Foucault, by comparing the light of a voltaic arc, produced by the action of three series of Bunsen's coils, of forty-six couples each, with the light of the sun in a clear sky in April, have established that the light-giving power of the sun is not more than twice and a half that of the electric light.

The preceding numbers represent the light-giving power of the sun upon our globe, taking into account atmospheric absorption. Arago, on endeavouring to determine the intrinsic light-giving power of the sun, found that the intensity of the solar light is 52,000 times greater than that of a candle placed at one metre. But, according to more recent researches for which we are indebted to Mr. Edmond Becquerel, the result obtained by Arago is greatly inferior to the truth, and the light of the central star is 180,000 times greater than that of a candle placed at one metre.

All the planets, attended by their satellites, and all the comets which accidentally manifest themselves to us, turn round the sun. The sun remains motionless in the midst of this imposing procession of stars, which circulate around him, like so many courtiers paying him homage.

Thus, the sun is the heart of our planetary system; everything is drawn, everything converges towards him.

Half-informed persons will exclaim, "What can be more simple! The sun being six hundred times the size of all the other stars put together, the phenomenon of the condition of all those stars around the sun is explained by the law of attraction, which prescribes that bodies shall attract in proportion to their mass. If the sun attracts the stars of our world to itself, it is because his mass is greater than that of all the other stars collectively." But such an answer would be erroneous, involving the common error of taking a word for a thing, an hypothesis for an explanation, of putting a term of language in the place of a logical consideration. When Newton conceived the hypothesis (and the phrase) of *reciprocal attraction of matter*, he was careful to state that he only proposed to characterise by a name a phenomenon which in itself is entirely inexplicable, and of which we know nothing but the exterior mode of its manifestation, that is to say, the mathematical law. We know that bodies go towards each other in the ratio of their masses, and in the inverse ratio of the square of their distances; but why do they go towards each other? This is what we do not know, and what we probably never shall

know. If, for the word *attraction* we were to substitute the word *electrization*, or, as Keppler did, the words *affection*, *sympathy*, *obedience*, &c., we should have a new hypothesis, with a new name, but the mathematical law would remain the same, the hypothesis only would be changed. The real cause which makes small bodies rush towards large ones, and the stars of lesser magnitude revolve round the stars of greater magnitude, is an impenetrable mystery to mankind.

Whatever may be the hypothesis by which we seek to explain the fact, it is certain that the sun holds the planets with their satellites, the asteroids and the comets, suspended above the abysses of space, and that they journey through the heavens in unintermitting obedience to his guiding influence. The sun draws with him all the stars which follow and surround him, like flatterers of his power, like humble slaves of his universal preponderance. Like the father of a family in the midst of his progeny, the sun peacefully governs the numerous children of sidereal creation. Obedient to the irresistible impulsion which emanates from the central star, the earth and the other planets circulate, roll, gravitate, around him, receiving light, heat and electricity from his beneficent rays, which are the first agents of life. The sun marks out for the planets their path through the heavens, and distributes to them their day and night, their seasons and their climate.

The sun is, then, the hand which holds the stars above the unfathomable abysses of infinite space, the centre from which

they obtain heat, the torch which gives them light, and the source whence they derive the principle of life.

From all time the immense and unique task fulfilled by the sun in the economy of nature has been understood. But this great truth has only been deeply studied in our days. Science has gone far beyond all the imagination the poets had conceived relative to the preponderance of the sun in our world. By means of numerous experiments and abstruse calculations, modern physicists have proved that the sun is the first cause of almost all the phenomena which take place on our globe, and that, without the sun, the earth and no doubt all the other planets would be nothing but immense wastes, gigantic corpses, rolling about, frozen and useless, in the deserts of infinite space.

Professor Tyndall, who has added largely to the discoveries of physics and mechanics, has brought out this truth very strongly, and the results to which he has been led may be said to form the most brilliant page of contemporary physical science.

We shall now endeavour to explain how it is that everything on the earth, and no doubt on all the other planets also, is derived from the sun, so entirely, that we may affirm that vegetables, animals, man, in short, all living beings, are but the productions, the children of the sun; that they are, so to speak, woven out of solar rays.

In the first place, the sun is the primary cause of all those movements which we observe, in the air, in the water, or in the ground under our feet, and which keep up life, feeling, and

activity on the surface of our globe.

Let us consider the winds, which have such important relations with all the physical phenomena of our globe. Whence proceed the winds? From the action of the sun. The sun heats the different portions of the earth very unequally, bestowing much more warmth on the tropical and equatorial regions than on the other latitudes, which he leaves exposed to cold. On each point of the earth which is struck by the rays of the sun, the layers of air near the ground are dilated and raised, and immediately replaced by colder layers from the temperate regions. Thus the periodical winds are produced. Across the hemispheres two great aërial currents are perpetually blowing, going from the equator to each of the poles; one, the upper current, towards the north-east in the northern hemisphere, and towards the south-east in the southern hemisphere; the other, the lower current, in a contrary direction.

The movement of the earth gives rise to other regular winds. The action of heat and of evaporation, added to the unequal distribution of the continents and the seas, produce others, which are irregular. Thus, for example, in the great valleys of the Alps, as in those of the Cordilleras, the warmth of the air regulates the afflux of the cold air of the mountains, and brings on tumultuous winds, and, in fact, hurricanes.

The sea breezes arise from the difference in the temperature of the shore during the day and the night. By day, the sun has warmed the shore and produced a considerable dilatation of the air. When the sun quits the horizon, this hot air is replaced by

cool currents from the inland. The same phenomenon is reversed in the morning, when the sun returns; the shore is warmed, the hot air rises, and is replaced by the colder air of the sea, which then goes inland. Thus, the evening breeze comes from landward, and the morning breeze from seaward.

We see, therefore, that the great atmospheric movements which we call the winds, are due to the successive appearances and disappearances of the sun, as are also the lesser movements which we call breezes. The position of the sun, constantly varying according to the period of the year, and the hour of the day, explains the inequality and the continuous existence of the aërial current.

The general cause of the winds which preserve the homogeneity of the air in all the terrestrial regions, is the heat of the sun dilating the atmospheric air; its absence, on the other hand, causes that gaseous mass to contract.

The *watering of the globe*, that is to say the rain, an element indispensable to the exercise of life, is another consequence of solar heat. The waters of the seas, the rivers, and the lakes, those which steep the soil, or are exhaled from vegetable matter, are gradually transformed into vapour by the action of the sun's heat, and form clouds and invisible vapour. When the sun has quitted the horizon, these vapours grow cold in the bosom of the atmosphere in which they floated, and fall down upon the earth again in the form of dew, of fog, and of rain.

When the cooling of the watery vapour in the bosom of



the atmosphere is more intense, instead of rain we have snow, that is to say, a fall of congealed water. It is chiefly on the summit of mountains that snow falls and accumulates, because the temperature of elevated places is always cold. In very great altitudes the snow, remaining for long periods on the tops of the mountains, passes into an intermediate condition, between snow and pure ice, and ends by forming those great expanses of congealed water which are called glaciers. During the hot seasons the glaciers melt by degrees; the water resulting from this melting process, flows down the slopes of the mountains into the valleys, and gives rise to springs, rivers, and streams. These streams and rivers run into the ocean, from which they are again evaporated by the action of solar heat, and reconstitute clouds and invisible vapour.

Thus is established and maintained that incessant circulation of the waters which lie on the surface of the earth, their continual exchange with the ærial masses, whose effect is to water the globe, a phenomenon necessary to the exercise of the functions of organized beings.

The regular currents which furrow the waters of the ocean are also the result of the action of solar heat. From the poles to the equator the waters of the sea are unequally heated, and this absence of equilibrium in the temperature of the sea occasions a regular furrow, or line from the poles to the equator, resulting from the displacement of the waters, the cold waves rushing in to replace the hot. The unequal evaporation caused by the

unequal distribution of heat at the equator and the poles, concurs to produce a similar result, by augmenting the degree of saltness at the equator, without augmenting it at the poles, occasioning a certain difference in density, and finally displacement for want of equilibrium. The currents of the sea are thus entirely produced by the action of the sun.

We see, therefore, that the winds, the watering of the globe, and the currents of the sea are the consequence of solar heat.

The movement of the magnet is another physical result of the action of the sun, if it be true, as Ampère says, that the magnetic currents which traverse the terrestrial globe are nothing but *thermo-electric* currents engendered by the unequal distribution of heat on the surface of the globe.

In addition to being the agent of powerful physical forces, the sun is a valuable agent of chemical forces,—indeed, this is the greatest part which he plays in the phenomena of nature. The light and heat of the sun produce the most important chemical actions on the earth's surface; those on which the exercise of vegetable and animal functions depend. If the sun did not exist, life would be banished from the terrestrial globe. Life is the child of the sun, as I shall endeavour to prove to you.

The operations of photography serve to make us understand how it is that the sun presides over chemical action in the vegetable world. What is photography? What does that curious phenomenon which fixes a drawing formed by light upon a sheet of paper, consist of? A paper steeped in chloride or iodide of

silver is placed in the focus of the lens of a dark camera, and the image formed by the lens is made to fall upon paper sprinkled with water. The portions of the picture not exposed to light produce no effect upon the salt of silver, which is incorporated with the paper, but the portions exposed to light decompose the salt of silver, and turn it black, or dark violet colour. On withdrawing this paper from the apparatus, where the operations have been carried on in darkness, we have a drawing which reproduces, in black, the luminous image formed by the lens. By certain means this image, solely produced by the chemical action of light, is rendered fixed and unalterable.

All the salts of silver thus exposed to light undergo an analogous decomposition. Nor are they the only salts which light modifies. Compounds of gold, platinum, and cobalt, properly prepared, may also be altered under the influence of direct or indirect rays, when exposed to the sun, or to his diffused light.

The light of the sun possesses the power of bringing about the combination of several other bodies. This is the case with hydrogen and chloric gas. If you mix equal parts of chloric gas and hydrogen in a bottle, and expose the mixture to the sun, an immediate combination will take place between the two gases, and chlorohydric acid gas will be formed. The combination will take place with so much force that it will be attended by a considerable escape of heat. If you throw the bottle containing the mixture up into the air, towards a space where the sun is shining, the bottle will break before it falls, with a violent

explosion, at the moment of its contact with the light.

We might multiply examples of the chemical action produced by light only on substances belonging to the mineral kingdom, but it is sufficient for our purpose to say that the chemical action of light is still more powerful and more general in the vegetable than in the inorganic realm. This is a phenomenon of such importance that it is impossible to believe it otherwise than a premeditated design of nature.

One of the most fruitful discoveries of modern science is the recognition of the fact, that the respiration of plants depends upon the presence and the direct action of light, that is to say, that the decomposition of the carbonic acid which circulates in the tissue of vegetables, and which has been breathed up from the soil by the roots, takes place only when the plants are exposed to the sun. The labours of Priestley, Charles Bonnet, Ingenhouz and Sennebier, have taught us that the decomposition of carbolic acid into carbon, which remains fixed in the tissue of the plant, and into oxygen, which disengages itself from it, can take place only under the direct or indirect influence of the sun's rays. Our readers may easily convince themselves of this fact. Place a handful of green leaves in a glass full of water, and expose the glass to the sun. At the close of the day the upper portion of the glass will be filled with gas, which is nothing but pure oxygen, the result of the breathing of the leaves.

All the importance, all the value of such a phenomenon will be evident, if we reflect that it takes place over the whole extent

of the globe, and that the respiration, which means the life of all the vegetable masses which cover the earth, depends solely upon the light of the sun. It is by means of the respiration of the plants, which restores oxygen to the atmospheric air, that nature makes up for the withdrawal of oxygen by the respiration of animals, by the continual absorption of that gas by numerous mineral substances, and by the frequent combustions, natural and artificial, which occur in the world. The result of these combustions would be the disappearance of the greater portion of the oxygen contained in the air, if there did not exist a permanent machinery for the restitution of that oxygen. This permanent machinery is the respiration of plants, produced by solar light. So absolute is the dependence of plants for their respiration on the action of the sun's light, that if it be intercepted by clouds, the escape of oxygen from them suffers a marked diminution. If the light of the sun be suddenly stopped, which occurs during a total solar eclipse, the escape of oxygen ceases, and the plants transpire carbonic acid only, as they always do during the night.

It is for this reason that a plant kept in complete darkness loses its colour, and becomes white. It does not respire, it emits carbonic acid gas without retaining carbon, it becomes etiolated, according to the scientific phrase, which means that the plant no longer lives at the cost of the external air, or of gas furnished by the soil, but consumes its own substance. The whitened salads which we prefer are not green only because they are grown in

darkness, and the mushrooms brought to table are white only because they are reared in cellars.

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