

URANIE

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BY
CAMILLE FLAMMARION

TRANSLATED FROM THE FRENCH BY

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ARTIST," "DRAGON TEETH," "PEPITA XIMENEZ," ETC.

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CAMILLE FLAMMARION.

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URANIE.

FIRST PART.

THE MUSE OF HEAVEN.

I.

DREAM OF YOUTH.

I WAS seventeen. She was called Uranie. Was Uranie, then, a young girl, fair, with blue eyes, innocent, but eager for knowledge? No, she was simply what she has always been, one of the nine muses; she who presided over astronomy, and whose celestial glance animated and directed the spheral choir; she was the heavenly idea hovering above earthly dullness; she had neither the palpitating flesh, nor the heart whose pulsations can be transmitted through space, nor the soft warmth of humanity; but she existed, nevertheless, in a sort of ideal world, superior to humanity, and always pure; and yet she was human enough in name and form to produce in the soul of a youth a vivid and profound impression; to awaken in that

soul an undefined and undefinable sentiment of admiration: almost of love.

The young man whose hand has not yet plucked the divine fruit of the tree of knowledge, whose lips have remained pure, whose heart has not yet spoken, but whose senses begin to awaken in the midst of a sea of new aspirations, has a premonition in his hours of solitude—and even in the midst of the intellectual labors with which our modern system of education overtaxes his brain,—has a premonition, I say, of the divinity at whose shrine he shall one day worship, and personifies beforehand, under varying forms, the charming ideal which floats in the atmosphere of his dreams. He desires, he longs to embrace this unknown being, but does not yet venture, may never venture, perhaps, in his naïve admiration for her, to do so, unless some favoring chance comes to his assistance. If Chloe is not learned enough, the indiscreet and curious Lycenion must undertake to instruct Daphnis.

Whatever speaks to our souls of the as yet unknown attraction has power to charm, to strike, to allure us. The cold representation in an engraving of the pure oval of a perfect face, a picture of some goddess, it may be a statue—above all a statue—awakens a strange emotion in the heart; the blood rushes on or seems to

pause in its course ; an idea flashes like lightning through the brain, flushing the brow, to remain floating vaguely in the dreamy soul. This is the beginning of love, the beginning of life, the dawn of a beautiful summer day, heralding the rising of the sun.

As for me, my first passion, the passion of my youth, had—not for its object, indeed, but for its determining cause—a clock ! This may seem strange enough, but it is true, notwithstanding. Calculations of an uninteresting character filled all my afternoons from two till four o'clock : it was my task to correct the observations of the stars and planets made on the previous night, by applying to them the reductions due to atmospheric refraction, which itself depends upon the height of the barometer and the temperature. These calculations are as simple as they are tiresome ; they are made mechanically by the aid of tables already prepared, while the thoughts may be occupied at the same time by something altogether different.

The illustrious Le Verrier was, at that time, director of the Observatory of Paris. Although he was by no means artistic in his tastes, he had, in his study, a fine gilt-bronze clock of the time of the First Empire, the work of Pradier. The pedestal of this clock represents in bas-

relief the birth of astronomy in the plains of Egypt. A massive celestial sphere, encircled by the zodiac and supported by sphinxes, surmounted the dial. But the beauty of this artistic work consisted, above all, in a ravishing statuette of Uranie—noble, elegant, I might almost say, majestic. The celestial Muse was represented standing. With her right hand she measured, by the aid of a compass, the degrees on the starry sphere; her left hand, falling by her side, held a small telescope. Superbly draped, her attitude was noble and, as I have said, majestic. I had never yet seen a face as beautiful as hers. With the light falling upon it, from the front, it looked grave and austere; falling upon it obliquely, it looked pensive. But if the light came from above or from the side, this charming countenance was illuminated by a mysterious smile, its look became almost caressing; its former serenity gave place to a gracious and joyful expression that it was a delight to contemplate. It was as if some melody were being chanted within. These changeful expressions seemed to endow the statue with life. Goddess and Muse, she was beautiful, she was enchanting, she was adorable. Whenever I had occasion to visit the famous mathematician, it was not the thought of his world-wide fame that was most present to me.

I forgot the formulas of logarithms, and even his immortal discovery of the planet Neptune, to yield myself up to the spell of the work of Pradier. That beautiful form, so admirably modeled under its antique drapery, the graceful poise of the head, the expressive face, attracted my gaze and enchained my thoughts. Often, when, at about four o'clock we left the office to return to Paris, I would peep through the open door to see if the director were absent from his study. Mondays and Wednesdays were the best days; the former because of the sessions of the Institute, at which he never failed to be present, the latter on account of those of the bureau of longitude, which he shunned with the most profound disdain, and which made him purposely leave the Observatory the better to manifest his contempt. Then I would take up my stand in front of my beloved Uranie. I would gaze at her at my ease. I was enraptured with the beautiful outlines of her figure, and I would go away each time more satisfied, but not happier, than the last. She charmed me, but she left me regrets.

One evening—the evening on which I discovered the changes her countenance underwent according to the direction from which the light fell upon it—I had found the study door

wide open, a lamp, which stood upon the chimney-piece, causing the figure of the Muse to appear in her most seductive aspect. The oblique light played softly on her forehead, her cheeks, her lips and her throat. The expression was marvelous. I drew near and stood motionless for a time, contemplating her; then it occurred to me to change the position of the lamp, so as to make the light fall upon her shoulders, her arm, her neck and her hair. The statue seemed to live, to think, to move, even to smile. Singular sensation, strange feeling! I was in truth enamored of her; my admiration for her had changed to love. I should have been very much surprised at the time if any one had said to me that this was not a genuine passion, that this platonic affection was nothing more than a childish dream. The Director entered, but he did not seem so surprised at my presence in his study as I had feared (people often passed by the door in going to the Observatory). But just as I replaced the lamp upon the chimney-piece: "You are rather late for Jupiter," he said. And as I crossed the sill: "Are you by chance a poet?" he added with an air of profound disdain, dwelling with an accent of contempt upon the final syllable.

I might have answered him by mentioning

the names of Kepler, Galileo, d'Alembert, the two Herschels, and other illustrious savants who were at the same time poets and astronomers. I might even have reminded him of the first Director of the Observatory, Jean Dominique Cassini who sang the praises of Uranie in Latin, French and Italian verse. But the students of the Observatory were not in the habit of answering the remarks of the Senator-Director. The senators at that time were important personages and the director of the Observatory was appointed for life. And besides, our great geometrician would, beyond a doubt, have regarded the most wonderful poem of Dante, Ariosto, or Victor Hugo with the same disdain as a fine Newfoundland dog might regard a glass of wine, set before him for his delectation. And then, I was incontestably in the wrong.

This enchanting face of Uranie, with all its delightful variety of expression, how it haunted me! How gracious was her smile! And her eyes of bronze had in them, at times, an expression that was truly life-like. Nothing was wanting but speech. On the following night, scarcely had I fallen asleep, when I saw before me the majestic figure of the goddess, and this time she spoke to me.

She was actually alive! And what a lovely

mouth. I could have kissed it at every word she uttered. "Come," said she to me, "come with me to the skies—up, far up above the earth. You shall see at your feet this lower world, you will contemplate the immensity of the universe in all its grandeur. Stay, behold!"

II.

THE MUSE OF HEAVEN—JOURNEY AMONG SYSTEMS AND WORLDS—UNKNOWN FORMS OF HUMANITY.

THEN I beheld the earth sinking into the yawning abyss of immensity. The cupolas of the Observatory, Paris, blazing with light, vanished swiftly from my gaze, while I seemed to be motionless. The sensation I experienced was like that which one feels who is ascending in a balloon, and sees the earth below sinking out of sight. For a long time I continued to ascend, carried on in my magical flight toward the inaccessible zenith. Uranie was at my side, a little above me, regarding me with an expression of sweetness on her countenance, as she pointed out to me the kingdoms beneath us. Day had dawned. I recognized France, the Rhine, Germany, Austria, Italy, the Mediterranean, Spain, the Atlantic Ocean, the British Channel, and England. But all these geographical divisions of the earth, already of Liliputian size, grew smaller every moment. Soon the

terrestrial globe was reduced to the apparent dimensions of the moon in her last quarter, then to that of a diminutive full moon.

"Behold!" she said to me, "this famous terrestrial globe, on which so many passions contend, and which holds within its narrow bounds the thoughts of so many millions of beings, whose vision does not extend beyond it. See, how its apparent size diminishes in proportion as our horizon broadens. We can no longer distinguish Europe from Asia. See Canada and North America. How insignificant it all appears!"

In passing near the Moon I had observed the mountainous tracts of our satellite, its peaks glittering with light, its deep valleys shrouded in shadow, and I would have liked to pause, in order to examine more closely this neighbor planet, but Uranie, disdaining to cast a single glance at it, drew me on with her in rapid flight toward the starry regions.

We continued to ascend. The Earth growing smaller and smaller to our gaze, as we left it beneath us, soon looked like a star, shining by the reflected light of the sun in the black void of immensity. We had turned our course toward the Sun, that shone in the depths of space without lighting it up, and at the same time that we saw the Sun, we saw the stars and

planets that his rays did not eclipse, because they did not communicate their light to the invisible ether. The celestial goddess pointed out to me Mercury near to the Sun, Venus shining on the opposite side, the Earth, resembling Venus, both in general appearance and in brilliancy; Mars, whose inland seas and streams I recognized; Jupiter, with his four enormous moons; Saturn, Uranus.

"All these worlds," she said to me, "are sustained in space by the attraction of the sun, around which they swiftly revolve. They are a harmonious choir revolving around a common center. The Earth is but a floating island, a hamlet in this great solar country, and this solar empire is itself only a province in the depths of infinite starry space."

Still we ascended. The Sun and his system rapidly disappeared from view; the Earth was now only a point in space; Jupiter itself, that colossal world, diminished in size like Mars and Venus, until it looked scarcely larger than the Earth.

We passed in sight of Saturn, girdled by his gigantic rings, which alone would suffice to prove the immense and inconceivable variety that reigns in the universe—Saturn, a veritable system by himself, with his rings formed of atoms thrown off in a rotation of vertiginous

velocity, and with his eight satellites, accompanying him like a celestial cortege!

In proportion as we ascended, our sun diminished in size. Soon he sank to the magnitude of a star, then he lost all majesty, all superiority over the sidereal world, seeming himself neither larger nor more brilliant than a star. I gazed at these starry fields of space in which we continued ascending, and tried to recognize the constellations. But they had begun to change their forms perceptibly, owing to the difference of perspective, resulting from my flight through these regions. I thought I saw our sun now, reduced to the size of a star of the smallest magnitude, join the constellation of the Centaur, while a light—pale, blue and unfamiliar—came from the regions toward which Uranie was carrying me. This brightness in no wise resembled terrestrial light; it was like nothing I had seen and admired in the scenery of the Earth, either in the changeful shades of twilight after a storm, or the formless vapors of the morn, or the reflection cast by the rays of the moon in the calm and silent hours of night on the burnished mirror of the sea. This is perhaps what that strange light most nearly resembled, but by degrees it became more and more blue, not with the reflected blue of heaven, or by the force of contrast, as when

electric light is brought into proximity with gas-light; but blue, as if the sun that was its source were blue. What was my astonishment when I perceived that we were, in fact, approaching a sun absolutely blue, looking like a brilliant disk cut out of our most beautiful terrestrial skies, and standing out brightly against a background entirely black, besprinkled with stars!

This sapphire sun was the center of a system of planets which received their light from it. We were soon to pass close by one of these planets. The blue sun grew perceptibly larger, but by a new change no less strange than the former one, the light cast from it on the planet had at times a tinge of green. I looked at the sky again, and perceived a second sun, this time of a beautiful emerald green! I could not believe my eyes.

"We are traversing," said Uranie to me, "the solar system of Gamma of Andromeda, of which you can as yet perceive but a part, because it is composed in reality, not of these two suns only, but of three: a blue sun, a green sun and a yellow-orange sun. The blue sun, which is the smallest, revolves around the green, and this, with its companion, revolves around the great orange sun, which you are now about to behold."

And in fact, as she spoke, I saw a third sun

appear in the heavens, glowing with this vivid color, its rays mingling with those shed by its two companions, and producing, by the contrast, a singular effect. I recognized, indeed, this curious sidereal system, as I had more than once observed it through the telescope; but I had had no conception of its actual splendor. What intensity of light! What dazzling brightness! What vividness of color was there in this wondrous fountain of azure light, in the green radiance of the second sun, and in the tawny gold brilliance of the third!

But we were now close, as I have said, to one of the worlds belonging to the system of the sapphire sun. Everything on it was blue—the landscape, the water, the plants, the rocks slightly tinged with green on that side where the rays of the second sun fell, and scarcely touched by the rays of the orange sun now rising above the far horizon. As we entered the atmosphere of this world, strains of ravishing sweetness filled the air like a perfume, like music heard in a dream. I had never before heard anything resembling it. It seemed to come from a distant orchestra of harps and violins, whose tones were sustained and prolonged by the deep notes of the organ. It was an exquisite melody which charmed the ear at once, which did not need to be analyzed

in order to be understood, and held the soul captive. I felt as if I could have listened to it forever. I dared not address a word to my guide, so much did I fear to lose a single note. Uranie perceived this. She stretched forth her arm toward a lake that was to be seen upon the planet, and pointed out to me with her finger, a group of winged creatures hovering above its blue waters.

They had not the human form of our earth. They were beings evidently organized to live in air. They seemed made of light. Seen from afar, I had taken them at first for dragon-flies; they had the same slender and graceful forms as these, the same large wings, the same vivacity and lightness. But on observing them more nearly, I took note of their size, which was not inferior to ours, and I saw from the expression of their eyes that they were not animals. They resembled dragon-flies in their heads as much as their other members, and like those aerial beings, they had no legs. The enchanting music I had heard was only the sound produced by their wings in flight. There was a very large number of them—several thousands, perhaps.

On the summits of the mountains were to be seen plants, which were neither trees nor flowers, whose fragile stems rose to an enormous height, spreading out at the top into

branches that looked like extended arms, bearing large tulip-shaped cups. These plants were endowed with life—at least as much as, if not more so than, our sensitive plant. Like the *Desmodie*, with its mobile leaves, they revealed their inward impressions by their movements. These groves were veritable plant cities. The inhabitants of this world had no other dwellings than these thickets, and it was among these fragrant sensitive plants that they reposed when they were not floating in the air.

“This world seems fantastic to you,” said Uranie, “and you ask yourself what can be the thoughts of these beings, what can be their manners, what their history, what species of art, of literature, of science, can they possess? It would take a long time to answer all the questions you might ask. Let it suffice you to know that their eyes are more far-seeing than our most perfect telescopes; that their nervous systems vibrate at the passage of a comet, and that from the impressions transmitted to them through electric currents they discover facts which you upon the earth will never know. The organs you see under their wings take the place of hands more skillful than yours. Instead of printing, events are with them recorded by direct photographic impressions, and their very words phonetically fixed.

For the rest, they occupy themselves only in scientific researches—that is to say, in the study of nature. The three passions which fill up the largest part of life on the earth, the eager desire for wealth, political ambition and love are unknown to them, because they need nothing to sustain life, have no political divisions, nor any other government than a council of administration, and because they are androgynes."

"Androgynes!" I returned. Then I ventured to add, "Is that better?"

"It is different," she answered. "It spares the race many serious troubles."

"It is necessary to detach one's self entirely," she continued, "from the sensations and the thoughts of earth, to be able to comprehend the infinite diversity manifested by the different forms of creation. Just as on your planet species have changed from age to age, from the strange beings of the earliest geological periods to the time of the appearance of man; so that now, even the animal and vegetable species of the earth are composed of the most diverse forms; from man to the coral, from the bird to the fish, from the elephant to the butterfly; thus, but over an extent incomparably more vast, the forces of nature have given birth in the innumerable abodes of the sky, to an

infinite diversity of beings and substances. The forms of the beings of each world are the result of the elements peculiar to it, such as the substance of which it is composed, its heat, light, electricity, density and gravity. The forms, the organs, the number of the senses—of which you have but five, and those not very perfect ones—depend upon the conditions of life peculiar to each sphere. Life is terrestrial on the earth, martial on Mars, saturnian on Saturn, neptunian on Neptune—that is to say, adapted to its surroundings, or rather, to be more correct, produced and developed by each world, according to its organic state and in consonance with a primordial law which all nature must obey: the law of Progress."

While she was speaking, my glance had followed the flight of the aerial beings toward the city of flowers, and I had seen with amazement the plants move, raising or lowering themselves to receive their guests; the green sun had sunk below the horizon and the orange sun ascended higher in the heavens; the landscape was lighted up by a strange splendor, above which floated a moon of enormous size, half orange and half green. Then the melody that filled the atmosphere ceased, and in the midst of the profound silence that ensued, I heard a song chanted by a voice so clear and

sweet, that no human voice could bear comparison with it.

"What a wondrous system must it be," I cried, "of which a world like this, lighted by splendors so marvelous, forms a part! These then, are the double, triple and multiple stars seen near."

"These stars are resplendent suns!" responded the goddess. "United in the gracious bonds of a mutual attraction, you on the Earth behold them cradled two by two, in the bosom of the skies, always beautiful, always bright, always clear. Suspended in the infinity of space, they mutually sustain without touching each other, as if their union, moral rather than material, were governed by an invisible and superior power, and following harmonious curves, they gravitate in rhythm, the one around the other; celestial pairs come into existence in the spring time of Creation, in the starry fields of space. While suns, simple as yours, shine starry, motionless, tranquil, in the deserts of Immensity, the double and multiple suns seem to animate by their movements, their color and their life, the silent regions of the eternal void, these starry timepieces mark for you the ages and the eras of other universes. But," she added, "let us continue our journey. We are only a few trillions of leagues distant from the Earth."

"A few trillions?"

"Yes. If we could hear at this distance the noises of your planet, its volcanoes its cannonades, its thunders, the vociferations of the mob in times of revolution, or the pious songs of the Churches as they rise toward Heaven, so distant from it are we that, granting these noises could traverse space with the rapidity of sound, it would take no less than fifteen millions of years for them to arrive here. We could hear now only what passed on the earth fifteen million years ago.

"Yet, compared with the immensity of the Universe, we are still very near your country. You can still recognize your Sun, a little star there below. We have not yet emerged from the universe to which, with its system of planets, it belongs.

"This universe is composed of myriads of suns separated the one from the other by trillions of leagues.

"Its extent is so great that a flash of lightning with a velocity of three hundred thousand kilometres a second, would take fifteen million years to traverse it.

"And on all sides, wherever we direct our gaze, are suns; everywhere sources of heat and of life; suns of inexhaustible variety; suns of every degree of brilliancy, of every degree of

magnitude, of every age, sustained in the luminous ether of the eternal void, by the mutual attraction of all, and by the movement of each ; every individual star, an enormous sun, revolves around itself like a globe of fire. Each has its goal. Your sun moves and carries you with it toward the constellation of Hercules ; the sun whose system we have just traversed moves to the south of the Pleiades. Sirius rushes toward Columba, Pollux toward the Milky Way. All these millions, all these myriads of worlds rush through space with a velocity two, three, and four hundred thousand metres a second ! Action it is, that sustains the Universe in equilibrium, that gives it its organization, its energy and its life."

III.

INFINITE VARIETY OF BEINGS — DIFFERENT METAMORPHOSES.

WE had long since left the tricolor system behind us in our flight. We passed near a great number of worlds very different from my earthly home. Some of them seemed to me to be entirely covered with water, and peopled by aquatic beings; others peopled solely by plants. We passed near several of them. What unimaginable variety.

On one among them, all the inhabitants seemed to me especially beautiful. Uranie informed me that their organization is altogether different from that of the children of the Earth, and that on those planets the human being perceives the physico-chemical operations which take place in the sustenance of the body. In our earthly organism, for instance, we do not see how the food which is taken assimilates; how the blood, the tissues and the bones are renewed; all these functions are automatically performed without the senses perceiving them. Thus it is that we suffer a thousand ailments whose origin is hidden, and

often undiscoverable. Thus the human being feels the operations of the vital forces as we feel a pleasure or a pain. From each molecule of the body, so to speak, proceeds a nerve which transmits to the brain the various impressions it receives. If the terrestrial man were endowed with a similar nervous system, he could, by turning his glance inward, see by the medium of his nerves, how food is transformed into chyle, this into blood, and blood into flesh, muscles, nerves, etc.; he would behold himself. But we are far from this; the vital centre of our perceptions being embarrassed by the many nerves of the lobes of the brain and the optic thalamus.

On another sphere which we passed during the night, that is to say, by its nocturnal hemisphere, the inhabitants are so formed that they are luminous, that they glow as if some phosphorescent emanation radiated from this strange source of light. A nocturnal reunion composed of a large number of persons, presents a truly fantastic appearance, because the light, as well as the color of the eyes, changes according to the diverse passions by which they are animated. In addition to this, the power of these glances are such that they exercise an influence both electric and magnetic of varying intensity and, in certain cases,

fatal, causing the victim on whom they are fixed with sufficient concentration of purpose, to fall dead.

A little further on my celestial guide pointed out to me a world of which the inhabitants enjoy a valuable faculty ; the soul has the power to pass into another body without undergoing death, which is often disagreeable and always sad. A savant who has spent his whole life laboring for the instruction of humanity, and who sees his end approach without being able to complete his noble tasks, may change his body for that of a young man, and begin a new life, still more useful than his former one. To effect this transmigration the consent of the youth and magnetic treatment by a competent physician are all that is necessary. One also sees, at times, two beings united by the bonds of a strong and sweet affection, effect a similar change of body after several years of union ; the soul of the husband comes to dwell in the body of the wife and vice versa, for the remainder of their existence. The intimate experience of life becomes incomparably more complete for each of them. We also see savants, historians for instance, desirous of living two centuries instead of one, plunge themselves into the fictitious sleep of an artificial hibernation, which suspends animation in them for the half of

each year, or even longer. Some succeed in prolonging life in this way to twice the length of the normal life of a centenarian.

A few seconds later, passing through another system, we encountered another species of beings entirely different from, and incontestably superior, to ours. With the inhabitants of the planet which we now had under our eyes, a world lit by a brilliant hydrogenized sun, it is not necessary for thought to be put into words to make itself understood. How often does it happen to us when some bright or ingenious idea visits our mind, to find it dissipated, vanished, obscured, or altogether changed before we have been able to express it in writing or in speech. The inhabitants of this planet have a sixth sense, which might be called autotelegraphic, by virtue of which, when the thinker is not opposed to it, thought transpires, and may be read upon an organ which very nearly takes the place of our forehead. These silent conversations are often the most profound and the most precious; they are always the most sincere.

We are innocently disposed to believe that the human organization, as it is on the Earth, leaves nothing to be desired. Yet, have we never regretted being obliged to listen against our will, to disagreeable words, to an absurd dis-

course, an inflated sermon, bad music, slander, or scandal! It is in vain for philosophers to pretend that we can close our ears to such sounds. Unhappily this is not the case. You cannot close your ears as you close your eyes. Here then is a hiatus. I was very much surprised to see a planet where Nature had not forgotten to attend to this detail. As we paused there for an instant Uranie pointed out to me that the ears of these beings closed like eyelids. "Here," she said, "there are fewer angry quarrels than on your planet, but political dissensions are much more bitter, as the contending parties close their ears effectually to the arguments of the opposite side, in spite of the efforts of the most eloquent lawyers to make them hear."

On another world, where phosphorus plays an important part, where the atmosphere is always charged with electricity when the temperature is very high, and of which the inhabitants have scarcely found it necessary to devise clothing, certain passions manifest themselves by the illumination of a part of the body. Here takes place, on a large scale, what passes on a small one on our earth, when, on a mild summer night we see the glow-worms burning silently with an amorous flame. It is curious to watch the appearance of these luminous pairs in the

evening in the large cities. The color of the phosphorescence differs according to the sex, and its intensity varies according to age and temperament. The sterner sex burns with a red flame, more or less brilliant, and the gentler with a bluish flame, at times pale and mild. Only our glow-worms could form any idea, rudimentary indeed, of the nature of the feelings of these peculiar beings. I could not believe my eyes when we passed through the atmosphere of this planet; but I was still more surprised on arriving at the satellite of this singular world. It was a moon alone in the skies, on which a perpetual twilight reigned. Before us lay a somber valley. From the trees, growing on either side of this valley, were suspended human beings enveloped in shrouds. They had fastened themselves to the branches by the hair, and slept there in the midst of the most profound silence. What I had taken for shrouds was a tissue formed by the prolongation of their bleached and bristly hair. As I showed surprise at such a situation, Uranie told me that this was their manner of disposing of the dead, and awaiting a resurrection. Yes, on this world the inhabitants enjoy the faculty possessed by those insects which have the power of falling asleep in the chrysalis state, to emerge from it winged butterflies. Here

there is, as it were, a second stage of being, and those in the first phase, the lowest and most material, aspire only to die in order that they may come to life again by a glorious metamorphosis. Each year of this world is equal to about two hundred terrestrial years. Its inhabitants pass two-thirds of the year in the lowest condition, the remaining third—the winter—in the chrysalis stage, and in the following spring those who are hanging to the trees feel life insensibly returning to their transformed flesh. They move, awaken, leave their locks hanging to the tree, from which they detach themselves, wonderful winged beings, and fly away into the aerial regions, to live there another Phenician year—that is to say, two hundred of our terrestrial years.

We traversed thus a great number of planetary systems, and it seemed to me that all eternity would not be long enough to enable me fully to enjoy the spectacle of all these creations unknown to the earth; but my guide left me scarcely the time to be conscious of this feeling, and we proceeded to visit new suns and new worlds. We had almost come in contact in our journey with several transparent comets, which passed like a breath from one system to the other, and more than once I felt the desire to pause at wonderful planets, with verdant

landscapes, of which the inhabitants would have been new subjects for study. The celestial Muse, however, unwearied, drew me on ever higher, ever farther, until at last we came to what seemed to be the outskirts of the Universe. The suns became more rare, less luminous, paler. The nights grew darker among the stars, and soon we found ourselves in the bosom of a veritable desert, the myriads of stars which constitute the Universe, visible from the earth, having withdrawn from view, reduced to a diminutive milky way, isolated in the infinite void.

"Here we are at last, then," I cried to myself, "at the uttermost verge of Creation."

"Behold!" she responded, pointing to the zenith.

IV.

INFINITY AND ETERNITY—TIME, SPACE AND LIFE—CELESTIAL HORIZONS.

WHAT, could I believe my eyes! Another universe was descending toward us! Millions and millions of suns grouped together, a new celestial archipelago, moved in space, opening to our view like a vast cloud of stars, as we ascended. I sought to fathom with my gaze the depths of immensity around us, and everywhere, on all sides, I perceived similar gleams of light, similar clouds of stars.

The new universe, into which we had entered, was composed principally of red, ruby and garnet suns; many of them were actually the color of blood. Our passage here was like a flash of lightning. We passed swiftly from sun to sun, but incessant electrical flashes reached us, like the lights of an Aurora Borealis. What strange habitations were these worlds illuminated solely by red suns! Then, in one of the districts of this universe, we beheld a secondary group, composed of a great number of red and blue stars. Suddenly, an enormous comet, of which the head resembled a colossal mouth, rushed

toward us and enveloped us completely. I clung with terror to the side of the goddess, who, for an instant, disappeared from my view in a luminous mist; but we met again in a starless desert, for this second universe had withdrawn from our view like the former one.

* * * * *

"Creation," she said to me, "is composed of an infinite number of distinct universes, separated the one from the other by abysses of nothingness."

"An infinite number?"

"The objection of a mathematician," she responded. "Without doubt a number, however large it may be, can never be, actually infinite, because it is always possible to the thought to augment it, two, three, or even a hundred fold. But, remember that the passing moment is only a door through which the future hurries toward the past. Eternity is without end, and the number of universes will also be without end. Behold! still new suns, always and everywhere, new archipelagoes of celestial islands, new universes."

"It seems to me, oh, Uranie! that we have been for a long time, and with great swiftness, ascending a heaven without bounds."

"We might ascend thus forever," she replied: "Never would we reach a definite limit."

We might journey into it, to the left, to the right, onward, backward, down, in any direction whatsoever, without ever reaching any frontier.

"Never, never should we reach the end. Knowest thou where we are? Knowest thou what road we have traveled over?"

"We are—in the vestibule of the Infinite, as we were upon the Earth. *We have not advanced a single step!*"

* * * * *

An overwhelming emotion had taken possession of my mind.

The last words of Uranie had penetrated to the marrow of my bones, causing a cold shudder to pass over me. "Never should we reach the end! never! never!" I repeated; and I had speech or thought for nothing else. Nevertheless, the magnificence of the spectacle before us again attracted my gaze, and my amazement gave place to enthusiasm.

"Astronomy!" I cried. "That is everything! To understand! To understand these things! To live in the Infinite! Oh, Uranie! What are all other human thoughts compared to science? Shadows, phantoms!"

"Ah!" she said, "you will re-awaken upon the Earth, you will admire again, and with reason, the science taught by your masters; but know that the astronomy of your schools and

of your observatories, the beautiful science of Newton, of Laplace, of Le Verrier, is not yet an exact science.

"That, oh my son, is not the aim I have had in view since the days of Hypparchus and of Ptolemy. Behold, those millions of suns, similar to that which gives life to the Earth, and like it, sources of movement, activity and splendor; well, those are the subjects of the science of the future—the study of *universal and eternal life*. Until that day arrives, no one has entered into the temple. Figures are not an end, but a means; they do not describe the edifice of Nature, but the scaffolding, the methods employed in building it. You are going to witness the dawn of a new day. Mathematical astronomy will give place to physical astronomy, to the true study of Nature.

"Yes," she added, "those astronomers who calculate the apparent movements of the stars in their passage each day to the meridian; those who announce the coming of eclipses, of celestial phenomena, of periodical comets; those who observe so carefully the exact positions of the stars and planets on the different degrees of the celestial sphere; those who discover comets, planets, satellites, stars that appear and disappear; those who investigate and

define the perturbations caused in the movements of the Earth by the attraction of the moon and of the planets ; those who dedicate their vigils to the discovery of the primordial elements of the system of the world—all those, whether observers or calculators, are the precursors of the new astronomy. Theirs are great labors, labors worthy of admiration : transcendent works which bring into play the highest faculties of the mind. But mathematicians and geometricians belong to the army of the past. Henceforward the heart of the savant will beat for still nobler victories. All those great minds in studying the heavens, have not in reality left the Earth. The end of astronomy is not to show the apparent position of points of light, nor to calculate the gravity of masses of matter moving through space, nor to announce the coming of eclipses, the phases of the moon or the tides. All this is very well, but it is not enough.

“ If life did not exist upon the Earth, that planet would be altogether devoid of interest for any thinking being whatsoever ; and one can apply the same reflection to all the worlds that gravitate around the millions of suns peopling the depths of space. Life is the end of all creation. If there were neither life nor thought, everything that exists would be as if

it did not exist and never had existed. You are destined to witness a complete transformation of science."

"Universal life!" I said. "Are all the planets of our solar system inhabited, then? Are the myriads of worlds that people infinite space inhabited? Do the beings that live upon them resemble those of our planet? Shall we ever know each other?"

"The period during which you live upon the Earth, the entire duration even of terrestrial humanity, is but a moment of eternity."

I did not comprehend this answer to my questions.

"There is no reason," added Uranie, "why all the worlds should be inhabited now. The present period is of no more importance than those which have preceded and those which are to follow it.

"The duration of the Earth's existence will be much longer, ten times longer, perhaps, than that of the period during which it shall be inhabited by man. Of a dozen worlds taken at random from among those that people space, we should, perhaps, find but one, for instance, to illustrate the case, inhabited at the present time by an intelligent race of beings. Some were inhabited in the past, others will be so in the future; the latter are

in the preparatory stage: the former have already passed through all their phases. Here are cradles, there are tombs. And then an infinite variety is revealed in the manifestations of the forces of Nature. Terrestrial life being in no sense the type of life outside the earth. Beings may live and think organized altogether differently from those of your planet. The inhabitants of the other worlds have neither your form nor your senses. They are altogether different. The day will come, and very soon, since you are destined to behold it, when this study of the conditions of life in the various parts of the universe will be the essential object and the chief charm of astronomy. Soon, instead of occupying themselves merely with the distance, the movement, the material mass of your neighboring planets, for instance, your astronomers will study their physical condition, their geographical aspects, their climatology, their meteorology; they will solve the mystery of the conditions of life upon them, and will extend their investigations to their inhabitants. They will find that Mars and Venus are at present peopled by thinking beings; that Jupiter is still in the primary stage of organic formation; that Saturn revolves under conditions altogether different from those which reigned at

the beginning of life upon the Earth, and that, never passing through a state analogous to that of the Earth, it will be inhabited by beings of entirely different organizations from those of the Earth. New methods will make known the physical and chemical constitution of the stars and the nature of their atmospheres. More perfect instruments will afford the means of discovering direct proofs of the existence of these planetary beings, and make it possible to think of holding communication with them. Such will be the changes in science that will mark the end of the nineteenth century and usher in the twentieth."

I listened, entranced, to the words of the celestial Muse, that threw a light altogether new on the future of astronomy, and filled me with an ever-growing enthusiasm. I saw before me the innumerable worlds that roll in space, and I comprehended that the true end of science was to make us acquainted with those distant universes, to bring us into living contact with those immense horizons. The beautiful goddess continued :

"Still more elevated will be the mission of astronomy, when she has brought home to your hearts and minds the fact that the Earth is but a city of the celestial country, and Man

a citizen of the heavens; she will go still farther. In revealing the plan of the construction of the physical universe, she will show that the moral universe is based upon the same plan, that both these worlds form but one world, and that spirit governs matter. What she has done for space she will do for time. When you have learned to appreciate the immensity of space, and have recognized the fact that the same laws reign everywhere, and make of the vast universe a unity, you will learn that all the ages of the past and of the future are one with the present, and that thinking nomads will live eternally through successive and progressive transformations; you will learn that there are intelligences incomparably superior to the greatest minds of terrestrial humanity, and that everything progresses toward supreme perfection; you will learn also that the material world has but an apparent existence, and that the reality underlying it is a force imponderable, invisible and intangible.

"Astronomy will then be preëminently and above all the guide of philosophy. From those who reason without a knowledge of the facts revealed by astronomy, the truth will remain hidden. Those who are guided by her light will attain to a solution of the great problems

of Nature. Astronomic philosophy will be the religion of superior minds.

"You are destined to witness," she added, "this two-fold transformation of Science. When you quit the terrestrial world, this Science of Astronomy, which you now so justly admire, will be altogether changed in form as well as in spirit.

"But this is not all. This transformation of an ancient science would further but little the general progress of humanity, if this sublime knowledge which develops the understanding and illumines the soul, freeing it from the petty conventionalities of society, were to remain confined to the narrow circle of astronomers by profession. That time, too, will pass. The bushel hiding the light will be overturned. The torch must be carried in the hand, its light must be augmented, it must be brought out into the public places, into the crowded streets, into the cross-roads even. The whole world is destined to receive this light; the whole world is thirsting for it;—above all, the lowly ones of earth, those disinherited by fortune, because those think more than others, those are hungry for knowledge, while the favored ones of the age do not suspect their state of ignorance, or almost take pride in remaining in it. Yes, the

torch of Astronomy is destined to enlighten the world ; it will extend even to the masses, enlighten their conscience, and elevate their hearts ; and this will be its highest mission, this its chiefest blessing."

V.

THE LIGHT OF THE PAST—THE REVELATIONS OF THE MUSE.

THUS spoke my celestial guide. Her countenance was beautiful as the day, her eyes shone with a brilliant light, her voice sounded like divine music. I contemplated the worlds revolving around us in space, and I felt that a supreme harmony reigned throughout Nature.

"Now," said Uranie, pointing out to me with her finger the place in the heavens from which our sun had disappeared, "let us return to the Earth. You have learned that Space is infinite. You are now going to learn that Time is eternal."

We journeyed through many constellations, and at last reached the solar system, for I saw the sun reappear as a diminutive star.

"I am going to bestow upon you for an instant," she said, "if not the divine, at least angelic vision! Your soul is about to feel the ethereal vibrations that are the cause of light, and to learn how the history of each world is eternal in God. To see is to know. Behold!" Just as the microscope makes an ant appear to

our eyes as large as an elephant, as, extending its power to the minutest atom, it can render the invisible visible, so, at the bidding of the Muse, my sight all at once acquired an unimagined power, and was able to distinguish through space near the sun which had eclipsed it, the Earth, invisible before.

I recognized it, and while I observed it, its disk grew larger, presenting the appearance of the moon a few days before the full. I was soon able to distinguish, as the disk grew larger, its principal geographical aspects, the snowy spot at the North Pole, the outlines of Europe and Asia, the North Sea, the Atlantic Ocean, and the Mediterranean. The more I concentrated my gaze, the better could I see. Lesser details grew more and more visible, as if I were looking through a series of micro-telescopic glasses of gradually increasing power. I recognized France by its shape as it appears upon the map, but our beautiful country looked to me entirely green, from the Rhine to the ocean, and from the British Channel to the Mediterranean Sea, as if it were covered by one immense forest. I was able, however, to distinguish smaller objects more clearly, for I could easily recognize by their position the Alps, the Pyrenees, the Rhine, the Rhone and the Loire.

"Fix well your attention," resumed my companion. As she pronounced these words she touched my forehead with the tips of her fingers, as if she wished to magnetize me, causing my perceptive faculties to become still keener than they already were.

Then I looked more closely at the vision before me, and I recognized the Gaul of the time of Julius Cæsar. It was the epoch of the war of independence stirred up by the patriotism of Vercingetorix. I saw all this from the height at which I was, as we see the lunar landscapes through the telescope, or as we see the earth from a balloon ; but I could recognize Gaul, l'Amerque, Gergovia, the Puy de Dôme, extinct volcanoes, and my mind easily reconstructed the Gallic scene of which this reduced image was presented to my gaze.

"We are so distant from the earth," said Uranie, "that it would take her light the same length of time to reach us here as has passed since the days of Julius Cæsar. We receive here now only the rays of light reflected from the earth at that period. Yet light travels through space with a velocity of three hundred thousand kilometres a second. This is rapid, it is true, but it is not instantaneous. The astronomers of the Earth, who are now observing the stars in the regions where we are, do

not see them as they are now, but as they were at the time when the rays of light that reach us now were reflected from the earth ; that is to say, as they were eighteen centuries ago."

"Neither from the earth," she added, "nor from any other point in space, does the observer behold the stars as they are now, but as they have been. The more distant they are the less recent knowledge has he of their history.

"You observe with the greatest care, through the telescope, stars that no longer exist. Many of the stars which you can now see with the naked eye exist no longer. Many of the nebulas, whose substance you analyze by means of the spectroscope, have become suns. Many of your most beautiful red stars are, in reality, extinct and dead. On approaching the spot where you had supposed them to be, you would no longer see them. The light emanating from all these suns that people immensity, the light reflected through space by all these worlds lighted by these suns, photographs throughout the boundless heaven, the centuries, the days, the moments as they pass, —when you observe a star, you see it as it was at the instant when the photographic impression which you receive of it was produced, just as when you hear a clock strike, the sound reaches you only after it has ceased striking,

and so much the longer after, the greater its distance from you.

"From this it results that the histories of all the worlds are traveling through space without disappearing altogether, and that all the events of the past are present and live forever in the bosom of the Infinite.

"The duration of the Universe will be endless. The Earth will have an end and will one day be only a tomb. But there shall be new suns and new earths, new springs, and new smiles, and life will always flourish in a universe without limits and without end.

"I wished to show you," she said, after a moment's pause, "that time is eternal. You have seen that space is infinite. You have comprehended the grandeur of the Universe. Let us direct our course to the Earth, and return to your abode.

"As for yourself," she continued, "know that knowledge is the surest foundation of intellectual worth; seek neither poverty nor riches; keep yourself free from ambition, as from every other species of bondage. Be independent; independence is the chiefest of blessings and the first condition of happiness."

Uranie had spoken in her sweetest voice; but the emotion the extraordinary scenes I had witnessed produced in me was such, that I

was seized with a sudden fit of trembling. A shudder ran through me from head to foot, and this it was, doubtless, that caused me to awaken with a sudden start. Alas! this delightful celestial journey had come to an end.

I sought Uranie with my gaze, but I could not see her. A ray of moonlight entering my chamber window, played upon the edge of the curtain, and seemed to outline vaguely the ethereal form of my celestial guide; but it was nothing more than a ray of moonlight.

On returning the following day to the Observatory, my first impulse was to hasten, with some pretext, to the study of the Director that I might again behold the gracious Muse who had favored me with so marvelous a dream.

The clock had disappeared.

For days and weeks I sought for it without ever succeeding in seeing it again, or even in learning what had become of it.

I had a friend, a confidant—nearly of my own age, although appearing a little older on account of a beard which was beginning to make its appearance—a worshiper of the Ideal also, and still more of a dreamer than I. He was the only one, perhaps, at the Observatory, with whom I had ever formed any close ties

of friendship. He was the sharer of my joys and my sorrows. Our tastes, our ideas, even our opinions were the same. He had been able to understand my feeling, my youthful admiration of a statue, how it was that in my imagination I had invested her with the attribute of life, and my sorrow at having thus suddenly lost my dear Uranie, just when I had become most attached to her. He had more than once admired with me the effects produced upon that countenance of bronze, by the light, and smiled at my ecstasies like an indulgent elder brother, ridiculing me at times a little severely, perhaps, on my passion for an idol, and even going so far as to call me "Camille Pygmalion." But, in his heart, I saw that he too loved her.

This friend, who was to be taken from me alas! a few years later, in the flower of his youth; this George Spero, a man of profound intellect and noble soul, whose memory will be forever dear to me, was then the private secretary of the Director, and I received a proof of the sincerity of his affection, on this occasion, in an attention as graceful as it was unexpected.

One day, on returning home, I saw with unspeakable amazement, standing just in front of me on my chimney-piece, the famous clock!

Was it indeed the clock? But how had it

come here? Who had brought it and where had it come from?

I learned that the illustrious discoverer of Neptune had sent it to one of the principal clockmakers of Paris to be repaired; that the latter, who had just received from China a highly interesting antique astronomical clock, offered this in exchange for it to the Director, who had accepted his offer, and that George Spero, who had been entrusted with the transaction, had bought back the work of Pradier, for the purpose of presenting it to me as a souvenir of the lessons in mathematics that I had given him.

With what joy did I again behold my Uranie! With what happiness did I let my gaze linger upon her. This charming representation of the Heavenly Muse has never since left me. In my hours of study, the beautiful statue stands before me, as if to remind me of the discourse of the goddess, to announce to me the future of astronomy, to direct me in my youthful aspirations toward knowledge. Since then, more passionate emotions have stirred my senses, allured my soul, held captive my heart; but I shall never forget the ideal feeling with which the Muse of the stars inspired me, nor the celestial journey on which she carried me, nor the strange panoramas that then unfolded

themselves before my gaze, nor the truths she revealed to me with regard to the extent and the constitution of the Universe, nor the happiness she conferred upon me by assigning me as the definite intellectual aim of my life, the calm contemplation of Nature and of Science.

SECOND PART.

GEORGE SPERO.

I.

LIFE—INVESTIGATION—STUDY.

THE glowing light of the late afternoon filled the atmosphere with a golden radiance. From the heights of Passy the eye of the spectator dominated the vast city—now more than ever before, a world rather than a city. The International Exposition of 1867 had brought together in this imperial Paris, all the attractions of the century. The flower of civilization here displayed its most vivid colors, and, consumed in the intoxication of its own fragrance, withered while yet in the full bloom of its feverish youth. A brilliant flourish of trumpets—the last of the monarchy—in honor of the assembled sovereigns of Europe, had just sounded. Science, art and industry, scattered their latest creations around with exhaustless prodigality. A species of delirium seemed to have seized upon everyone and everything. Regiments marched through the streets, bands

of music at their head ; equipages drove rapidly past on all sides ; millions of beings hurried to and fro amid the dust of the avenues, the quays and the boulevards ; but this very dust, gilded by the rays of the setting sun, seemed like an aureole crowning the splendid city. The tall edifices, the domes, the towers, the steeples, were lighted up by the glowing rays of the sun ; the strains of the orchestra could be heard from afar, mingled with the confused murmur of voices, and the noises of the city, and the luminous evening terminating a glorious summer day, produced in the soul a sense of contentment, satisfaction and happiness. It was a sort of symbolic epitome of the manifestations of the life of a great people arrived at the apogee of their being and their prosperity.

On the heights of Passy, where we are, on the terrace of a garden, overhanging, as in the days of Babylon, the lazy current of the river below, two persons, leaning against a stone balustrade, contemplated the noisy scene. Looking from above at the agitated surface of this human sea, happier in their sweet solitude than any among the giddy crowd, they do not belong to the vulgar world, and dwell, removed above all this bustle and confusion, in the limpid atmosphere of their happiness. Their minds think, their hearts love or, to express

with more completeness the same fact, their souls live.

The young girl, now in the fresh beauty of her eighteenth spring, allows her dreamy gaze to wander to the apotheosis of the setting sun, happy in living, happier still in loving. She thinks not of the millions of human beings who are hurrying to and fro at her feet; she gazes without seeing it, at the glowing disk of the sun sinking behind the empurpled clouds in the west; she inhales the perfume of the rose-garlands of the garden, and feels, pervading her being, the peace of the secret happiness which fills her soul with the ineffable harmony of love. Her blonde hair surrounds her brow like an aureole and falls in rich masses over her graceful and slender form; her blue eyes, shaded by long black lashes, seem a reflection of the azure of the skies; her arms and neck are of a milky whiteness; her ears and cheeks of a rosy hue. In her air there is something that reminds one of those *petites marquises* of the painters of the eighteenth century, born to the uncertainties of a destiny they were not long to enjoy. She was standing. Her companion, whose arm had encircled her waist as he stood gazing with her at the panorama of the city, listening to the strains of harmony diffused in the air by the band of the imperial guard, is

now seated beside her. His eyes have forgotten Paris, and the setting sun, to dwell upon his graceful companion, and without being conscious of it he looks at her admiringly, with a strange and sweet persistence in his gaze, as if he now saw her for the first time, and were unable to take his eyes from this charming profile upon which they linger like a caress.

The young student remained long absorbed in this contemplation. Was he, then, still at twenty-five, a student? But is not one always a student, and was not M. Chevreul, our professor at that time, only a few days before sur-named, in his hundred and third year, the dean of the students of France?

George Spero had early finished his studies at the Lyceum, studies which teach nothing unless it be how to study, and had gone on investigating with indefatigable ardor the great problems of the natural sciences. Astronomy, above all, had from the first aroused his enthusiasm, and I had first met him, in fact, at the Observatory of Paris (as the reader may remember to have read in the preceding narration), which he entered at the age of sixteen, and where he had made himself noticeable by an eccentricity sufficiently rare—that of having no ambition and seeking no advancement. At sixteen as at twenty-five, he had believed

himself on the eve of his death, reflecting, perhaps, that life is in any case short, and that nothing is worth an effort but Science, no happiness worth having but that of studying and acquiring knowledge. He was rather reserved in his manners, although at bottom he had a happy, childlike nature. His mouth, which was small and gracefully formed, seemed to smile, if one let one's eyes rest on the corners of the lips; otherwise it seemed pensive, rather, and made for silence. His eyes, whose undecided color, resembling the greenish-blue of the sea where it touches the horizon, and changing according to the light and to every passing emotion, had ordinarily an expression of great sweetness, although on occasions they could flash like lightning or shine with the cold glitter of steel. His glance was piercing—at times unfathomable, strange even, and enigmatic. His ear was small and gracefully curved, the lobe well defined and slightly curled, which physiognomists regard as the mark of a subtle intellect. His forehead was broad, although his head was in reality rather small than large, its apparent size being increased by a wealth of sunny hair. His beard was fine; chestnut in color, like his hair, and wavy. Of medium height, his whole bearing had an air of distinction natural to him; and his dress was

always elegant, without pretension or affectation.

Neither my friends nor I had ever, at any time, had any intimacy with him. On holidays and during the hours of recreation he was never there. Always buried in his studies, one might suppose he had given up all his faculties to the discovery of the Philosopher's Stone, the squaring of the circle, or perpetual motion. I never knew him to have a friend, unless it were myself, and yet I am by no means certain of having been admitted unreservedly to his confidence, and perhaps, after all, no other event of importance had ever occurred in his life, than the one of which I am now about to relate the history, and of all the details of which I was cognizant as an eye-witness, if not as his confidant.

His mind was constantly occupied with the problem of the nature and destiny of the soul to the exclusion of every other thought. At times he would plunge into the abysses of the unknown in his investigations, with so great an intensity of cerebral action, that he would feel a tingling in his brain, like a premonition of insanity. This was especially the case, when, after devoting hours to the solution of the question of immortality, our ephemeral earthly life vanished from his gaze and he saw opening be-

fore his mental view, eternity without end. Face to face with this vision of the soul, enjoying endless being, what he desired was *to know*. The sight of his body, pale and cold, enveloped in a winding-sheet, lying stretched upon a bier, alone in the narrow grave, the last sad dwelling-place of man, the grass where the cricket chirps growing above, did not terrify his mind as much as did the uncertainty regarding a future state. "What is to be my future destiny? What the destiny of mankind?" was his constant question, like the echo, in his brain, of a fixed idea. "If we die altogether, what a vain farce is life, with all its struggles and its hopes. If we are immortal, what is to be our occupation during all the countless aeons of eternity? A hundred years hence where shall I be? Where will all those be who live now upon the earth? and what of the inhabitants of other worlds? To die forever, forever! To have existed only for a moment—what a mockery! Would it not be a thousand times better never to have been born? But if it is our destiny to live through all eternity, powerless to influence in aught the fatality that hurries us onward, eternity without end always before our gaze, how support the weight of such a destiny? Is this then the fate that awaits us? If we should ever grow weary of existence, we should be unable to fly

from it; it would be impossible for us to end it—a fate more cruel still than that this ephemeral life should disappear from the view like an insect in its flight in the coolness of the evening. Why then were we born? To endure this uncertainty? To see our hopes of a future, as we examine them, vanish one by one until none is left. To live, if we do not think like idiots, and if we think like fools? And they talk to us of a ‘good God!’ And there are religions and priests and rabbis and bonzes! But men are all either impostors or dupes. Religion and country, the priest and the soldier, it is the same with all. Men of every nation are armed to the teeth, to slay each other like mad men. And that is the wisest thing they can do: it is the best way in which they can show their gratitude to Nature for the useless gift she has bestowed upon them in giving them life.”

I tried to soothe these tortures, these doubts, for I had framed for myself a certain system of philosophy with which I was comparatively satisfied. “The fear of death,” I would say to him, “appears to me altogether absurd. There are only two sides to the question. When we go to sleep each night there is always the possibility that we may never awaken: yet this thought when it occurs to us does not prevent

us from falling asleep. In the one case then—supposing death to end everything—we never awaken, either here or elsewhere; and in that case death is but an unfinished sleep which is to last with us forever. Or, in the other case—that is to say should the soul survive the body—we shall re-awaken in some other place to resume our active life. In this case the re-awakening cannot be very terrible; on the contrary, it must rather be delightful, every form of life in nature having its *raison d'être*, and every creature, the lowest as well as the highest, finding its happiness in the exercise of its faculties.”

These arguments seemed to quiet him.

But the tortures of doubt soon pierced his soul again, sharp as thorns. At times he would wander alone through the vast cemeteries of Paris, seeking out the most solitary alleys among the tombs, listening to the sound of the wind among the trees and the rustling of the dead leaves in the walks. At times he would retire to the suburbs of the great city, plunge into the woods, and walk about for hours at a time, talking to himself. At other times he would remain in his room at the Place du Panthéon—a room which served him at once as a study, a bedroom and a reception-room—all day long and far into the night, dissecting some

brain he had brought home from the clinic; examining the gray matter divided into minute sections, by the aid of the microscope.

The uncertainties of the sciences that are called exact, a sudden check to the progress of his thoughts in the solution of some problem, would throw him at such times into a paroxysm of despair, and I found him more than once in a state of utter exhaustion, his eyes fixed and brilliant, his hands burning, his pulse quick and irregular. On the occasion of one of these crisis, when I had been obliged to leave him alone for several hours, I even feared on returning at about five o'clock in the morning to find him no longer alive. He had beside him a glass of cyanuret of potassium, which he tried to conceal at my approach. But he recovered himself immediately, and smiling slightly, said with the utmost calmness: "What purpose would it serve? If we are immortal it would be of no use. It was only that I might know the truth the sooner." He confessed to me that day that he had thought himself raised violently by the hair to the ceiling, and dropped down again with his whole weight upon the floor.

The general indifference with regard to this great problem of human destiny—a question in his eyes more important than any other, since

it is one of our future existence or our annihilation—had the effect of exasperating him to the highest degree. He saw everywhere people busied only with material interests, wrapped up in the bizarre idea of “accumulating money”; consecrating all their years, all their days, all their hours, all their minutes, to these interests, disguised under the most diverse forms.

He found not one free, independent, living the life of the spirit. It seemed to him that all thinking beings could and ought—while living the life of the body, since it could not be otherwise—to remain free from the slavery of an organization so gross, and to devote their best moments to the intellectual life.

At the time when this history begins, George Spero had already become celebrated, famous even, on account both of the scientific works he had published, and of several works of polite literature, which had been received with universal applause. Although he had not yet completed his twenty-fifth year, more than a million persons had read his works, which, although not written for the general public, had had the good fortune to be appreciated by the majority seeking for instruction, as well as by the learned few. He had been proclaimed the leader of a new school, and eminent critics,

who had never seen him and did not know how young he was, spoke of his "doctrines."

How was it that this eccentric philosopher, this austere student, found himself at the feet of a young girl, at the hour of sunset, alone with her on this terrace where we have just seen them? This is what we are now about to learn.

II.

THE APPARITION—JOURNEY TO NORWAY— THE ANTHELION—A MEETING IN THE HEAVENS.

THEIR first meeting had been, in truth, a strange one. A passionate admirer of the beauties of Nature, always in search of sublime scenes, the young physicist had undertaken, the preceding summer, a journey to Norway, for the purpose of visiting those solitary fiords that suck in the sea; those mountains whose snowy summits, pure and unspotted, tower above the clouds; but urged chiefly by an ardent desire to make a special study of the Aurora Borealis, that sublime manifestation of the life of our planet. I was his companion on this journey. The sun, sinking beyond calm and unsounded fiords, the rising of the Day-star above the summits of the mountain, produced in his soul—the soul of an artist and a poet—an indescribable emotion. We remained there more than a month, exploring the picturesque region extending from Christiania to the Scandinavian Alps. And Norway was the

birthplace of that daughter of the North who was to cast so sudden a spell over his yet unawakened heart. She was there, a few steps distant from him, and yet it was only on the day of our departure that chance—that goddess of the ancients—decided to bring them face to face.

The morning light gilded the distant mountain peaks. The young Norwegian had made an excursion with her father to one of those mountains which, like the Rigi of Switzerland, are the resort of tourists, to witness the sunrise that on this particular day had been marvelous. Icelea had withdrawn alone to a solitary hillock a few yards distant, in order the better to observe certain details of the landscape, when, turning around, with her face opposite the sun, in order to take in the whole of the horizon, she perceived—not now on the mountain or on the earth—but on the sky itself, her image, her full-length figure, quite recognizable by its likeness. A luminous aureole encircled the head and shoulders like a crown of dazzling brightness, and a large aerial circle, faintly tinted by the colors of the rainbow, surrounded this mysterious apparition.

Astonished and agitated by the strangeness of the spectacle, and impressed, as she still was, by the splendor of the sunrise, she did not at

first observe that another image, that of a man's figure in profile, was beside hers,—the silhouette of a traveler standing motionless, contemplating the scene, and looking like one of those statues of saints that adorn the columns of churches. This masculine countenance and her own were framed in by the same aerial circle when she perceived this strange human profile outlined against the sky. She thought herself the victim of some fantastic illusion, and made a gesture of surprise, almost of terror. Her aerial image repeated the gesture, and she saw the spectre of the traveler carry its hand to its hat and uncover its head in salutation, then fade away and vanish from view at the same time as her own.

The Transfiguration on Mount Tabor when the disciples suddenly beheld the image of the Master accompanied by the images of Moses and Elias, did not cause a more profound astonishment to those who witnessed it than did the sight of the anthelion, of which the explanation is known to all meteorologists, to the innocent Norwegian maiden.

This apparition remained fixed in her thoughts like some wonderful dream. She had called her father, who was standing at a little distance behind the hillock, but when he came there was nothing to be seen. She asked

him for an explanation of the apparition, but could obtain nothing in reply, unless it were a doubt, almost a denial of the reality of the phenomenon. This excellent man, a retired military officer, belonged to that category of distinguished sceptics, who content themselves with denying whatever they have no knowledge of or do not understand. It was in vain she declared that she had just seen her image on the sky, and also that of a man whom she judged must be young and of a good figure—it was in vain she related to him all the details of the apparition, and added that the figures had seemed to her larger than life, resembling colossal silhouettes; he declared with an air of authority and with some emphasis, that it was what is called an optical illusion produced by a disordered imagination, often the result of disturbed sleep, especially during the period of adolescence.

But as we were going on board the steamer that evening, I noticed a young girl with very fair hair looking at my friend with an undisguised expression of amazement on her face. She was leaning on her father's arm on the quay, and stood motionless as Lot's wife after she had been changed into a pillar of salt. I drew George's attention to her as we went on board, but he no sooner turned around to look

at her than, flushing quickly, she turned her head aside and fixed her gaze on the wheel of the vessel, which had now begun to move. I do not know if Spero had remarked this. In point of fact neither of us had observed the aerial phenomenon of the morning, at least not during the time in which the young girl was near us, hidden from view by the bushes. It was the eastern portion of the heavens, the magnificence of the rising sun that had especially attracted us. George had, however, saluted the young Norwegian, whom he quitted with regret, with the same gesture with which he had saluted the rising sun, and which she had taken as being for herself.

Two months later the Count de R—— held a brilliantly attended fête in honor of a recent triumph of his compatriot Christine Nilsson. The young Norwegian and her father, who had come to Paris to spend there a part of the winter, were among the guests. They and the famous singer had known each other for a long time as compatriots, Norway and Sweden being sister countries. We, however, now visited the house to-night for the first time, our invitation being due to the appearance of Spero's latest book, which had already attained marked success. Dreamy, thoughtful, learned with the solid learning of the North, eager for

knowledge, Icea had already read more than once and with lively interest, this somewhat mystical work in which the author has laid bare the secret doubts of his soul, unsatisfied with the *Pensées* of Pascal. Let us add that she herself had a few months previously successfully passed the examination for a higher degree, and having abandoned the study of medicine, which had at first attracted her, had thrown herself with ardor into the study—at that time coming into fashion—of physiological psychology.

When M. George Spero was announced, it seemed to her as if an unknown friend, the confidant of her thoughts almost, were about to enter the room. She trembled as if an electric shock had passed through her. George, little accustomed to society, timid and embarrassed when with strangers, fond neither of dancing, playing, nor conversing, had remained in a corner of the salon with some friends, indifferent to waltzes and quadrilles, but listening with interest to some of the master-pieces of modern music played with feeling, and the evening had passed without his approaching her, although he had not failed to observe her—although indeed among all this brilliant company he saw no one but her. More than once their glances had encountered

each other. At last at about two o'clock, when the restraint of the earlier part of the evening had begun to wear away, he ventured to approach her, but without addressing her. She it was who spoke first, asking him to explain to her the meaning of a passage toward the conclusion of his book. Flattered, but still more surprised that those metaphysical pages should be read by a woman,—and so young a woman—the author answered with some embarrassment that such subjects were rather dry for a woman. She responded that not all women—not all young girls even—devoted themselves entirely to the arts of coquetry; and that she knew of some who occasionally studied, worked and thought.

She spoke with some warmth in her eagerness to enter her protest against the contemptuous disdain of certain scientists for her sex and to vindicate their intellectual claims, and she had but little difficulty in gaining a cause in which her opponent was not her adversary.

This latest book of its author, of which the success had been striking and immediate, notwithstanding the serious nature of its subject, had crowned the name of George Spero with glory; and the brilliant author was received in every salon with lively expressions of interest. The two young people had hardly exchanged a

dozen words before he found himself the center of observation of the assembled guests, answering various questions, by which their tête-à-tête was continually interrupted. One of the most eminent critics of the day, had a short time before devoted a long article to the new work, and this now became the subject of general conversation. Icelea held herself apart. She felt—and women rarely deceive themselves—that the hero of the evening had already observed her; that their minds were already united by an invisible thread, and that, as he answered the more or less commonplace questions addressed to him, his thoughts were not all in the conversation. This first secret triumph sufficed her. She did not aspire to any other, and she had, besides, recognized in his profile, that of the mysterious aerial apparition, and the young passenger of the Christiania steamer.

In this, their first interview, he was not slow in manifesting his enthusiasm for the marvelous scenes of Norway, telling her of his travels there.

She was burning to hear some allusion to the aerial phenomenon which had made so deep an impression upon her, and she could not understand his silence and reserve regarding it. He, however, not having observed the anthelion

at the moment when her image appeared in it, had not been especially surprised by a phenomenon which he had already seen several times and observed under better conditions from the parachute of a balloon, and having taken no particular notice of it, had nothing to say about it. Nor did the circumstance of his journey on the boat occur to his memory, and although the beautiful girl did not seem to him altogether a stranger, he could not remember where he had before seen her. For my part, I recognized her at once. They talked of lakes, rivers, fiords, mountains. He learned from her that her mother had died at an early age, of an affection of the heart; that her father preferred the life of Paris to that of any other city; and that it was probable that she would revisit but rarely her own country. A remarkable similarity of tastes and ideas, congeniality of disposition and mutual esteem at once placed them *en rapport*. Educated according to the English fashion, she enjoyed that independence of mind and freedom of action which French women are denied, until after marriage, and she did not feel herself embarrassed by any of those social conventionalities, the object of which seems to be with us, the protection of innocence and virtue. Two friends of her own age had already come

alone to Paris to finish their musical education, and all three lived together in perfect security in the midst of this Babylon, without ever even suspecting the dangers of which Paris is said to be full. The young girl received the visits of George Spero as her father himself might have received them, and in a few weeks the similarity of their characters and their tastes had associated them in the same studies, the same researches, and often in the same thoughts. Almost every afternoon, drawn by a secret attraction, he directed his steps from the Latin Quarter toward the banks of the Seine, whose course he followed till he reached the Trocadero, and passed several hours with Icea, either in the library, the terrace of the garden, or promenading in the Bois. The impression first received from the apparition had remained in the soul of Icea. She regarded the young savant, if not as a god or a hero, at least as a man superior to his contemporaries. The reading of his books strengthened this impression and augmented it. The feeling she had for him was more than admiration. It was almost veneration. When she became more intimately acquainted with him, the great man did not descend from his pedestal. She found him so superior to every one else in knowledge, and at the same time so unaffected,

so sincere, so amiable, and so indulgent toward others and—for she seized every pretext to hear his name uttered—she was sometimes compelled to listen to remarks made by his rivals concerning him, that seemed to her so unjust, that she began to regard him with an affection that was almost maternal. Does this feeling of protecting love then, already exist in the heart of every young girl? It may be so, but certain it is that Iclea loved him thus at first. I think I have said before that the disposition of this savant was naturally tinged with melancholy, which Pascal called the nostalgia of the soul. His constant occupation, in fact, was the solution of the eternal problem, the "*To be or not to be*" of Hamlet. At times he seemed depressed, sad, even to death. By a strange contradiction in his nature, when his gloomy thoughts had, so to say, spent themselves in his investigations, and his brain could no longer work, peace and serenity once more took possession of his mind, the red blood again circled through his frame, and the philosopher became a child—gay, simple, easily amused, with tastes almost like those of a woman, fond of flowers, perfumes, music, reverie, and at times even astonishingly indifferent to everything.

III.

TO BE OR NOT TO BE—WHAT IS THE HUMAN
BEING?—NATURE, THE UNIVERSE.

IT was precisely this phase of his intellectual life that had chiefly attracted Icea. Happy in living, a flower opening to the light of life, a harp vibrating to all the harmonies of nature, the fair daughter of the North still thought at times, of the elfs and fays of her native land, of the angels and the mysteries of Christianity amid which her infancy had been cradled. But her piety, the blind faith of her youthful days, had not darkened her reason; her thoughts moved unshackled; she earnestly sought for truth, and while she regretted, it may be, that she could no longer believe in the Paradise of the preachers, she yet felt an imperious and ardent desire for continued existence. Death seemed to her a cruel injustice. She could never recall the image of her mother lying cold in death, in all the splendid beauty of her prime, carried in the time of roses, to a green and fragrant cemetery where birds sang, her name suddenly blotted from the book of life,

while all nature continued to sing, to bloom, to shine. She could never recall, I say, the pale image of her mother without a cold shudder passing through her frame. No, her mother was not dead. She herself would never die, neither in her youthful beauty, nor ever. And he! He to die! This sublime intellect to become extinct through a stoppage of the breathing or the circulation! No, it was impossible. Mankind deceive themselves. One day they will know the truth.

Iclea too, sometimes pondered these problems, regarding them indeed rather under their æsthetic and sentimental than their scientific aspect, but she pondered them. All her questions, all her doubts, the secret aim of her conversation with, perhaps even of her sudden attachment for, her friend, were caused by the ardent desire for knowledge which consumed her soul. She fixed her hopes upon him because she had already found in his writings the solution of the weightiest problems. They had taught her to know the universe, and this knowledge she found more beautiful, more vital, more exalted, more poetic than her former illusions. Since the day on which she had learned from his lips that he had dedicated his life to the search after truth—a search in which he was destined, she was certain, one day to be

successful—her intellect was attracted to him perhaps still more strongly than her heart.

They had thus led together for nearly three months a common intellectual life, spending several hours almost every day reading, in the original, works in different languages on the science of philosophy, the atomic theory, molecular physics, organic chemistry, thermodynamics, and the various sciences which have for their object a knowledge of being; discussing the apparent or real contradictions in hypotheses they severally presented; finding sometimes, in writings purely literary, surprising divinations of scientific truths, marveling at the prescience of many great authors. These readings, these investigations, these discussions were especially interesting to them because they progressed in knowledge, they were able to appreciate more justly the works of great writers from whose number, however, they soon found that nine-tenths, whose works are absolutely valueless, might be eliminated; and from the remaining tenth, one-half whose writings have only an apparent value. Having thus cleared the rubbish from the field of literature, they confined themselves with a certain satisfaction that was not without a mixture of pride, perhaps, to the narrow circle of superior intellects.

One day Spero came earlier than usual. "Eureka!" he cried. But quickly restraining himself, "*Perhaps*," he added. Leaning against the chimney-piece where a blazing fire glowed, while his companion looked at him with eyes full of curiosity, he began to speak with unconscious solemnity, as if he were holding converse with his own soul in some desert solitude.

"All that you behold is but apparent. The reality is something altogether different.

"The sun seems to revolve around the earth, to rise in the morning and to set in the evening, and the earth on which we are seems to stand still. It is the reverse of this that is true. We dwell upon the surface of a body projected into space, revolving with a velocity seventy-five times greater than that of a cannon ball.

"A harmony of sweet sounds has just charmed your ears. The sound does not exist; it is nothing more than the impression made upon the sense of hearing by the vibrations of the atmosphere throughout a certain space and with a certain velocity, vibrations which themselves emit no sound. Without the auditory nerve and the brain, there could be no sound. In reality there is only motion.

"The rainbow expands its radiant circle, the rose and the corn-flower, wet by the rain, sparkle in the sunshine; the green field, the golden

furrow diversify the landscape by their vivid colors. There are no colors, there is no light, there are only undulations in the air that set the optic nerve vibrating. It is all a delusion of the senses. The sun warms and fertilizes, the fire burns—there is no heat, only the sensation of heat; heat, like light, is only a form of motion, invisible motion, but all-potent, supreme.

“Here is a solid iron joist such as are commonly employed in building. It is fixed in the air at a height of thirty feet, on two walls, upon which rest its extremities. It is steadfast in truth. On its center is placed a weight of a thousand, two thousand, three thousand kilogrammes, and this enormous weight does not affect it in the least; hardly is there to be perceived by the level, the slightest flexure. Yet this joist is composed of molecules which do not touch each other, which are in perpetual vibration, and which expand under the influence of heat and contract under the influence of cold. Tell me, if you please, what it is that constitutes the solidity of this bar of iron? The atoms that compose it? Assuredly not, since they do not touch each other. The cause of this solidity is molecular attraction; that is to say, an invisible force.

“To speak with exactness, solidity does not

exist. Let us take between our hands a heavy ball of iron ; this ball is composed of invisible molecules which do not touch each other, which are composed of atoms which do not touch each other either. The continuity which the surface of this ball appears to have and its apparent solidity are then pure illusions. For the scientist who analyzes its structure it is as a cloud of gnats, like those which hover in the air on summer evenings. Again, let us heat this ball, which appears to us solid ; it will flow ; let us heat it still more, it will evaporate, without, therefore, changing its nature. A liquid or a gas, it will always continue to be iron.

“ We are at this moment in a house, All these walls, these floors, these carpets, these articles of furniture, this marble chimney-piece, are composed of molecules which touch each other no more than do those of the iron ball. And all these molecules that constitute matter rotate around each other.

“ It is the same thing with our body. It is composed of molecules perpetually rotating. It is a flame incessantly consumed, and incessantly renewing itself. It is a river on whose banks we sit fancying we see the same water flowing past, but of which its current renews each drop perpetually.

“Each globule of our blood is a world (and we have five millions of these to a cubic millimetre). Incessantly, without pause or truce, in our arteries, in our veins, in our flesh, in our brain, the atoms revolve, move, rush into a vortex of life as rapid, relatively, as that of the celestial bodies. Molecule by molecule, our brain, our skull, our eyes, our nerves, our flesh renew themselves without cessation, and so rapidly that in a few months our body is entirely reconstructed. By means of calculations based on molecular attraction, it has been estimated that the minutest possible drop of water held on the point of a pin, a drop invisible to the naked eye, measuring a thousandth of a cubic millimetre, there are more than two hundred and twenty-five millions of molecules.

“In the head of a pin there are no less than eight sextillions of atoms, or eight thousand thousand millions of thousand millions, and those atoms are separated the one from the other by distances considerably greater than their dimensions, these dimensions being, besides, invisible even under the most powerful microscope. If one desired to count the number of atoms contained in the head of a pin, taking from it in thought a thousand thousandth part every second, it would be necessary to continue the operation for fifty-three thou-

sand years in order to finish their enumeration.

"In a drop of water on the head of a pin there are innumerable more atoms than all the stars which astronomers, armed with their most powerful telescopes, are able to discover in the sky.

What is it, then, that sustains the earth, the sun and the stars of the universe in infinite space? What sustains this long bar of iron, which is to support the weight of a house, on two walls? What gives to every body its form? The attraction of gravitation.

"The universe, material and spiritual, all that we behold, is formed of invisible and imponderable atoms. The Universe is a manifestation of force. God is the soul of the Universe; *in eo vivimus, movemur et sumus*.

"As the soul is the power that moves the body, so is the Infinite Being the power that moves the Universe. The theory of the purely material nature of the universe is untenable by the scientist who carries his investigations beyond the appearances of things. Human will is weak, it is true, compared to the cosmic forces. Yet, in sending a train from Paris to Marseilles, a ship from Marseilles to Suez, I displace by my will an infinitesimal part of the terrestrial mass, and I modify the course of the moon.

Blind children of the nineteenth century, let us return to the words of the Swan of Mantua :
Mens agitat molem.

"If I analyze matter I find everywhere the invisible atom ; matter disappears like smoke in the atmosphere. If my eyes had power to see the reality of things, they would look through walls formed of separate molecules, through solid bodies, atomic vortexes. Our bodily eyes behold only that which is. It is with the eye of the spirit that we must see. Let us not trust to the sole testimony of our senses. There are as many stars above our head in the daytime as there are at night.

"There is in nature neither astronomy nor physics, nor chemistry nor mechanics ; these are all only subjective methods of observation. All things are one. The infinitely great is identical with the infinitely little. Space is infinite without being large. Duration is eternal without being long. Stars and atoms are one.

"The Universe is made one by an invisible, imponderable, immaterial force which puts its atoms in motion. If one single atom should cease to be moved by this force, the universe would come to a stop. The earth revolves around the sun. The sun gravitates around a

sidereal fire in motion like himself. The millions, the myriads of suns which people the universe, move with greater velocity than a ball fired from a cannon. Those stars that seem to us motionless are suns projected into infinite space with a velocity of ten, twenty, thirty millions of kilometres per day, all moving toward an unknown goal—suns, planets, earths, satellites, wandering comets. The fixed point, the center of gravity sought for by the physicist, flees from him as he pursues it, and exists, in reality, nowhere. The constituent atoms of bodies move relatively with as much velocity as the stars in the heavens. Motion reigns everywhere, forms everything.

"The atom itself is not inert matter. It is a center of force. The essential part of man, that which gives him his organization, is not his material part; it is neither the protoplasm nor the cell, nor those marvelous and fecund unions of carbon with hydrogen, of oxygen and azote; it is vital, invisible, immaterial Force. This it is that groups, directs and keeps together the innumerable molecules which compose the admirable harmony of the living body.

"Matter and force have never been found separated the one from the other. They are, it may be, identical. That the body should

disintegrate all at once after death, as it disintegrates slowly, renewing itself perpetually during life, matters little. The soul remains. *The psychic atom, the principle of organisation, is the center of this force,* This, too, is indestructible. That which we see is an illusion. The rest is the invisible."

He walked up and down the room with rapid steps. The young girl listened to him as the disciple listens to his master, a well-beloved master, and although his words were for her only, he did not seem to take note of her presence, so silent and motionless had she remained. She drew near to him, and took his hand between both her own. "Ah!" she exclaimed, "if you have not yet grasped the truth, it will not long escape you."

Then, with growing enthusiasm: "You believe," she added, alluding to a doubt to which he had often given expression, "that it is impossible for the terrestrial being to attain to a complete knowledge of the truth, because he has only five senses, and a multitude of the phenomena of nature remain unknown to his mind, having no means by which to reach it. Just as we should be unable to see, if deprived of the optic nerve; to hear, if deprived of the auditory nerve, so would the vibration, the manifestations of force, which found no chord

responsive to their vibration in the instrument of our organism, remain unknown to us.

"I conceive, and I am willing to grant, that the inhabitants of other worlds may be immeasurably more advanced than we are. But it seems to me that, although you belong to earth, you have found the truth."

"Beloved friend," he replied, seating himself beside her on the large sofa in the library, "it is very true that our terrestrial harp is wanting in chords, and it is very probable that an inhabitant of the system of Sirius would ridicule our pretensions to knowledge. The smallest magnet can more easily than Newton or Leibnitz discover the magnetic pole; and the swallow has more knowledge of the varieties of latitude than Christopher Columbus or Magellan had. What did I say a moment ago? That appearances are an illusion, and that the mind should be able to descry, through matter, the invisible force that animates it. Matter is not what it appears, and no one who is aware of the progress made in the exact sciences of to-day can pretend to be a materialist."

"Then," she rejoined, "the psychic atom of the brain, the principle of the human organism, would be immortal, like atoms everywhere, if we were to admit the fundamental axioms of chemistry. But it would differ from the others,

in being superior to them, the soul being attached to it. But would it still be conscious of its existence? Can the soul partake of the nature of electricity? I once saw a flash of lightning pass through a room, putting out the lights. When they were relighted it was found that the gilding had disappeared from the clock and that the chased silver candlestick was gilded in several places. There you have a subtle force.

"Let us not reason by analogies; we should never arrive at the truth in that way. We all know that we shall die; but we do not believe it. How would it be possible for us to believe it? How could we comprehend what death, which is but a change of state from the known to the unknown, from the visible to the invisible, means? That the soul exists as force, we do not doubt, that it is one with the cerebral atom, the principle of organization, we may admit. That it thus survives the dissolution of the body, we conceive."

"But what becomes of it? Whither does it go?"

"The greater number of souls are not even conscious of their own existence. Of the fourteen hundred millions of human beings who people our planet, ninety-nine hundredths do not think. What use, in Heaven's name,

should they make of immortality? As the molecule of iron floats without being conscious of it, in the blood which throbs beneath the brow of a Lamartine or a Victor Hugo, or remains for a time attached to the sword of a Cæsar, as a molecule of hydrogen shines in the gaslight of the *foyer* of the opera, or sinks in the drop of water swallowed by the fish, into the dark abysses of the sea, so do the living atoms which have never thought, slumber.

“To the souls which think belongs the gift of intellectual life. They are the guardians of the inheritance of humanity and augment it for the ages which are yet to come. Were it not that the human souls which are conscious of their existence and live by the spirit are immortal, the whole history of the earth would end in nothing, and the entire creation, that of the greatest worlds, as well as of our own insignificant planet, would be a specious absurdity, more vile and senseless than the meanest worm that crawls. This has a *raison d'être*, and the universe would have none! Can you picture to yourself myriads of worlds attaining to the utmost splendor of life and thought, succeeding each other endlessly in the history of the sidereal universe, for no other end than to give birth to hopes perpetually deceived, to grandeurs perpetually destroyed? It is in vain

that we would humble ourselves; we cannot admit annihilation as the supreme end of progress, proved such by the whole history of nature. Souls are the seed of the planetary populations."

"Can souls, then, transport themselves from one planet to another?"

"Nothing is so difficult to comprehend as that which we are ignorant of; nothing is simpler than what we know. Who wonders to-day at seeing the telegraphic wires transmit human thought instantaneously across continents and oceans? Who wonders at seeing light transmitted from one star to another with a velocity of three hundred thousand kilometres a second? Besides, only philosophers would be able to appreciate these marvels; the vulgar herd is surprised at nothing. If, by means of some new discovery, we were able to-morrow to send messages to the inhabitants of Mars, and to receive answers in return, three-fourths of mankind would have ceased to wonder at it the day after.

"Yes, living principles of force can transport themselves from one world to another, not always and not everywhere, assuredly not, nor all of them. There are laws and conditions to be observed. My will, by the aid of my muscles, has power to move my arm to

throw a stone ; if I take in my hand a weight of twenty kilogrammes it still has power to move my arm ; but if I try to raise a weight of a thousand kilogrammes, it can no longer do so. Certain spirits are incapable of any species of activity whatsoever ; others have attained to transcendent powers. Mozart, at six years of age, made all who heard him feel the spell of his musical genius, and published, at eighteen, his two first works of sonnets, while the greatest dramatist who has ever lived, Shakespeare, had written nothing worthy of his name before thirty. We must not think the soul belongs to some supernatural world. There is nothing that is not in nature. It is scarcely more than a hundred thousand years since terrestrial humanity emerged from its chrysalis state of being. During millions of years, during the primary, secondary and tertiary periods, there was not upon the Earth a single mind to appreciate the glorious spectacles it offered, a single human glance to note them. The progress of evolution gradually developed from plants and animals, souls of an inferior grade ; man is of recent date upon the planet. Nature is an unceasing progress ; the Universe is a perpetual becoming, a never-ending ascent."

"All the worlds," he added, "are not at present inhabited. Some are in the dawn,

others in the twilight of their existence. In our solar system, for instance, Mars, Venus, Saturn, and several of the satellites, are in the full activity of life. Jupiter appears to have passed his primary period; the moon is perhaps no longer inhabited. The present epoch of our history possesses no greater importance in the general history of the universe than does our anthill in the infinity of space. Before the earth existed there had been, from all eternity, worlds peopled by human beings; when our earth shall have yielded up her latest sigh, and the last human family shall have fallen asleep in the last sleep, on the borders of the remotest lake of the frozen ocean, suns without number shall still shine in infinite space, still shall there be mornings and evenings, spring time and flowers, hopes and joys. New suns, new earths, new human beings. Boundless space is peopled by tombs and cradles. But life, thought, eternal progress are the final end of creation.

"The Earth is a satellite of a star. Now, as in the future, we are inhabitants of the skies. Whether we know it or whether we are ignorant of it, we live, in reality, among the stars."

Thus did the two friends hold converse on the mighty problems which occupied their thoughts. When they arrived at a solution,

even an incomplete one, of one of these, they experienced a genuine happiness in having made one step forward in the search into the unknown, and they were able to converse with more tranquility afterward, on the ordinary matters of life. They were two intellects equally eager for knowledge, thinking, with the fervor of youth, that they could isolate themselves from the world, conquer human feelings and reach, soaring into celestial heights, the star of Truth which shone above their heads, in the altitudes of space.

IV.

LOVE—ICLEA—ATTRACTION.

IN this life of intimate communion, this *solitude à deux*, delightful as it was, there was something wanting. These conversations on the weighty problems of life and death, this interchange of ideas concerning the nature of man, these speculations regarding the origin and end of all things, these contemplations of the heavens, and the thoughts they awakened, satisfied for a time their minds, but not their hearts. After hours spent in conversation together, seated beside each other in the arbor of the garden overlooking the great city spread like a map before them, or in the solitude of the library, the philosopher, the scientist, had not the necessary strength of will to enable him to tear himself from the society of his beloved companion. Hand in hand they would sit beside each other in silence, held by a resistless power. On separating they would both experience a strange and painful sensation in the heart, an indefinable malaise, as if something there, necessary to their existence, had

snapped, and both alike longed but for the hour of reunion. He loved her for her own sake, not for his, with an affection that was almost impersonal, in which there was as much esteem as love, and by unceasing struggles against the allurements of the senses, he had thus far been able to resist their power. But one day, as they were seated in silence near each other on the large sofa in the library—littered as usual with books and manuscripts—George, exhausted perhaps by the efforts he had so long been making to resist the power of a spell that was irresistible, allowed his head to sink imperceptibly on the shoulder of his companion, and—their lips met.

Ah, joys ineffable of requited love! Insatiable desire of the soul thirsting for happiness, transports without end of the soaring imagination, sweet harmony of hearts—to what ethereal heights do you raise those who abandon themselves to your supreme delights! Lost in the raptures of the region of enchantment to which their souls have taken flight, they forget the world they have left beneath them and all it contains. The earth, with its baseness and its misery, exists no longer for them. Light as air, they dwell in flames, like salamanders or phoenixes, and consumed perpetually in their own fires, perpetually rise from their

ashes ever luminous, ever ardent, invulnerable, invincible.

The transports experienced by the lovers in this expansion of feeling so long repressed, plunged them into an ecstasy that made them, for a period, forget metaphysics and its problems. This period lasted six months. The sweetest but most imperious of sentiments had come to supply in their being the want which intellectual pleasures had not been able completely to satisfy. From the day of that kiss George Spero not only disappeared altogether from the world, but he even ceased to write. I myself completely lost sight of him, notwithstanding the long and sincere affection he had always shown me. Logicians might perhaps have deduced from this that, for the first time in his life, he was satisfied, and that he had found the solution of the great problem—the final end of existence. They lived in that egotism of lovers which, removing the rest of the world beyond their center of vision, diminished their defects and made them appear more amiable and beautiful.

Often they would walk along the borders of the Seine at sunset, silently contemplating the marvelous effects of light and shade that make the sky of Paris so beautiful at twilight, when the spires and dwellings of the city stand darkly

outlined against the luminous background of the western sky.

Rosy and purple clouds, lighted up by the reflection of the sun's last rays upon the water, gave the sky that strange charm peculiar to our Parisian sky, less gorgeous than that of Naples, bathed, as it is, in the light reflected from the Mediterranean on the West, but more beautiful than that of Venice illumined by the light from the East, which is pale.

Whether, drawn by the spell of the old City, they wandered along the river-bank, passing in turn Notre Dame and the old Châtelet projecting its black silhouette against the still luminous sky; or, as was oftener the case, attracted by the splendors of the sunset and of Nature, they passed along the quays beyond the ramparts of the vast city into the solitudes of Boulogne and Billancourt, shut in by the dark sides of Meudon and Saint Cloud, it was all the same; they forgot the noisy city they had left behind them, and walking with the same steps, the two forming one, they received at the same time the same impressions, thought the same thoughts, and, silent, spoke the same language. The river flowing at their feet, the noises of the day sunk into silence, Iclea loved to repeat to George the names of the stars as they appeared one by one in the sky.

There are often in Paris mild days in March and April, when the air is spring-like. The brilliant stars of Orion, the dazzling Sirius, the twins Castor and Pollux, sparkle in the spacious vault of heaven; the Pleiades sink toward the western horizon; but Arcturus, and Boötes, shepherd of the Celestial flock, arise, and a few hours later the shining Vega rises above the eastern horizon, to be soon followed by the Milky Way. Arcturus, with his rays of gold, was always the first star to be recognized by his piercing brightness and his position at the end of the tail of the Great Bear. At times the crescent moon glittered in the west, and the young spectator admired, like Ruth beside Boaz, "this golden scythe in the field of stars."

Stars surround the Earth on all sides; the Earth moves in space. Spero and his companion were aware of this, and perhaps in none of those celestial worlds did any two beings live in more intimate communion than did they, with infinity and with the heavens.

Insensibly, however, and perhaps unconsciously, the young philosopher took up again, desultorily and by degrees, his interrupted studies. Pursuing his researches now with an optimism that he had not hitherto felt, notwithstanding his natural goodness of disposition, he rejected cruel conclusions, because they

seemed to him to be due to an incomplete knowledge of causes, beholding as he did, panoramas of nature and humanity under a new light. Iclea also resumed, at least in part, the studies she had commenced with him, but a new and powerful sentiment filled her soul, and her spirit no longer enjoyed, as before, the freedom which is indispensable to intellectual labor. Absorbed in her affection for a being over whom she held complete sway, she saw life only through him, she lived only for him. During the quiet evening hours, when she seated herself at the piano to play a sonata of Chopin, which she was surprised to find that she had not understood before she loved, or to accompany herself on the piano as she sang with her full, pure voice, the Norwegian songs of Grieg and Bull, or the melodies of our own Gounod, it seemed to her, in despite of herself, perhaps, that her beloved was the only auditor capable of understanding these inspirations of the heart. What delightful hours did George spend in the large library in the house at Passy, stretched on the sofa, watching the capricious rings of the smoke of an Oriental cigarette, while Iclea, abandoning herself to the reminiscences of her fancy, sang a sweet Saetergientens Sondag of her native land, the serenade of Don Juan or the Lakes of Lamartine, or, letting her

agile fingers run over the keys, dashed off the melodious dream of the minuet of Boccherini!

Spring had come. The month of May witnessed the opening fêtes of the International Exposition at Paris, of which we spoke at the beginning of this narration, and the heights of the garden at Passy sheltered the Eden of two loving hearts.

The father of Icea, who had been suddenly called to Tunis, had now returned, bringing with him a collection of Arabian arms for his museum at Christiania. It was his intention to return soon to Norway, and it had been agreed between the young Norwegian and her lover, that their marriage was to take place in her native land on the anniversary of the mysterious apparition. Their union was, by its very nature, altogether different from those vulgar liaisons, based either on sensual pleasure or mercenary interest, more or less disguised, which form the greater part of the unions between the sexes. Intellectual culture isolated them in the higher regions of thought; the delicacy of their sentiments kept them in an ideal atmosphere where everything material was forgotten. The extreme sensibility of their nerves, the exquisite refinement of all their feelings plunged them into ecstasies of never-ending delight. If love exist in other worlds it

can be neither more profound nor more exquisite than theirs. They might both have afforded the physiologists living proof of the fact that, contrary to the general opinion, all our enjoyments proceed from the brain, the intensity of the feeling corresponding to the psychic sensibility of the being.

Paris was for them not a city, not a world, but the stage of human history. Here they lived over again long past ages. The old quarters of Paris, not yet swept away by modern innovations; the city, with Notre Dame; St. Julien-le-Pauvre, whose walls still recall Chilperic and Fredigonda, the ancient dwellings of Albert le Grand, Dante, Petrarch and Abelard; the old University still more ancient than the Sorbonne, and—relics of the same long past ages—the cloisters of St. Merry, with its sombre aisles; the abbey of St. Martin, the tower of Clovis; Mount St. Genevieve; Saint Germain-des-Près, memorial of the Merovingians, Saint Germain l'Auxerrois, whose bell sounded the tocsin of Saint Bartholomew, the Angelical Chapel of the palace of Louis IX.; all the memorials of French history were the objects of their pilgrimages. In the midst of crowds they dwelt apart in the contemplation of the past, and saw indeed what few can see.

Thus did the vast city speak to them in the

language of the past, when, lost among the fabulous monsters, the griffins, the pillars, the capitals, the arabesques of the towers and galleries of Notre Dame, they saw at their feet the human swarm hurrying homeward in the evening twilight, or when, ascending still higher, they sought, from the summit of the Pantheon, to reconstruct the ancient city and to follow its development through successive centuries, from the time of the Roman emperors, who passed their lives in the thermæ, down to Philip Augustus and his successors.

The spring sunshine, the lilacs in bloom, the joyous May morning, exhilarating, and melodious with the song of birds, drew them at times away from the city, wherever chance might lead, into the fields or the woods. Time passed like the wind. Day vanished like a dream, and night prolonged the divine ecstasy of love. In the whirling globe of Jupiter, where the days and nights are scarcely ten hours long and pass more than twice as quickly as with us, lovers do not find the hours pass more quickly; the measure of time is in ourselves.

One evening they were both seated close together on the roof of the old tower of the *château de Chevreuse*, whence they could see, without obstruction, the surrounding landscape. The warm air of the valley reached them where

they were, laden with the perfumes of the wild-flowers of the neighboring woods; the fauvette could still be heard, and the nightingale sent forth in the darkening shade of the thickets his melodious song to the stars. The sun had just set amid splendors of gold and scarlet, and only the west was illuminated by a still brilliant light. All Nature seemed to sleep. Slightly pale, but illumined by the glow of the western sky, Iclea seemed to shine with an inward light, so delicate, so clear and ideally pure she looked. Her eyes swimming in languorous depths, her small and childlike mouth, slightly parted, she seemed lost in contemplation of the sunset. Resting against the bosom of Spero, her arms thrown around his neck, she had abandoned herself to revery, when a shooting-star fell from the heavens, just opposite the roof of the tower where they stood. She trembled with a superstitious fear. Already the brightest of the stars had begun to appear in the depths of the sky; high above, almost at the zenith, Arcturus, of a bright golden yellow; to the east, a little lower down, Vega, of a pure white; to the north Capella; to the west Castor, Pollux and Procyon. The seven stars of the Great Bear, the cluster of the Virgin and Regulus, were now also visible. One by one the stars began to stud the firmament. The polar star indicated the sole

fixed point of the Celestial Sphere. The moon was rising, a narrow crescent defined in shadow on her reddish disk. Mars shone brightly between Pollux and Regulus to the southwest; Saturn shone in the southeast. Twilight slowly yielded to the mysterious reign of night.

"Does it not seem to you," Iclea said, "that all those stars are like eyes watching us?"

"Celestial eyes like thine. What could they behold on earth more beautiful than thou and than our love?"

"In spite of—" She paused.

"Yes, in spite of all. The world, family, society, custom, the laws of morality—I understand your thoughts—we have forgotten them all to obey the law of attraction—like the sun, like the stars, like the nightingale that sings, like all nature. Soon we shall pay those social usages the tribute due to them, and we can then openly proclaim our love. Shall we be therefore happier, is it possible to be happier than we are at this moment?"

"I am thine," she replied. "I exist not for myself. I am absorbed in thy light, thy love, thy happiness, and I desire nothing, nothing more. No, I thought of those stars, those eyes that watch us and I said to myself,

‘Where, to-day, are all the human eyes that have contemplated them for myriads of years as we do now. Where are all the hearts that have beaten as our hearts beat at this moment. Where are the souls that have mingled in kisses without end, in the nights of the ages of the past?’”

“They still exist. Nothing can be destroyed. We associate heaven and earth together in our minds, and we are right. In every age, among every race, in every creed, humanity has sought to find in that starry sky the secret of its destinies. This seems to have been in some sort a premonition. The Earth is one of the stars of the sky, like Mars and Saturn, that we behold yonder, celestial worlds, dark themselves and lighted by the same sun that gives light to us, and like all those stars yonder which are distant suns. Your thought repeats the thought of humanity since it has existed. Mankind have always sought in the heavens an answer to the great secret, and since the age of mythology it is Uranie who has answered it.

“And she it is, this divine Uranie, who will always answer it. She holds in her hands the heavens and the earth. She makes us live in infinite space. And would it not seem as if our ancestors, in personifying in her, through

poetic feeling, the study of the Universe, had sought to perfect Science by bestowing on it life, grace and beauty? Uranie is the muse, *par excellence*. Her beauty seems to say to us that in order to understand truly the science of the stars and of the infinite, it is necessary to love."

Night was falling. The moon sinking slowly in the eastern sky diffused through the atmosphere a brightness which imperceptibly replaced the twilight, and already in the city below a few lights could be seen glimmering through the trees. They had risen to their feet and stood clasped in each other's arms on the roof of the tower. Icea's face was beautiful, framed in the aureole of her locks which floated over her shoulders. The cool breath of spring, laden with the mingled perfumes of violets, gilly-flowers, lilacs and May roses, ascended from the neighboring gardens. Solitude and silence surrounded them on all sides. Their lips met in a long kiss.

Hours, days, weeks passed in intimate communion of thought and feeling. The June sun already shone in the solstice, and the moment had arrived for Icea's departure for her native land. At the time fixed upon she set out with her father for Christiania.

Spero followed them a few days later. The

intention of the young savant was to remain in Norway until the autumn, and to continue there the investigations which he had commenced the preceding year, into the nature and cause of the Aurora Borealis, investigations which possessed a peculiar fascination for him, but in which he had as yet made little progress.

In Norway this sweetest of dreams continued uninterrupted. The fair daughter of the North cast a spell around her lover, under whose influence he might have forgotten forever the attractions of science, if Iclea had not herself had, as we have seen, an insatiable thirst for knowledge.

The experiments which the indefatigable investigator had begun in atmospheric electricity, interested her as much as him. She too wished to understand the nature of those mysterious flames of the Aurora Borealis, that scintillate at night in the upper regions of the atmosphere, and as in the progress of his researches he experienced a desire to make an ascension in a balloon for the purpose of observing the phenomenon at its source, she insisted on accompanying him. He tried to dissuade her from her purpose, these aeronautic experiments not being without danger.

But the thought of a danger to be shared with him was enough to make her deaf to the entreaties of her beloved. After much hesitation, Spero consented to take her with him. and began to make his preparations at the University of Christiania for an ascension the first night of the Aurora Borealis.

V.

THE AURORA BOREALIS—THE BALLOON ASCENT—IN MID-HEAVEN—CATASTROPHE.

THE disturbance of the magnetic needle had announced the coming of the Northern Lights, even before the sun had set, and the balloon was being filled with hydrogen gas, when the transparent green color, which is the unmistakable forerunner of an Aurora Borealis, appeared in the North. In a few hours more the preparations were completed. The atmosphere was limpid, the sky cloudless. The stars sparkled in a moonless heaven, brightened only in the magnetic regions of the North by a circle of soft light, which shot forth rosy and greenish flames that seemed like the throbbings of the heart of some unknown and mysterious being. The father of Iclea, who was present at the inflation of the balloon, had no suspicion of his daughter's intention. At the last moment she entered the parachute as if for the purpose of examining it. Spero gave a signal and the balloon rose slowly and majestically above the city of Chris-

tiania, which, with its thousands of lights, gradually diminishing in size, soon disappeared from the gaze of the two aerial voyagers as they ascended into the dark regions of space. The balloon, taking an oblique direction, soared lightly above the dark regions below, whose lights paling gradually, soon disappeared from view. The noises of the city were at the same time lost in distance, and a profound silence, the silence of the upper regions, enveloped the aerial boat. Impressed by the strange stillness, and still more, perhaps, by the novelty of her position, Icea clung to her intrepid companion. They were now ascending rapidly in the air. The Aurora Borealis seemed to descend toward them, spreading itself beneath the stars like a floating drapery of gold and purple, shot with electric lights. Spero, by the aid of a small glass globe containing glow-worms, took observations from time to time with his instruments, marking the degrees indicated by them as they ascended. The balloon continued to mount. What intense joy for the scientist! In a few moments they should reach the plane of the lights. He was about to solve the problem of the altitude of the Aurora Borealis, which so many famous scientists, chief among them his beloved masters, the two great "psychologists and philosophers," Oersted and

Ampère, had attempted to solve in vain. Icea had recovered her calmness. "Are you then afraid?" her friend asked her. "The balloon is safe, there is nothing to be feared; every possible accident has been provided against; we shall descend in an hour. There is not a breath of wind blowing from the earth."

"No," she said, while a flame lighted up her figure with a transparent, rosy brightness. "I am not afraid, but it is all so strange, so beautiful, so divine; to me, in my insignificance, it seems sublime. I trembled for an instant. It seems to me that I love you more than ever—"

And throwing her arms around his neck she clasped him in a long and passionate embrace.

The solitary balloon sailed on through the aerial heights in silence, a globe of transparent gas enveloped in a frail, silken covering, of which they could descry, from the parachute, the vertical divisions meeting at the top around the ring of the valve, the inferior part of the balloon remaining wide open for the expansion of the gas. The "obscure brightness" of which Corneille speaks, shed by the stars, would have given light enough without the light of the Aurora Borealis, to distinguish the form of the aerial vessel. The parachute, suspended to the network enveloping the silken

globe, was fastened by eight solid cords woven into the wicker-work surrounding it and passing under the feet of the aeronauts. The silence was solemn and profound; they could almost hear the beating of their hearts. The last sounds of earth had sunk into silence. They moved at a distance of five thousand yards above the Earth, borne along with incredible swiftness by the upper current of the atmosphere, of which, however, they felt nothing, for a balloon is submerged in the moving current of air and remains motionless in it, as if it formed a part of it. Sole inhabitants of those elevated regions, our two travelers experienced in their novel situation, the exquisite happiness felt by those who breathe this pure and exhilarating atmosphere, and soaring above the world below, forget in the silence of space, all the meannesses of our terrestrial system. And they, better than any of those who have preceded them, were able to enjoy the charms of this unique situation, heightened tenfold by the feeling of their own happiness. They conversed in low tones as if they feared to be overheard by the angels, and that the magic spell should be broken that held them suspended near to Heaven. At times, sudden flashes, the lights of the Aurora Borealis, passed before their gaze, then everything re-

turned to an obscurity more profound and more fathomless than before.

They continued sailing on, as in a dream, among the stars, when a sudden sound like a dull hissing greeted their ears. They leaned over the edge of the parachute and listened attentively. The sound did not come from the earth. Was it the hum of the electric currents of the Aurora Borealis? Was it some magnetic disturbance in the upper regions of the air? Lights flashed suddenly from the depths of space, illumining their figures for a moment, then vanished. They listened breathless—the sound was close beside them—it was the gas escaping from the balloon.

Whether it was that the valve had opened of itself, or that either of them had accidentally pressed upon the cord that secured it, the fact was the same—the gas was escaping!

Spero soon discovered the cause of the sound that had alarmed them, but it was with terror that he did so, for it was impossible to close the valve again. He examined the barometer, which began to rise slowly—the balloon, then, was descending. And the descent, slow at first, but inevitable, would go on increasing in mathematical proportion. Looking into the space below them, they saw the lights of the Aurora Borealis reflected in the burnished mirror of a vast lake.

The balloon descended with velocity until it was not more than three thousand yards above the ground. Although outwardly calm, the unfortunate aeronaut did not deceive himself as to the imminence of the danger. He threw overboard, in succession, all the ballast that remained, the rugs, the instruments, the anchor, until the parachute was empty; but this lightening of the balloon was insufficient, and served to diminish its velocity but for an instant. Descending, or rather falling now, with inconceivable rapidity, the balloon was only a few hundred yards above the surface of the lake. A violent wind began to blow from below, and whistled about their ears.

The balloon whirled around, as if caught in a waterspout. Suddenly George Spero felt himself clasped in a close embrace, his lips pressed by a long kiss. "My Master, my Lord, my All, I love thee!" she cried, and parting the cords with her hands she precipitated herself from the balloon.

The balloon, lightened of its weight, shot up like an arrow. Spero was saved.

The fall of Icea's body into the deep waters of the lake produced a dull sound, strange and terrible, in the silence of the night. Mad with anguish and despair, his hair bristling with horror, looking into space, but beholding nothing, while the balloon shot up to the height of

a thousand yards, he hung with all his weight on the cord of the valve in the hope of descending to the scene of the catastrophe; but the cord did not work. He fumbled at it in the darkness, but without result. He felt under his hand the little veil of his beloved, which had remained caught among the cords, the light, little perfumed veil, still impregnated with the intoxicating perfume of his beautiful companion's breath. He examined the cords closely, fancied he discovered the impress her little clinched hands had made upon them, and placing his hands where a few seconds before Icea's had rested, threw himself from the balloon.

For an instant his foot remained caught among the ropes, but he had the courage to disengage it, and fell whirling into space.

Some fishermen, who had witnessed the tragedy, had rowed quickly to the place where the young girl had fallen into the lake, and had succeeded in rescuing her. She was still alive, but all the cares lavished upon her could not prevent a fever supervening. In the morning the fishermen put in at one of the little towns on the borders of the lake, and carried her to their humble dwelling. She had not once recovered her senses. "George!" she would cry, opening her eyes, "George!" and that was all. On the following day she heard the tolling of the vil-

lage bell. "George " she repeated, "George!" They had found his body, a formless mass, a few steps distant from the borders of the lake. His fall, from a height of more than a thousand yards, had commenced above the lake, but the body, still keeping the motion communicated to it by the horizontal movement of the balloon, had not fallen vertically, it had descended obliquely, following the line of progress of the balloon, and had dropped, a mass precipitated from the sky, into a field on the borders of the lake, had left a deep imprint on the ground, and rebounded to a distance of a yard from the spot where it had fallen. The very bones even, were ground to powder, and the brains had escaped from the skull. Scarcely was his grave closed than another was opened beside it for Icea, who died calling, with her latest accents, "George! George!"

One stone covered both their tombs, and the same willow cast its shadow over their last sleep. To this day the dwellers on the borders of the beautiful Lake Tyriforden preserve in their hearts a sad remembrance of the catastrophe, now almost a tradition, and they never point out the stone that covers the graves of the lovers to the traveler, that it does not bring to their minds the mournful memory of a vanished dream.

VI.

ETERNAL PROGRESS—MAGNETIC SÉANCE.

DAYS, weeks, months, seasons, years pass swiftly on this planet, and doubtless also on the others. More than twenty times already had the Earth made its annual revolution around the sun, since the day when Fate so tragically closed the book which my young friends had been reading for not quite a year; their happiness had passed swiftly, their day had ended in its dawn. I had, if not forgotten,* at least ceased to think of them, when, quite recently, in a hypnotic séance, at Nancy, where I had stopped for a few days on my way to the

*Curious coincidences sometimes happen. On the day on which Spero made the ascension which was to prove fatal to him, I knew that he had precipitated himself into space, by the extraordinary agitation of the compass, which announced at Paris, where I then was, the occurrence of the Aurora Borealis he had so anxiously waited for, to make the ascent. It has been proved, indeed, that the presence of those lights may be known at a distance, by the magnetic disturbances they produce, but what surprised me most, and what I have not yet been able to explain, was the fact that the very hour of the catastrophe, I experienced an indefinable feeling of *malaise*, followed by a sort of presentiment that some misfortune had befallen him. The telegram which announced to me his death, found me almost prepared for it.

Vosges, I was led to question a "subject" by whose aid in their investigations, the savants of the Stanislas Academy had obtained some of those truly marvelous results with which the scientific press has been astonishing us for some years past. I do not remember how it happened that he and I entered into a conversation concerning the planet Mars.

After describing a country situated on the shores of a sea known to astronomers by the name of the Sea of Sathir, and a solitary island which rises from the bosom of this sea, after describing the picturesque scenery and the reddish vegetation of these shores, the cliffs against which the waves dash ceaselessly, the sandy beach, on which they die away, the subject, who was a sensitive of extraordinary power, suddenly grew pale, and carried his hand to his forehead. His eyes closed, he contracted his brows, he seemed trying to grasp an idea that fled from him. "See!" cried Doctor B——, raising his hand with a gesture of command—

"See! I will it."

"You have friends there," the sensitive said to me.

"That does not surprise me greatly," I answered. "I have done a good deal for the inhabitants of that planet."

"Two friends," he added, "who are talking of you now."

"Oh, persons who are acquainted with me?"

"Yes."

"How can that be?"

"They have known you here."

"Here?"

"Here on the Earth."

"Ah! And is it long since?"

"I do not know."

"Are they young?"

"Yes, they are two lovers who adore each other."

Then the charming images of my regretted friends were brought vividly before my mind. But I had no sooner thought of them than the sensitive cried, in a more assured voice :

"It is they!"

"How do you know?"

"I see it. They are the same souls; they are of the same color."

"How, of the same color?"

"Yes, souls are light."

A few moments afterwards he added :

"There is a difference, however."

He remained silent for a moment, his brow contracted as if lost in thought. But his face suddenly clearing, he added :

"They have changed places with each other."

He has now become the woman, she the man. And they love each other more ardently than ever."

As if he did not himself understand what he had just said, he seemed making painful efforts to find an explanation of it in his thought, the muscles of his countenance became violently contracted, and he fell into a sort of catalepsy from which Doctor B—— made no delay in delivering him. But the instant of lucidity had passed, and returned no more.

I give this last incident in conclusion, to the reader, as I witnessed it, and without comment. Had the subject, according to the hypothesis of not a few hypnotists, been influenced by the thoughts passing through my mind, when the doctor commanded him to answer my question? Or, more independent, had his spirit really freed itself for the time from the bonds of matter, and caught sight of things passing beyond our sphere? This is what I shall not take it upon myself to decide. Perhaps the conclusion of this narrative will tell.

I will admit, however, without hesitation, that the resurrection of my friend and his adored companion on Mars, a planet near our own, and resembling it so closely as it does, although older and doubtless more advanced in progress, might seem to the thinker the

logical and natural continuation of their terrestrial existence, so soon cut short.

No doubt Spero was right in saying that matter is not what it appears to be, that appearances are deceitful, that the real is the invisible, that spirit is indestructible, that in the eternal world the infinitely great is one with the infinitely little, that the celestial regions are not separated from us, and that souls are the seed of the planetary populations. Who can say that the science of dynamics will not one day reveal to the student of the heavens the religion of the future? May not Uranie hold in her hand the torch without whose light no problem can be solved, without which all nature would remain hidden from our gaze in impenetrable obscurity? The heavens should interpret the earth, the infinite should explain the soul and its spiritual faculties.

The unknown of to-day is the reality of to-morrow. The following pages may perhaps throw some light on the mysterious bond that unites the transitory to the eternal, the visible to the invisible, the earth to the heavens.

THIRD PART.

HEAVEN AND EARTH.

I.

TELEPATHY—THE UNKNOWN OF YESTERDAY—SCIENCE—APPARITIONS—THE PSYCHIC FACULTIES—THE SOUL AND THE BRAIN.

THE magnetic seance at Nancy had left a vivid impression on my mind. I often thought of my departed friend, of his researches into the unexplored domains of nature and life, and of his earnest and original investigations regarding the mysterious problem of immortality. But I could now no longer think of him without associating with him the idea of a possible reincarnation in the planet Mars.

This idea appeared to me bold, rash, chimerical, if you will, but not absurd. The distance from our earth to Mars is as nothing where the transmission of the force of attraction is concerned ; it is almost insignificant in the

case of light, since a few minutes suffice for a wave of light to traverse those millions of leagues. I thought of the telegraph, the telephone, the phonograph, the will power of the magnetiser exercised over his subject miles away, and at times I asked myself if it might not one day be possible, through some gigantic stride in scientific discovery, to throw a celestial bridge from our world to its sister spheres in space.

During my observation of Mars through the telescope, on the succeeding night, I was distracted by a thousand strange ideas. The planet was, however, as interesting, from a scientific point of view, as it had been during the entire spring and summer of 1888. Vast inundations had taken place on one of its continents, the Libye—as had happened once before, in 1882, according to the observations made by astronomers, under different circumstances. It was ascertained that its meteorology and its climatology are not the same as ours, and that the waters that cover about one-half the surface of the planet undergo singular displacements and periodical changes, of which terrestrial geography can give no idea. The snows of the north pole had greatly diminished, a fact which proved the summer on that hemisphere to have been warm, although less so than the

summer on the southern hemisphere. For the rest, there had been very few clouds over Mars during the whole series of our observations. But strange as it may seem, it was not these scientific facts, important as they were, and the basis of all our conjectures, which most occupied my thoughts, it was what the sensitive had told me concerning George and Iclea. The fantastic ideas which passed through my brain; prevented me from making any observation of scientific value. I continually asked myself if communication could not exist between two beings remote from each other, or even between the living and the dead, and each time I answered myself that such a question was in itself anti-scientific and unworthy of a practical mind.

Yet, after all, what is it we call "science"?

What is there that is not "scientific" in nature? Where are the limits of abstract science? Is the body of a bird really of more scientific significance than his brilliant plumage, or his song with its varied cadences? Is the skeleton of a pretty woman less worthy of attention than her structure of flesh and her living form? Is not the analysis of the emotions of the soul scientific? Is it not scientific to seek to know if the soul can really see from afar, and how? And then what is this strange

vanity, this naïve presumption of ours to imagine that science has said its last word; that we know all that there is to know; that our five senses are sufficient to comprehend the nature of the universe? To say that we can recognize, amongst the forces which act around us, attraction, light, electricity, is this to say that there are no other forces which escape our knowledge because we have not the faculty to perceive them? It is not this hypothesis which is absurd, it is the naïveté of the pedagogues and academicians. We smile at the ideas of the astronomers, the philosophers, the physicians, the theologians of three centuries ago. In three centuries more, will not our successors in the sciences smile in their turn at the assertions of those who pretend in our day to know everything?

The physicians to whom I communicated, fifteen years ago, the magnetic phenomena observed by me in certain experiments, one and all, denied absolutely the reality of the facts observed. I met one of them recently at the Institute: "Oh!" said he, not without shrewdness, "*then* it was magnetism, *now* it is hypnotism, and it is we who study it. That is a very different thing."

Moral: Let us deny nothing positively. Let us study, let us examine; the explanation

will come later. I was in this frame of mind, when, pacing up and down my library, my eyes fell on an elegant edition of Cicero, which I had not looked at for some time. I took one of the volumes, opened it at random, and read as follows: "Two friends arrived at Megara and put up at separate lodgings. One of them had hardly fallen asleep when he saw his traveling companion before him, who said to him with a tragic air, that his host had formed a plan to assassinate him, begging him at the same time to go as quickly as possible to his assistance. The other awoke, but convinced that he had been deceived by a dream, he soon fell asleep again. His friend appeared to him anew and entreated him to hasten, as the murderers had just entered his room. Much troubled, he could not help feeling surprised at the persistence of the dream, and was inclined to go to the help of his friend, but reason and fatigue finally prevailed, and he lay down again. Then his friend appeared to him a third time, pale, bleeding, disfigured. "Unhappy man," he said to him, "you would not come to me when I implored you. It is too late to help me now; all that remains is to avenge me! Go at sunrise to the gate of the city. You will meet there a cart laden with manure; stop it, and order it to be unloaded; you will find my body con-

cealed in it. Render me the honor of burial; seek out my murderers and punish them." Persistence so determined, details so minute, allowed of no more hesitation. The friend arose, hastened to the gate indicated, and overtook and stopped the driver, who, surprised, made no attempt at resistance, and the body of the murdered man was at once discovered, concealed in the cart."

This incident seemed to come expressly in support of my opinions regarding these unsounded problems. Doubtless there will not be wanting theories in explanation of the occurrence. It may be said that the story did not happen just as Cicero relates it, that it has been amplified or exaggerated; that two friends arriving at a strange city, might well fear some misfortune, that, fearing for the life of his friend, and fatigued by the journey, it might easily happen that one of them should dream of his friend being the victim of an assassination. As to the episode of the cart, the travelers might have seen one in the inn-yard, and the principle of the association of ideas accounts for its connection with the dream. Yes, one may make all these explanatory hypotheses, but they are only hypotheses. To admit that there was really communication between the dead and the the living is a hypothesis also.

Are facts of this kind rare? I do not think so. I remember, among others, one incident in particular, which was related to me by Jean Best, an old friend of mine, who, in company with the distinguished Edward Charton, another friend, founded, in 1883, the *Magazin Pittoresque*, and who died some years ago. He was a grave, cold, methodical man, a skillful engraver, a conscientious manager, every one who knew him knows how unexcitable his temperament was, and how little imaginative. The following occurrence took place when he was a child about five or six years old.

It was at Toul, his native place. One beautiful evening he was lying on his little bed, awake, when he saw his mother enter his room, walk across the floor, and go into the next room, of which the door was open, where his father was playing cards with a friend. At the time his mother was at Pau very ill. He arose immediately from his bed and ran after the apparition into the room, where he looked for her in vain. His father, with some impatience, scolded him, and, telling him that he had been dreaming, sent him back to his bed. The child, convinced at first that it was so, went back to bed and tried to go to sleep. But some moments later, his eyes being wide open, he distinctly saw his mother a second time pass quite near

to him, and this time he sprang toward her to embrace her. But ~~she~~ vanished on the instant. He did not wish to go back to bed, but remained in the room with his father, who went on playing cards. On that very day, and at that very hour, his mother had expired at Pau.

I had this recital from Mr. Best himself, who retained an ineffaceable recollection of it. How is this occurrence to be explained. It might be said that the child, knowing his mother to be ill, thought of her with frequency, and that he experienced an hallucination which coincided, by chance, with the death of his mother. It may be so. But it is also possible that there was a sympathetic bond between the mother and the child, and that at that solemn moment, the soul of the mother had actually held communication with that of her child. How? it may be asked. We do not know. But what we *do not* know compared with what we *do* know, is as the ocean compared to a drop of water.

Hallucinations! This is easily said. Medical works without end have been written on the subject. Every one is acquainted with the work of Brierre de Boismont. Amongst the many observations which it contains, apropos of this subject, we will cite the two following:

"Obs. 84.—At the time of the plague in Lon-

don, King James, being just arrived in England, and staying with Lord Camden at the country house of Sir Robert Cotton, his eldest son, still a child, and living at the time in London, appeared to him in a dream, with a bleeding cut in his forehead, as though he had been wounded by a sword. Terrified by this apparition, the King began to pray, and in the morning he repaired to the room of Lord Camden, to whom he related the occurrence of the night. The latter tried to reassure the monarch, telling him that he had been the sport of a dream, and that there was no need to torment himself about the matter. On the same day the King received a letter from his wife, informing him of the loss of his son, who had died of the plague. When the child had appeared to his father, he had the figure and the proportions of a grown man.

"Obs. 87.—Mdlle. R., a lady endowed with excellent judgment, religious without bigotry, lived, before her marriage, in the house of her uncle, Dr. D., a celebrated physician, and a member of the Institute. She was separated from her mother, who was seriously ill in the country.

"One night this young girl dreamed that she saw her mother near her, pale, ill, dying, and showing great distress at not being surrounded by her children, of whom one, the Curé of a

parish in Paris, had emigrated to Spain, the other being in Paris. Shortly afterward she heard her mother call her several times by her name ; and saw, in her dreams, the persons surrounding her mother, supposing that she asked for her little grand-daughter, of the same name, go into the next room for her ; a sign from the sick woman made known to them that it was not her grand-child, but her daughter, then in Paris, that she desired to see. Her face expressed the grief which she felt at her daughter's absence ; suddenly her countenance changed, a mortal pallor overspread it, and falling back in the bed she expired.

“ On the following day Mdlle. R., appearing very sad, her uncle Dr. D., begged her to let him know the cause of her sorrow ; she related to him, in all its details, the dream which had so greatly distressed her. Dr. D., finding her in this condition of mind, threw his arms around her, confessing that the dream was only too true, and that her mother had just died ; he did not enter into any further details. Some months afterwards, availing herself of the absence of her uncle to arrange his papers, which, like many other literary men, he disliked to have touched, Mdlle. R. found among them a letter relating the circumstances of her mother's death. What was her surprise on

reading in it the most minute details of her dream!"

Hallucination! Fortuitous coincidence! Is this a satisfactory explanation? In every case it is an explanation which explains nothing. A great number of ignorant and unthinking people of all ages, and of every position in life; people who live on their rents, merchants or deputies, sceptical by temperament or for fashion's sake, simply declare that they do not believe those stories, and that there is no truth in them. This also is a solution of the problem unworthy of serious attention. Minds accustomed to study cannot be content with a bare and unsupported denial of facts.

A fact is a fact, and as such it must be accepted, even though, in the present state of our knowledge, it is impossible to explain it.

It is true that medical annals bear witness that there are really hallucinations of more than one sort, and that certain nervous organizations are the victims of them. But this is no reason for the conclusion that all unexplained psychological phenomena are hallucinations.

The scientific spirit of our age seeks, with reason, to clear all these facts from the delusive mists of supernaturalism, considering that there is really nothing supernatural, and that nature, whose domain is infinite, embraces

everything. Some years ago a scientific society, particularly worthy of note, was organized in England for the special purpose of studying those phenomena. It is named the "Society for Psychical Research ;"* it has at its head some of the illustrious savants on the other side of the English Channel ; and it has already made important publications. These phenomena of *vision à distance* are classed under the general title of Telepathy. (τήλε, far, πάθος, sensation, feeling.)

Rigorous investigations are made in examining the evidence, of which there is a considerable variety. Let us for an instant look over this collection, and select from it some documents duly and scientifically proved.

In the following case, observed recently, the witness was as wide awake as you or I are at this moment. The person in question is a certain Mr. Robert Bee, living at Wigan, England. Here is this curious revelation, written by the observer himself.

"On the 18th of December, 1873, I went with my wife to visit her family at Southport,

* "Phantasms of the Living," by E. Gurney and Fr. Myers, Professors of the University of Cambridge, and Frank Podmore, London, 1886. The "Society for Psychical Research" has for President, Professor Balfour Stewart, of the Royal Society of London.

leaving both my parents, to all appearance, in perfect health. On the following day, in the afternoon, taking a walk by the sea-shore, I was seized with so profound a melancholy that it became impossible for me to interest myself in anything, so that we made no delay in returning to the house.

"Suddenly my wife, showing some uneasiness, said that she would go to her mother's room for a few minutes. A moment after, I myself arose from the sofa and went to the parlor.

"A lady, dressed as if she were going out, approached me, coming from the neighboring bed-room. I did not remark her features, as her face was not turned toward me. I immediately addressed her, but I do not remember what I said.

"At the same instant, and while she was in front of me, my wife returned from her mother's room, and passed just by the place where the lady stood, without appearing to observe her. I exclaimed, in surprise: 'Who is that lady, whom you passed by just now without noticing her?'

"'I have passed nobody by,' replied my wife, still more astonished than I was.—'What!' returned I, 'you did not see a lady just now, who stood a moment since exactly where

you are standing? She came out of your mother's room, and must now be in the vestibule.'

" 'It is impossible,' answered she, 'there is absolutely no one in the house but my mother and ourselves.'

" In fact, no stranger had been there, and the search, which we at once made, showed no other result.

" It was then three minutes to eight o'clock in the morning. The next morning, a telegram announced to us the sudden death of my mother from heart-disease, precisely at the same hour. She was in the street at the time, dressed exactly like the stranger who passed before me."

Such is the recital of an eye-witness. Investigations, made by the Society for Psychical Research, have demonstrated conclusively the authenticity and concurrence of the testimony. It is as truly a fact, as any meteorological, astronomical, physical or chemical observation. How is it to be explained? "A coincidence," you will say.

Can an exact scientific critic be satisfied with this word?

Still another case:

"Mr. Frederick Wingfield, living at Belle-Isle en Terre (Côtes-du-Nord), wrote that on

the 25th of March, 1880, having gone to bed late, after having spent a part of the evening reading, he dreamed that his brother, living in the county of Essex, England, was sitting beside him, but that, instead of answering a question which he addressed him, he shook his head, arose from his chair, and went away. The impression had been so vivid that the narrator sprang, half asleep, from his bed, and called to his brother.

"Three days afterwards he received the news that his brother had been killed by a fall from his horse on the same day, the 25th of March, at half-past eight in the evening, a few hours before the dream occurred which has been just related.

"An investigation proved that the date of this death was as given, and that the author of this recital had written down his dream in a memorandum book, *when* it occurred, and not afterwards."

Another case :

"Mr. S. and M. L., both employed in a government office, had been intimate friends for about eight years. On Monday, the 19th of March, 1833, L., on leaving his office, had an attack of indigestion ; he went into an apothecarie's shop, where they gave him some medicine. The following Thursday he felt worse ;

the Saturday of the same week he was still absent from the office.

"On the evening of Saturday, the 24th of March, S. remained at home, having a headache; he told his wife that he felt too warm, a thing that had not happened to him for two months, and after making this remark he went to bed, and a minute afterward he saw his friend L. standing before him, in the same clothes that he usually wore. S. noticed particularly in his dream that he had crape on his hat, that his overcoat was unbuttoned, and that he had a cane in his hand. L. looked at S. steadily and passed him by. S. then recalled the verse in the Book of Job: 'Then a spirit passed before my face; the hair of my flesh stood up.' At this moment he felt a shiver creep over his body, and his hair stood on end. Then he said to his wife, 'What o'clock is it?' She answered, 'Twelve minutes to nine.' He said to her, 'If I ask you the hour it is because L. is dead; I have just seen him.' She tried to persuade him that it was an illusion, but he assured her in the most earnest manner that nothing could make him change his opinion."

Such is the story told by Mr. S. He did not hear of the death of his friend L. until the following Sunday, at three o'clock in the

afternoon. L. had, in fact, died on Saturday evening at about ten minutes to nine.

We may compare this account with the historical event narrated by Agrippa d'Aubigne at the time of the death of the Cardinal of Lorraine :

The King being at Avignon, on the 23d of December, 1574, Charles, Cardinal of Lorraine, died there. The Queen, Catherine de Medicis, retired to rest earlier than usual, having at her *couchée*, among other distinguished persons, the King of Navarre, the Archbishop of Lyons, Madame de Ritz, Madame de Lignerolles and Madame de Sannes. Two of these ladies have vouched for the truth of this account. As the Queen was bidding them good-night, she threw herself back on her pillow with a shudder, covered her face with her hands, and with a violent cry called those present to her assistance, at the same time pointing out to them the Cardinal, who stood at the foot of the bed, holding out his hand. She cried out several times : " My lord Cardinal, I have nothing to do with you ! " The King of Navarre immediately sent a gentleman of his suite to the lodgings of the Cardinal, who brought back word that the Cardinal had at that moment expired.

In his book on " Posthumous Humanity," published in 1882, Adolphe d'Assier vouches

for the authenticity of the following fact, which has been reported by a native of St. Gaudens as having happened to herself :

"I was at the time a young girl," she says, "and I used to sleep with my sister, who was older than I. One night we had just gone to bed, and blown out the candle. The fire in the grate was not quite extinguished, and still threw a feeble light over the room. Turning my eyes toward the fire-place, I perceived, to my great surprise, a priest, sitting there warming himself by the fire. He had the features and the figure of an uncle of ours who was a clergyman, and lived in the neighborhood. I called my sister's attention to this apparition ; she looked toward the fire-place, and saw it also. She, as well as I, recognized our uncle, the arch-priest. Then, seized by an undefinable terror, we cried out, ' Help ! help ! ' with all our might. My father, who slept in an adjoining room, awakened by our screams, arose in great haste, and came to us at once, with a candle in his hand. The phantom had disappeared ; we no longer saw any one in the room. The next day we received a letter telling us that our uncle had died that evening."

Still another fact, reported by a disciple of Auguste Comte, and by him recorded during his sojourn at Rio Janeiro.

It was in 1858. In the French Colony of that capital they still talked about a singular apparition which had been seen a few years before. An Alsatian family, consisting of the husband, wife, and a little daughter, set sail for Rio Janeiro, whither they were going to rejoin some compatriots, who had settled in that city. The voyage was long, the wife became ill, and no doubt for want of care and suitable aliment, died before the vessel arrived. On the day of her death, she fell into a swoon; she remained in that state for a long time, and when she recovered consciousness, she said to her husband, who was watching beside her: "I die content, for now I am reassured concerning the fate of our child. I have just come from Rio Janeiro. I have found the street and the house of our friend Fritz, the carpenter. He was standing at his door, I presented our little one to him. I am sure that on your arrival he will meet her and take care of her. The husband was surprised at these words, without, however, attaching any importance to them. The very same day, and precisely at the same hour, Fritz, the carpenter, of whom I have just spoken, was standing at the door of the house where he lived, in Rio Janeiro, when he thought he saw a fellow country woman of his, cross the street, holding a little child in her arms. She looked at him

with a supplicating air, and appeared to present to him the child which she held in her arms. Her face, which looked very thin, recalled to him, nevertheless, the features of Lotta, the wife of his friend and compatriot Schmidt. The expression of her countenance, the peculiarity of her gait, which he seemed to see more in a vision than in reality, all impressed Fritz vividly.

Wishing to assure himself that he was not the victim of an illusion, he called one of his men, who was working in the shop, and who was also an Alsatian, and from the same locality.

"Look," said he to him, "do you not see a woman in the street holding a child in her arms? Would you not say it was Lotta, the wife of our countryman Schmidt."

"I cannot tell you; I do not distinguish her very plainly," answered the workman.

Fritz said no more; but all the circumstances of this appearance, real or imaginary, and especially the day and the hour, were engraved deeply on his mind. A short time after this he said he saw his compatriot Schmidt arrive with a little child in his arms. The visit of Lotta then recurred to his mind, and before Schmidt had opened his mouth, he said to him:

"My poor friend, I know all; your wife died

on the passage out; and before dying she brought me her little child, that I might take care of it. See, here are the day and the hour."

They were, in fact, the day and the moment recorded by Schmidt, on board the ship.

In his work on the "Phenomena of Magic," published in 1864, Gougenot Mousseaux relates the following fact, which he certifies to be authentic.

Sir Robert Bruce, of the illustrious Scotch family of that name, was second officer on board a vessel. One day, while nearing Newfoundland, as he was making his calculations, he fancied he saw the captain seated at his desk, but on looking with attention, he found that it was a stranger, whose gaze, fixed coldly on him, astonished him greatly. The captain, whom he met when he returned to the deck, noticed his look of astonishment, and asked him what it meant:

"But, who then is at your desk?" said Bruce to him.

"No one."

"Yes, there is some one there: is he a stranger?—and how did he come there?"

"You are dreaming—or you jest?"

"Not at all; will you come down and see?"

They went down to the cabin, but no one was sitting at the desk. They made search

throughout the vessel; but no stranger was to be found.

"The man I saw, however, was writing on your slate; his writing must be there still," said Bruce.

They looked at the slate; these words were written on it, "Steer to the northwest."

"But this is written by you or by some one on board, is it not?"

"No."

Each one was in turn requested to write the same sentence; but no one's handwriting resembled that on the slate.

"Well, let us follow the advice given by these words, steer the ship to the northwest; the wind is good, and will permit us to try the experiment."

Three hours later the man on the lookout signalled an iceberg, and they saw close to it a vessel disabled and crowded with people, bound for Liverpool from Quebec. The passengers were taken on board Bruce's vessel by the life-boats. At the moment when one of the men was going on board the vessel which had rescued them, Bruce started back, greatly agitated. He had recognized the stranger whom he had seen writing the words on the slate. He told the captain this new incident.

"Will you oblige me by writing 'Steer to the

northwest,' on this slate," said the captain to the new-comer, presenting to him the side that had no writing on it.

The stranger wrote the words as he was requested.

"Well, do you acknowledge that to be written by you?" said the captain, struck with the identity of the writing.

"Why, you have seen me write it! How could it be possible for you to have any doubt about it?"

For sole response, the captain turned the other side of the slate up, and the stranger stood confounded at seeing his own handwriting in both sides of it.

"Had you dreamed that you wrote on this slate," said the captain of the wrecked vessel, to the man who had just written on the slate.

"Not at all; I have no recollection of it."

"What was this passenger doing at mid-day," said the captain to the captain of the disabled vessel, whom he had rescued.

"As he was very tired, he was sleeping soundly. As nearly as I can recollect, it was shortly before midday. An hour afterward, at the most, he awoke, and said to me, 'Captain, we shall be saved this very day!' adding: 'I dreamed that I was on board a ship that had come to our rescue.' He described the ves-

sel and its rigging; and it was with great surprise that we recognized your vessel as you came towards us, from the exactness of the description. Finally, the passenger said in his turn, "What seems strange to me is that everything here appears familiar to me, and yet I was never here before."

Baron Dupolet, in his course of lectures on Animal Magnetism, mentions the following fact, published in 1814, by the celebrated Iung Stilling, who heard it from an eye-witness, the Baron de Sulza, chamberlain of the King of Sweden.

One summer night he was returning to his house, near midnight, an hour at which, in Sweden, there is still light enough to read the finest print. "As I arrived at my demesne," he relates, "my father met me at the entrance to the park; he was dressed as usual, and he held in his hand a cane which my brother had carved. I saluted him, and we talked together for some time as we walked toward the house, until we reached his bed-room door. On entering it, I saw my father there undressed and asleep; at that instant the apparition beside me vanished. Shortly afterwards my father awoke and looked at me inquiringly: "My dear Edward," said he to me, "God be praised that I see you safe and well, for I have been

greatly distressed about you, in a dream. It appeared to me that you had fallen into the water and that you were in danger of drowning."

"Now, that day," adds the Baron, "I had gone crabbing with a friend of mine, and I came near being carried away by the current. I told my father that I had seen his apparition at the entrance to the demesne, and that we had held a long conversation together. He responded that he had often had similar experiences."

One may perceive in these different accounts of apparitions that some are spontaneous, and others provoked, so to speak, by the desire, or by the will. Can mental suggestion, then, go so far? The authors of the work entitled "*Phantoms of the Living*," of which we have already made mention, answer affirmatively, by seven well-attested examples, from amongst which I shall take one, to which I shall call the attention of my readers. It is this:

"The Rev. C. Godfrey, living at Eastbourne, in the County of Sussex, having read the account of an apparition, produced by the power of the will, was so struck by it, that he determined to make the experiment himself. On the 15th of November, about eleven o'clock at night, he directed all the power of imagination

and all the strength of will of which he was capable, to the idea of appearing to a friend of his, (a lady,) standing at the foot of her bed.

"The effort lasted about eight minutes; at the end of this time Mr. Godfrey, feeling fatigued, fell asleep. The next day, the lady who had been the subject of the experiment, came of her own accord to relate to Mr. Godfrey what she had seen.

"Being requested to record it in writing, she did so in the following terms:

"Last night, I started out of my sleep with the impression that some one had entered my room. At the same time I heard a noise, but I suppose that it was made by the birds in the ivy outside my window. This was followed by a sense of uneasiness and a vague desire to leave my room, and go down to the ground floor. This feeling became so strong that I finally arose; I lit a candle, and went downstairs with the intention of taking something to quiet my nerves. On my way back to my room I saw Mr. Godfrey, standing by the large window which lights the stairs. He was dressed as usual, and had an expression which I have sometimes remarked on his face, when he was looking attentively at anything. He stood motionless, while I, holding the light up high, looked at him in extreme surprise. This

lasted three or four seconds, after which, as I was going up the stairs, he disappeared. I was not frightened, but greatly agitated, and I could not go to sleep again.'

"Mr. Godfrey considered, very properly, that the experiment would have much more importance if it should be repeated. A second attempt failed, but a third succeeded.

"It is understood of course that the lady on whom he experimented was no more apprized of his intention than she had been on the first occasion.

" 'Last night,' she writes, 'on Tuesday, the 7th of December, at half-past ten o'clock, I went up stairs to bed. I soon fell asleep. Suddenly I heard a voice saying, 'wake up!' and I felt a hand laid on the left side of my head. (The intention of Mr. Godfrey this time, had been to make his presence felt by his voice and touch.) I was at once fully awake. There was a curious sound, like that of a jews-harp, in the room. I felt at the same time a cold breath, as it were, envelope me; my heart began to beat violently, and I distinctly saw a figure leaning over me.

" 'The only light in the room came from a lamp outside, which threw a long luminous ray on the wall above the dressing table; this ray was peculiarly darkened by the figure. I

turned round quickly, and the hand seemed to fall from my head to the pillow. The figure was bent over me and I felt it lean against the side of the bed. I could perceive the outlines of the face, but as though obscured by a mist. It must have been about half-past twelve o'clock. The figure had slightly moved the curtain aside, but in the morning it was hanging down as usual. There is no doubt that the figure was that of Mr. Godfrey. I recognized him by the turn of his shoulders and the shape of his face. During all the time that he remained, there was a current of cold air in the room, as if both windows had been open.'"

These are *facts*!

In the present state of our knowledge, it would be rash to seek an explanation of those things. Our psychology is not far enough advanced. There are many things which we are forced to admit without in any way being able to explain them. To deny what we cannot explain would be sheer insanity. Could the system of the universe have been explained a thousand years ago? Even in our day can attraction be explained? But science advances, and its progress will be without end. Do we know the full capacity of the *human* faculties? That there may be in nature forces still unknown to us, as electricity was less than a

century ago ; that there may be in the universe other beings, endowed with other faculties, the thinker can not for an instant doubt. But is even the terrestrial completely known ? It does not appear so.

There are facts, the reality of which we are forced to admit without being able in any way to explain them.

The life of Swedenborg presents three facts of this class. Setting aside for the present his visions of the stars and planets, which appear more subjective than objective, and merely remarking, *en passant*, that Swedenborg was a *savant* of the first order, in geology, in mineralogy, in crystallography, a member of the academies of science of Upsal, Stockholm, and St. Petersburg, let it suffice to call to mind the three following facts :

On the 19th of July, 1759, returning from England, this *savant* landed at Gottenberg, and went to dine at the house of a certain William Costel, where many guests were assembled. At six o'clock in the evening Swedenborg, who had gone out, returned to the drawing-room, pale and in great consternation, telling them that a fire had just broken out at Stockholm in the Südermohm, in the street in which he lived, and that the flames were spreading rapidly toward his house. He

went out again and returned, lamenting that the house of one of his friends had been burnt to ashes, and that his own house was in the greatest danger. At eight o'clock, after having gone out a third time, he exclaimed joyfully: "Thank God; the fire has been extinguished at the third house from mine."

The news spread quickly through the city, in which it caused all the more excitement, as the governor himself was greatly concerned about it, and many persons were uneasy who had property or friends in Stockholm. Two days later, the royal courier brought the news of the conflagration from that city; there was no discrepancy between his account and that which had been given by Swedenborg; the fire had been extinguished at eight o'clock.

This account is written by the illustrious Kant, who desired to investigate the fact, and who adds: "What is there that can be alleged against the authenticity of this event?"

Now, Gottenberg is one hundred and twenty-five miles from Stockholm.

Swedenborg was at that time in his seventy-second year.

Here is the second fact:

In 1761, Madame de Marteville, widow of the Dutch ambassador at the court of Stockholm, was called on by one of her husband's creditors

to pay a sum of twenty-five thousand Dutch florins (about ten thousand dollars) which she knew had been already paid by her husband, and a second payment of which would place her in the greatest embarrassment—would, indeed, almost ruin her. It was impossible for her to find the receipt.

She paid a visit to Swedenborg, and eight days afterwards she saw in a dream her husband, who pointed out to her a piece of furniture where he told her she would find the lost receipt, together with a hair-pin, studded with twenty diamonds, which she had thought to be lost also. This was at two o'clock in the morning. Overjoyed, she arose and found the receipt in the place indicated. She went back to bed and slept until nine o'clock in the morning. At about eleven o'clock Swedenborg was announced. Before having heard anything that had happened, he told her that the previous night he had seen the spirit of her husband, M. Marteville, who had declared to him that he was going to visit his widow.

Here is the third fact:

In the month of February, 1772, Swedenborg, being at the time in London, sent a note to John Wesley, the founder of the sect of Wesleyan Methodists, saying that he would be delighted to make his acquaintance. The

zealous preacher received this note at the moment when he was about to set out on a mission, and answered that he would profit by this courteous invitation to pay the savant a visit on his return, which would be in about six weeks. Swedenborg replied that in that case they would not see each other in this world, as the 29th of next March would be the day of his death.

Swedenborg in fact died on the date indicated by him more than a month beforehand.

These are three facts whose authenticity it is impossible to deny, but which in the actual state of our knowledge no one assuredly would undertake to explain.

We might multiply indefinitely these authentic accounts. Facts analogous to those related above, whether occurring at the moment of death or in the normal condition of life, without being of frequent occurrence are yet not so rare but that every one of our readers may have heard related, or even perhaps himself been witness to one or more of them. In addition to this, experiments made in the domain of magnetism, equally prove that in certain determined psychological cases, a mesmerist can act on his subject at a distance, not only of several yards, but of several miles, or even hundreds of miles, according to the sensitiveness

and the lucidity of the subject, and no doubt also according to the will of the magnetiser. Besides, space is not what we believe it to be. The distance from Paris to London is great for a pedestrian; it would even have been impossible to make the journey before the invention of boats; it is nothing for electricity. The distance from the earth to the moon is great for our actual modes of locomotion; it is nothing for electricity. In fact from the point of view of the absolute, the space which separates us from Sirius is no greater a part of the infinite than the distance from Paris to Versailles, or from your right eye to your left.

Still more; the separation which seems to exist between the Earth and the Moon, or between the Earth and Mars, or even between the Earth and Sirius, is only an illusion due to the insufficiency of our perceptions. The Moon acts constantly upon the Earth and disturbs it perpetually. The attraction of Mars is also felt on our planet, and in our turn we disturb Mars in his course while we ourselves feel the influence of the Moon. Our globe even acts upon the Sun itself, causing it to move as much as if it touched it. In virtue of attraction the Moon causes the Earth to revolve every month around their common center of gravity, a point 1700 kilometres from

the surface of the globe ; the Earth causes the Sun to revolve annually around their common center of gravity, situated 456 kilometres from the solar center ; all the worlds act perpetually on each other, so that there is no isolation, no real separation amongst them. Now, if attraction thus establishes a communication, real, constant, active and indisputable, proved mathematically, between the Earth and her sisters in space, we cannot see by what right pretended positivists declare that no communication can be possible between two beings, more or less removed from each other, whether on the Earth, or on two different worlds.

May not two brains, which vibrate in unison several miles apart, be moved by one and the same psychical force ? May not the emotional force of the brain travel through the ether in the same manner as attraction, and strike the brain, which vibrates at any distance whatever, just as a sound through a room makes the chords of a piano or violin vibrate ? Let us not forget that our brains are composed of molecules which do not touch each other and which are in perpetual vibration.

But why speak of the brain ? Thought, with psychic force, or whatever else it may be called, can it not act from a distance on another will through the sympathetic and indissoluble

bonds of intellectual kinship? Are not the palpitations of the heart transmitted suddenly to the heart which beats in unison with ours?

Are we to suppose, in the case of the apparitions above mentioned, that the spirits of the dead have really taken a corporeal form beside the observer? In the greater number of cases this hypothesis does not seem necessary. In our dreams we believe that we see persons who are by no means before our eyes, which, besides, are closed. We see them plainly, as well as in the daylight; we speak to them, we hear them, we hold long conversations with them. Assuredly it is neither our retina nor our optic nerve which sees them, any more than it is our ear which hears them. Our cerebral cells alone are in play.

Certain apparitions may be objective, exterior, substantial; others may be subjective; in the latter case the person who manifests himself would act at a distance on the person who sees him, and this influence upon his brain would determine the interior vision which seems to be exterior, as in dreams, but which may be purely subjective and interior.

In the same way as a thought, a memory, awakens in our mind an image which may seem very real, very vivid, so one mind acting

on another, may evoke in it an image which for an instant may seem to be reality.

Those facts are now clearly demonstrated by experiments in hypnotism and suggestion, sciences which are still in their infancy, but which give results assuredly worthy of the most earnest attention, as well from a psychological as from a physiological point of view. It is not the retina which receives the impression of real objects, it is the optic thalami, which are excited by a psychical force. It is the mental being itself which receives the impression. In what way? We cannot tell.

Such appear to be the most rational conclusions to be drawn from the class of phenomena of which we have been treating; phenomena unexplained, although very ancient, for the history of all nations, from the most remote antiquity, has handed down to us examples which it would be difficult to deny or ignore.

"But," you will exclaim, "can we, ought we, in our age of experimental philosophy and of positive science, to admit that not only a dying but even a dead person can hold communication with us?"

What is a dead person?

A human being dies every second upon the whole surface of the terrestrial globe—that is to say, about 86,400 persons die every day,

thirty-one millions every year, or more than three thousand millions in a century. In ten centuries thirty thousand millions of corpses have been given to the earth and returned to atmospheric circulation in the form of water, gases, vapor, etc. If we take into account the diminution of the human population as we go back to remoter ages, we find that in ten thousand years *two hundred thousand millions of human bodies, at the lowest calculation, have been formed by means of respiration and alimentation from the earth and the atmosphere, and have returned to them again.* The molecules of oxygen, of hydrogen, of carbonic acid gas, of azote, which constituted those bodies, have enriched the earth and entered again into atmospheric circulation.

Yes, the earth which we inhabit, is to-day formed, in part, of the myriads of brains which have thought, of the myriads of organisms which have lived.

We walk over our ancestors, as those who come after us will walk over us.

The brows of the thinkers, the eyes which have looked, smiled, wept; the lips which have sung of love, the arm of the worker, the muscles of the warrior, the blood of the vanquished, youth and age, the rich and the poor alike, all who have lived, all who have thought,

lie in the same earth. It would be difficult at this day to take a single step upon the planet without walking over the remains of the dead ; it would be difficult to eat or drink without reabsorbing what has been eaten and drunk thousands of times already ; it would be difficult to breathe without incorporating the air already breathed by the dead.

Do you believe, then, that this is all there is of humanity ? Do you think that it leaves nothing nobler, grander, more spiritual behind ? Does each one of us, in yielding up his latest breath, give nothing to the universe but so many pounds of flesh and bone, which become disintegrated and are returned to the elements ? Has not the soul that animates the body as good a right to exist as each one of its molecules of oxygen, azote or iron ? And all the souls which have lived, do they not still exist ?

We have no reason to affirm that man is formed solely of material elements, and that the faculty of thinking is only a property of his organization. We have, on the contrary, the strongest reasons for believing that the soul is an individual entity, and the force which governs the molecules in organizing the living form of the human body.

What becomes of the invisible and intangible molecules which constitutes our body

during life? They become a part of new bodies. What becomes of the souls equally invisible and intangible? It is reasonable to suppose that they also become reincarnated in new organisms, each one following his nature, his faculties, and his destiny.

The soul belongs to the psychic world. Without doubt there are on the earth innumerable souls, dull, coarse, scarcely ever freed from matter, incapable of comprehending intellectual truths. But there are others who pass their lives in study, in contemplation, in the investigation of the psychical or spiritual world. Those cannot remain imprisoned on the earth, and their destiny is to live the Uranian life.

The Uranian soul lives, even during its terrestrial incarnations, in the world of the infinite and the divine. It knows that although inhabiting the earth, it dwells in reality in the heavens, and that our planet is a star in the heavens.

What is the inmost nature of the soul? What are its modes of manifestation? When does its memory become permanent? Does it preserve with certainty a consciousness of its own identity? Under what diversity of forms and of substances can it live? What extent of space can it traverse? What kind of intellectual relations exist between the different planets of the

same system? What is the germinating principle in the worlds? When shall we be able to place ourselves in communication with the neighboring worlds? When shall we penetrate the profound secrets of destiny? All is mystery and ignorance to-day. But the unknown of yesterday is the truth of to-morrow.

It is an absolutely incontestable fact, demonstrated by history and science, that in all ages, among all peoples, and under religious forms the most diverse, the idea of immortality remains fixed imperishably in the depths of the human conscience. Education has given it a thousand different forms, but it has not invented it. This ineradicable idea is self-existent. Every human being on coming into the world, brings with him, under a form more or less vague, this inward sentiment, this desire, this hope.

II.

ITER EXTATICUM CÆLESTE.

THE hours spent in the study of psychology and telepathy did not prevent me from observing Mars through the telescope and taking sketches of its surface whenever our atmosphere, so often cloudy, permitted. And then, not only is it true that all the problems of nature and science are related to each other, but also that astronomy and psychology are indissolubly connected, seeing that the psychic universe has for its habitat the material universe; that astronomy has for its object the study of the region of eternal life, and that we could form no idea of that region if we had no knowledge of astronomy. Whether we are aware of it or not, it is none the less a fact that we are dwelling now in the celestial regions. It was, perhaps, with an unconscious divination of the future that the ancients made Uranie the Muse of the sciences.

My thoughts had now been for a long time occupied with our neighbor Mars, when one day, during a solitary ramble on the outskirts

of a wood, I seated myself, overcome with the heat of a July day, in the shade of a clump of oak trees, and soon fell fast asleep.

I was greatly surprised on awakening to find myself, after what had seemed a moment's doze, in the midst of unfamiliar surroundings. The trees that grew close beside me, the river which flowed at the foot of the hill, the undulating meadow, losing itself in the distance, were no longer to be seen. The air vibrated with harmonious sounds, unknown on Earth, and insects, large as birds, flew about among leafless trees which were covered with enormous red flowers. I rose to my feet, but with a bound, as if moved by a spring, for I felt of an extraordinary lightness. I took a few steps and found that half the weight of my body had, as it were, evaporated during sleep. These sensations amazed me more than the transformation of the scene before me had done. I could scarcely believe the evidence of my senses, and, besides, my eyes were no longer the same. I no longer heard in the same manner, and I could perceive even in these first few moments that my organism was endowed with several new senses differing entirely from those of our earthly organism. The most remarkable of these was a magnetic sense by means of which two beings can place them-

selves in communication without the necessity of translating their thoughts by audible words; this power resembles that of the needle of the compass, in the cellar of the Observatory at Paris, which vibrates and trembles when the *Aurora Borealis* kindles its light in Siberia, or when an electric explosion takes place in the sun. The Day Star had just sunk into the bosom of a distant lake, and the rosy glow of the sunset floated in the depths of the heavens like a vanishing vision of light.

Two moons shone in the sky; the one, a crescent, hung over the lake into whose bosom the sun had just sunk; the other, in her first quarter, was higher up in the East. Both moons were diminutive, bearing slight resemblance to the great torch that lights our terrestrial nights. It seemed as if they gave their light, bright but scant, reluctantly. I gazed at each in turn with wonder.

The strangest thing of all, perhaps, in this strange spectacle was that the western moon (which was about three times as large as her companion of the East, although but one-fifth the size of our terrestrial moon) moved with a velocity that could be perceived by the eye, hurrying from the right to the left, as if hastening on to join her heavenly sister in the East.

There could also be distinguished in the fading light of sunset, a third moon, or rather a brilliant star, smaller than either of the two satellites. She presented to the view no perceptible disk, but her light was dazzling. She shone in the evening sky like Venus, the "shepherd's star," when, in her fullest splendor, she rules the languorous nights of spring and inspires their tender dreams. Already the most brilliant of the stars were shining in the heavens; Arcturus with his golden rays; Vega, pure and white; the Seven Stars, and many of the constellations of the zodiac were visible. The evening star, the new Hesperus, glittered in the constellation of Piscis. Taking into consideration my position in the sky with reference to the constellations, the two moons shining in the sky, and the lightness of my body, I was convinced after a few moments' reflection that I was on the planet Mars, and that this beautiful evening star was—the Earth!

I let my gaze dwell upon it tenderly while a pang pierced my heart, such as we feel when the thoughts fly toward a beloved being from whom cruel distance separates us. I gazed long at the planet on which I was born, where so many varied emotions contend for the mastery during the changing events of life, and I thought, what a pity it was that none of all the

multitudes of human beings with which that little globe swarmed should know in what regions they dwell. It is beautiful, this diminutive Earth, reflecting the sun's light, with its moon, still more diminutive, which seems like a point in space beside it. Borne into the invisible by the divine laws of attraction, an atom floating in the infinite harmony of the heavens, she has her place and floats on high in space like an angelic island. But her inhabitants are unaware of this fact. Strange humanity—finding the Earth too vast, they have herded together, and pass their time in shooting each other.

In that celestial island there are as many soldiers as there are inhabitants. They are armed, the one against the other, when they might as easily dwell together in harmony, and their glory consists in changing from time to time the names of countries and the colors of their flags. This is the favorite occupation of nations and the first duty in which citizens are educated. When they are not thus employed they spend their time in the worship of matter. They do not value intellectual worth; they are indifferent to the wonderful mysteries of Creation; they live without an aim. What a pity that it should be so! A native of Paris who knew neither its name nor that of France, could

not be more a stranger in his country than they are in theirs.

Ah! if they could behold the earth from the place where I am now, with what pleasure would they return to it, and what a transformation would be effected in their ideas. Then, at least, they would know where the country is situated in which they dwell. That would be a beginning. They would discover by degrees the sublime realities that surround them, instead of passing life aimlessly, enveloped in a fog without horizon, and they would soon learn to live the true life, the life of the spirit.

"What honor he does it! One would suppose he had left friends behind him in that prison!"

I had not spoken, but I heard these words which seemed an answer to my thoughts, uttered with distinctness. Two of the inhabitants of Mars stood beside me contemplating me, and they had understood what was passing within my mind, by means of that sixth sense of magnetic perception mentioned above. I was a little surprised, and, shall I confess it, deeply hurt by this speech. "After all," I thought, "I love the Earth; it is my country, and as such I love it."

My two companions laughed at this.

"Yes," returned one of them, with an amia-

bility that I was not prepared for, "you love your country. It is easily seen that you come from the Earth."

And the elder of the two added :

"Think no more of your compatriots of the Earth; they will never be either more intellectual or less blind than they are now. They have lived there now for eighty thousand years, and you yourself confess that they are not yet capable of thinking. It is truly surprising that you should regard the Earth with so much tenderness; it shows too much simplicity on your part."

Have you ever, dear reader, come across men, in your way through life, who believe blindly, and with a confidence not to be shaken, in their superiority to other men? When these haughty individuals find themselves in the presence of one who is their superior, they conceive for him an instantaneous antipathy; they cannot endure him. Well, during the preceding tirade (of which I have given you only a feeble translation), I had felt myself superior to the rest of terrestrial humanity, whom I pitied and whom I prayed Heaven to grant happier times. But when those two inhabitants of Mars seemed to pity *me*, when I fancied I discovered in them a feeling of unquestioning superiority over me, I was for a moment like one of those

stupidly proud men of whom I have spoken; my blood gave a bound, and restraining myself by a last effort of French politeness, I opened my mouth to utter these words:

"After all, gentlemen, the inhabitants of the Earth are not altogether so stupid as you seem to think them; it may be that they are even superior to yourselves."

Unhappily they did not even let me begin the sentence, for they had divined what I was going to say by the vibrations at the base of my brain.

"Allow me to tell you at once," said the younger of the two, "that your planet is an absolute failure, in consequence of a circumstance which dates back a dozen million years. It was at the time of the primary period of terrestrial existence. Plants already grew upon the Earth, beautiful plants even, and in the depths of the waters, as well as upon their borders, the earliest animals were beginning to appear—headless mollusks, deaf, dumb and sexless. You know that trees need no other nourishment than the air, and that your most gigantic oaks, your tallest cedars, have never eaten anything. They live by breathing only. An unhappy chance willed it that into the body of the first mollusk there should enter a drop of water more substantial than the surround-

ing atmosphere. Perhaps he thought it good. This was the origin of the digestive apparatus, which was to exert so fatal an influence over humanity itself. The first assassin was the mollusk who ate.

"Here we do not eat, we have never eaten, we never shall eat. Creation here has unfolded gradually, peacefully, nobly, as it began. The body here is nourished, in other words, renews its molecules by the simple act of breathing, as do your terrestrial trees, of which every leaf is a minute stomach. In your beloved country you could not live a single day, except on the condition of killing. Among you, the law of life is the law of death. Here, the thought has never occurred to any one of killing even a bird. You are all, more or less, butchers! Your hands are imbrued in blood. Your stomachs are gorged with food. How could you expect, with organisms so gross, ever to conceive pure, sound, elevated or—pardon my frankness—even clean thoughts? What sort of souls could dwell in bodies like those? Reflect for an instant, and cease to indulge in vain illusions, too ideal for such a world."

"What!" I cried, interrupting him, "you deny to us the possibility of having clean thoughts? Do you take human beings for animals? Homer, Plato, Phidias, Seneca, Vir-

gil, Dante, Columbus, Bacon, Galileo, Pascal, Leonardo, Raphael, Mozart, Beethoven, have they never had exalted aspirations?

"You think our bodies gross and repulsive. If you saw pass before you Helen, Phryne, Aspasia, Sappho, Cleopatra, Lucrezia Borgia, Agnes Sorel, Diana de Poitiers, Margaret de Valois, Borghèse, Tallien, Recamier, Georges and their admirable compeers, you would think altogether differently. Ah, my dear Martian, permit me, in my turn, to express my regret that you know the Earth only at a distance."

"That is where you deceive yourself. I lived on that planet for fifty years. That was sufficient for me, and I assure you that I never desire to return to it. Everything there has proved a failure, even what you think most beautiful. Do you imagine that in all the worlds of the heavens, the flowers produce fruits in the same manner? Would not that be a little cruel? For my own part, my favorite flowers are primroses, and roses in the bud."

"But," I rejoined, "notwithstanding all you can say to the contrary, there have been great minds upon the Earth and, indeed, beings worthy of admiration. May we not cherish the hope that physical and moral beauty will go on perfecting themselves unceasingly, as they have done up to the present, and that the

mind will become gradually more and more enlightened? We do not spend all our time in eating. All men, we may hope, will be able, at last, notwithstanding their material labors to devote a few hours daily to the cultivation of their intellect. Then, no doubt, they will no longer continue to create petty gods in their own likeness, and perhaps also, they will do away with the childish barriers that keep them apart, and will live together in peace and brotherly unity."

"No, my friend, because if they so desired they might do it to-day, but they will take very good care not to do so. The terrestrial man is but an animal of insignificant size, who does not feel the need of thinking, having no independence of soul, and who loves to fight, and openly bases right on might. Such is his good pleasure and such his nature. You will never be able to make a bramble bush bear peaches. Think only that the most charming of the terrestrial beauties, whom you mentioned just now, are coarse monsters compared to our ethereal women of Mars, who live on the airs of our springs and the perfumes of our flowers, and who exercise such a charm, in the very fluttering of their wings, in the ideal kiss of a mouth that has never eaten, that, if Dante's Beatrice had been endowed with such a nature,

the immortal Florentine would never have been able to write a second canto of his *Divina Commedia*; he would have begun with Paradise, and would have remained there. Imagine that our youths know as much science at their birth as Pythagoras, Archimedes, Euclid, Kepler, Newton, Laplace or Darwin, after all their laborious studies. Our twelve senses place us in direct communication with the Universe; we feel here, at three hundred millions of miles distance, the attraction of Jupiter as he passes. We divine the appearance of a comet, and our bodies are impregnated by the solar electricity which makes all nature vibrate. There has never been here either religious fanaticism, or executioners, or martyrs, or political dissensions, or wars; but from their earliest days, humanity, by their nature, peaceable and exempt from every material want, have lived in a constant intellectual activity, their minds and bodies alike free, progressing without pause in the knowledge of the truth. But come with us, rather."

I walked on a little with my interlocutors till we came to the other side of the mountain, when I perceived a multitude of lights of diverse colors, fluttering in the air. These were the inhabitants of the planet, who become luminous at night when they desire it. Aerial

chariots, that seemed made of phosphorescent flowers, carried choirs and bands of music. One of these chariots passed near us and we took our seats in it in the midst of a cloud of incense. The sensations I experienced differed strangely from all those I had felt upon the Earth, and this first night on Mars passed swiftly as a dream, for when day dawned I found myself still in the aerial car, discoursing with my two interlocutors and their friends, and strange companions. What a scene did the rising sun disclose ! Fruits, flowers, clouds of incense, fairy palaces rising in the midst of orange colored vegetation on islands, lakes like mirrors, and joyous ethereal beings, two by two, fluttering down on these enchanting shores. Here all material labor is done by machinery, directed by some of the more perfected animal races, whose intelligence is almost as great as that of human beings on the Earth. The inhabitants live only by the spirit and for the spirit ; their nervous system has attained to such development, that each of these beings, at once extremely delicate and very strong, seems to be an apparatus, and their most material sensations, felt by their souls rather than their bodies, surpass a hundred fold any that our five senses united could ever afford us. A sort of summer palace, lighted by the rays of

the rising sun, opened its door to us under our aerial car. My neighbor, whose wings fluttered with impatience, placed her delicate foot on a knot of flowers that grew between two perfumed fountains.

"Will you return to the Earth?" she asked, opening her arms to me.

"Never!" I cried, and I precipitated myself toward her.

But all at once I found myself again alone in the wood on the side of the hill, at whose foot the Seine wound along.

"Never," I repeated, trying to grasp the sweet vision that had vanished. "Where then, am I? Ah! it was beautiful."

The sun had just set, and already the planet Mars, at the time very brilliant, glittered in the sky. "Ah," I cried, as a sudden recollection flashed through my mind, "I was there! Moved by the same attraction the two neighboring planets look at each other across transparent space. May we not, in this celestial brotherhood, have a prefiguring of the eternal journey? The Earth is no longer alone in the universe. The panoramas of the infinite begin to unfold themselves. Whether we dwell here, or there, we are not the citizens of a country or of a world, but, in very truth, CITIZENS OF HEAVEN."

III.

THE PLANET MARS—APPARITION OF SPERO— PSYCHIC COMMUNICATION—THE INHABITANTS OF MARS.

HAD I been the sport of a dream? Had my spirit been really transported to the planet Mars, or was I rather the dupe of a purely imaginary illusion?

The feeling of reality had been so vivid, so intense, and the things I had witnessed were so completely in accord with the scientific notions we already have of the physical nature of Mars, that I could not entertain a doubt on this point, astonished as I still was by my ecstatic journey, and while asking myself a thousand contradictory questions.

The absence of Spero from the vision surprised me somewhat. His memory was still so dear, that it seemed to me that I should have divined his presence had he been there, flown straight to him, seen him, spoken to him, listened to his voice. But was not the subject at Nancy rather himself the sport of his imagination, or of mine, or of that of the experimenter?

Besides, even admitting that my two friends were reincarnated on this neighbor planet, I told myself in answer to this question, that it was very possible for two persons to traverse the same city without meeting each other, and with how much more probability the whole world. But it is not assuredly the doctrine of probabilities that must be invoked here, for a feeling of attraction, such as united us, ought to modify the chances of meeting and throw into the balance an element which would predominate over all the rest.

While these thoughts were passing through my mind, I entered my observatory at Juvisy, where I had prepared some electric batteries for the purpose of making an experiment in optics, in connection with the tower of Montlhéry. When I had assured myself that everything was in readiness, I left my assistant to make the signals agreed upon, between the hours of ten and eleven, and I myself set out for the old tower, on which I took my stand an hour later. Night had fallen. From the height of the ancient donjon the horizon forms a perfect circle, visible in its whole circumference, having a radius of from twenty to twenty-five kilometres. A third post of observation, situated at Paris, was in communication with us. The object of the experiment was to learn if

the rays of the spectrum all travel with an equal velocity of three hundred thousand kilometres a second. The result proved this to be the case.

The experiments being ended at about eleven o'clock, and it being a glorious starlit night, as soon as I had put my apparatus away safely in the tower, I returned to the terrace above to contemplate the landscape, lighted by the first rays of the rising moon. The air was calm and mild, almost warm. But just as I reached the last step I stood still, petrified with horror. I tried to cry out; but no sound came. Spero—Spero himself was there before me, seated on the parapet. I raised my arms toward Heaven, feeling as if I were going to faint, but he said to me in the sweet voice which I knew so well.

“Can it be that you are afraid of me?”

I had not the strength either to answer or to advance. I ventured, however, to look straight at my friend, who was smiling. His dear face, lighted by the moon, was just as I had seen it before his departure for Christiania, youthful and pleasing, his air thoughtful, his glance keen. I took a step, strongly impelled to rush forward and embrace him. But my courage failed me and I remained where I was, gazing at him.

I had recovered the use of my faculties. "Spero! It is thou!" I cried.

"I was with you during your experiment," he replied, "and it was I who inspired you with the idea of comparing the extreme violet with the extreme red rays."

"Can it be possible? Let me look at you, let me touch you."

I passed my hands over his face, his body, his hair, and I received from them exactly the same impression as if he had been a living being. My reason refused to admit the testimony of my senses, and yet I could not doubt that it was he. No twin brother could be so like him. And then my doubts would have fled at his first words, for he added immediately afterward:

"My body sleeps at this moment in Mars."

"So then," I said, "you still live, you continue to exist, and at last you have solved the great problem that tormented you so much. And Iclea?"

"Let us talk together," he replied. "I have many things to tell you."

I seated myself beside him on the edge of the parapet of the old tower, and this is what I heard:

Some time after the accident at the Lake of Tyrifjorden he had felt himself awakening as if

from a long and profound sleep. He was alone in the darkness of the night on the borders of a lake. He felt himself to be living, but he could neither see nor feel. The air did not strike him. His body was not only light but imponderable. The only thing that seemed to survive in him was his faculty of thinking.

His first idea, on collecting his thoughts, was that he was returning to himself after his fall near the Norwegian lake. But when day dawned he perceived that he was in another world. The two moons revolving rapidly in the heavens in opposite directions, made him think that he was on our neighbor planet, Mars, and it was not long before other proofs came to convince him that this was the case.

He remained there for a certain length of time as a spirit, and found the inhabitants to be an extremely cultivated race, among whom the feminine sex rules supreme, owing to its incontestable superiority over the masculine. The organisms are light and delicate, the density of the body very slight, its weight still less. On this planet force plays only a secondary rôle in nature ; fineness of sensation is the determining power. There are a great many species of animals, and several races of human beings. In all those species and all those races the female sex is the more beautiful and the

stronger (strength consisting in the superior delicacy of sensation), and this sex it is that rules the world.

His intense desire to learn something of the life that was before him, decided Spero not to remain long a spectator and a spirit, but to be re-born under a corporeal human form, and—having made himself acquainted with the organic condition of this planet—in the female form.

Already, among the terrestrial souls floating about in the atmosphere of Mars, he had recognized (for souls feel each other's presence), the soul of Icea, who had followed him, drawn by a ceaseless attraction. She, on her side, had felt herself inclined to an incarnation in a masculine form.

They were thus brought together in one of the most favored lands in this planet; were near each other; predestined to meet each other again in existence, and to share the same emotions, the same thoughts, the same labors. Thus, although the remembrance of their terrestrial existence was obscured and effaced as it were, by the new transformation, a vague feeling of spiritual kinship and a sudden sympathy had drawn them together from the moment of their awakening. Their psychic superiority, the habitual nature of their

thoughts, the condition of their minds, accustomed as they were to search for the relation between cause and effect, had bestowed upon both a species of secret clairvoyance that freed them from the general ignorance of their fellow beings. They had loved each other with so sudden a passion ; they yielded themselves so completely to the magnetic influences of their re-union, that they soon formed one sole being, united as at the moment of their terrestrial separation. They had a remembrance of having already known each other ; they were convinced that it was upon the Earth, that neighbor planet that shines in the evening with so bright a light in the sky of Mars, and at times, in their solitary flights above the hills clothed by aerial vegetation, they gazed at "the evening star," and sought to unite the broken thread of memory.

An unexpected event took place, which explained their reminiscences and showed them that they were not deceived.

The inhabitants of Mars are very superior to those of the Earth in their organization, in the number and fineness of their senses, and in their intellectual faculties.

The fact that in this world, density is very slight, and that the material substances which form the body are less heavy than with us,

permits the formation of beings incomparably lighter, more ethereal, more delicate, more sensitive than we are. The fact that the atmosphere supplies nutrition has freed the beings on Mars from the grossness of terrestrial wants.

It is an altogether different state of being. Light there is less intense, that planet being further removed from the Sun than ours, and the optic nerve is more sensitive. Magnetic and electric influences being there extremely powerful, the inhabitants possess senses unknown to terrestrial organisms; senses which place them in communication with those influences. Everything in nature is consistent. Beings everywhere are adapted to their environment. Terrestrial organisms could no more exist on Mars than beings formed to inhabit the atmosphere could live at the bottom of the sea.

In addition to this the superior state, which is the result of these conditions, has developed of itself because of the ease with which intellectual labor is carried on. Nature seems to obey the thought. The architect who wishes to construct a building, the engineer who wishes to change the surface of the ground, whether it be to excavate or to raise it, to cut down mountains or to fill up valleys, has not

to contend, as with us, against the density and other drawbacks of matter.

Still more—Martian humanity, being several hundred thousand years older than earthly humanity—has passed before the latter through all the phases of its development.

Our most transcendent triumphs in scientific discovery are only child's play compared with the scientific knowledge of the inhabitants of that planet.

They have invented, among other things, a sort of tele-photographic apparatus by means of which a roll of stuff receives, as it unrolls, the image of our world, which remains fixed upon it ineffaceably. A vast museum, devoted specially to the planets of the solar system, contains, in chronological order, all those photographic images fixed forever. There may be re-read all the history of the Earth; of France at the time of Charlemagne; Greece, at the time of Alexander; Egypt at the time of Rhameses. By means of the microscope may be seen the minutest historical details, such as Paris during the French Revolution, Rome under the pontificate of Borgia, the Spanish fleet of Christopher Columbus arriving in America, the Franks under Clovis conquering the Gauls, the army of Julius Cæsar interrupted in its conquest of England by the tide

carrying away its vessels, the troops of King David, the founder of standing armies, as well as the greater number of historical events, all recognizable by certain special characters.

One day, when the two friends were visiting this museum, their reminiscences, vague until now, grew clear, as a dark night is suddenly illuminated by a flash of lightning. All at once they recognized Paris as it appeared during the Exposition of 1867. Their recollections took definite shape. Each felt convinced of having lived there at one time, and, their memory stimulated by the vividness of this impression, they were immediately seized by the conviction that they had lived there together. Light gradually broke on their minds, not by flashes, but rather like the gradually increasing light of dawn.

They both called to mind then, as by an inspiration, these words of the Evangelist: "In my Father's House there are many mansions."

And those other words of Jesus to Nicodemus: "Verily I say unto you, unless a man be born again he shall not see the Kingdom of God."

From that day they did not entertain the slightest doubt concerning their anterior terrestrial existence, and were firmly convinced that

they should continue on the planet Mars their preceding life. They belonged to the circle of the great minds of every age who know that human life does not cease here, but is continued in the heavens; and who also know that every planet, whether it be the Earth, Mars or any other, is a star in those heavens.

The peculiarity of the transformation of sex, which had appeared to me to have a certain importance, had in reality none, it would seem. Contrary to the opinion generally held among us, he informed me that souls are without sex, and that the destiny of all souls is the same. I learned too that on this planet, less material than our own, the constitution of the body resembles in nothing the constitution of the terrestrial body. Conception and birth take place there in an altogether different manner, which resembles, but in a spiritual form, the fecundation and blooming of a flower. Pleasure is without bitterness. They know nothing there of the heavy burdens we of the Earth bear, nor of the pangs of anguish that we suffer. Everything is more spiritual, more ethereal, more unsubstantial. One might call the Martians thinking and living winged flowers. But indeed there is nothing on Earth by means of a comparison with which we could form a conception of their form and mode of life.

I had listened to the words of the spirit, scarcely daring to interrupt him, lest he should vanish from my gaze as suddenly as he had appeared before it. Remembering my dream, however, which was recalled to my mind by the coincidence of the descriptions he had just given me of the planet, with what I myself had seen, I could not refrain from telling him of my extraordinary vision, and expressing my astonishment at not having seen him in my travels there.

"But," he answered, "I saw you perfectly well, and you saw me also and spoke to me. For I it was—"

There was something in the intonation of his voice, as he uttered the last words, that made me suddenly recognize in it the melodious voice of the beautiful Martian who had so much attracted me.

"Yes," he resumed, "it was I. I tried to make myself known, but dazzled by a spectacle which captivated your eye, you were unable to free yourself from terrestrial sensations; you remained terrestrial and a slave to your senses, and could not succeed in attaining to a true perception of things. Yes, I it was who reached out my arms to you to assist you to descend from the aerial chariot into our dwelling, when you suddenly awoke."

"But then," I cried, "if you are indeed that inhabitant of Mars, how is it that you appear to me now under the form of Spero, who is no longer in existence?"

"The impression you receive of me," he replied, "is produced neither on your retina nor on your optic nerve. I am at this moment in communication with you. I directly influence the seat of sensation in your brain. In reality, my mental being is without form like yours, like that of all spirits. But when I place myself, as at this moment, in direct relation with your thoughts, you can only see me as you have known me. Thus it is in dreams; that is to say, during more than a quarter of your terrestrial life, during twenty years out of seventy, you see, you hear, you speak, you feel with the same sense of reality, the same clearness, the same exactness as during normal life, yet your eyes are closed, your tympanum is insensible to sound, your lips are mute, your arms are stretched out and motionless. Thus it is, also, in the states of sonnambulism, hypnotism and suggestion. You see me, you hear me, you touch me through the influence exercised upon your brain. But I no more exist in the form you see than the rainbow exists in the spot where the spectator sees it."

"Could you then appear to me under your Martian form also?"

"No; at least not unless you were really transported in spirit to that planet. There the mode of communication would be altogether different. Here as we are talking now, everything is subjective with you. The elements of Martian form do not exist in the terrestrial atmosphere and your brain could not imagine them. You could not behold me again except through the remembrance of your dream of to-day; but in the moment in which you should seek to analyze its details, the image would vanish. You have not seen us as we are, because your spirit can judge only by means of your terrestrial eyes, which are not sensible to all the radiations of light, and because you do not possess as many senses as we do."

"I confess," I replied, "that I cannot very well conceive your state of existence on Mars, as beings possessing six limbs."

"If those forms you saw had not been as graceful as they are, they would have appeared to you monstrous. Each world is inhabited by organisms adapted to the condition of existence upon it. I will confess, in my turn, that, for the inhabitants of Mars, the Apollo Belvidere and the Venus de Medicis, are ver-

itable monstrosities because of their animal grossness.

"With us everything is of an exquisite lightness. Although our planet is much smaller than yours, its inhabitants are much larger than those of your planet, because density is less there than here and beings may be tall without being clumsy, or putting their equilibrium in peril. They are larger and lighter because the constituent materials of that planet have less density than those of yours. The same thing has happened there which would happen on the Earth if density were not so great as it is. The winged species would have dominated the world, instead of dwindling away because of the impossibility of development. On Mars the evolution of being has been effected in a series of winged species. Martian humanity is, in fact, a race of sextuple origin; but it is, at present, biped, bimanous and what may be called bipennate, since those beings have two wings. Life there is altogether different from terrestrial life. First, because the inhabitants live as much in the air and on aerial plants as on the ground; and, second, because they do not eat, the atmosphere affording them nutrition. The passions there are not the same as here. Murder is unknown, Humanity being without

material wants, has never lived there, even in the primitive ages, in the barbarism of rapine and war. Thoughts and feelings are all of an intellectual order. Nevertheless, there may be found in that planet, if not resemblances, at least analogies, to earthly conditions. Thus there is there, as here, a succession of days and nights, which do not differ essentially from yours. The duration of the day and of the night there, being twenty-four hours, thirty-nine minutes, thirty-five seconds. As there are six hundred and sixty-eight of these days in the Martian year, we have more time than you for our labors, our researches, our studies, and our enjoyments. Our seasons, too, are almost twice as long as yours, but are otherwise the same. The climates are not very different from those of the Earth. A country of Mars situated on the borders of the equatorial sea differs less in climate from France, than Lapland differs from India.

"An inhabitant of the Earth would not find himself there very much a stranger. The greatest dissimilarity between the two worlds consists indeed in the great superiority of our humanity to yours.

"This superiority is due chiefly to the progress made in astronomical science, and to the general diffusion among the inhabitants of the

planet of that science without a knowledge of which it is impossible to think clearly or to form any just conception of existence, of creation, or of destiny. We are as fortunate in the purity of our sky as we are in the acuteness of our senses. There is much less water on the surface of Mars than on that of the Earth, and the atmosphere is less cloudy.

"The sky there is almost always beautiful, especially in the temperate zone."

"Yet you often have inundations?"

"Yes; and quite recently your telescopes gave you notice of an extensive one, which took place on the borders of a sea to which your colleagues have given a name that will be always dear to me, far away though I be from Earth. Our coasts are mostly level plains. We have few mountains and our seas are shallow. The inhabitants avail themselves of these inundations for the irrigation of vast fields. They have altered the course of rivers—enlarged their beds and banked in their waters, and have constructed on the continents networks of immense canals. These continents are not like those of the terrestrial globe, bristling with Alpine or Himalayan heights, but are immense plains traversed on all sides by embanked streams, and by canals which put all the seas into communication with each other. Formerly there was

almost as much water, relatively to the size of the planet, on Mars, as there is on the Earth. Imperceptibly, however, for some ages past, a part of the rains has sunk into the deeper strata of the soil, and has not returned to the surface. It has become chemically combined with the rocks and cut off from the action of the atmosphere. For centuries, also, the rains, the snows, the winds, the frosts of winter, the droughts of summer, have been disintegrating mountains and drying up rivers, carrying this débris to the bed of the seas, which they have been gradually filling up. We no longer have either large or deep bodies of water on our planet; we have only inland seas; we have many straits, gulfs, and lakes like the British Channel, the Red Sea, the Adriatic, the Baltic and the Caspian; agreeable shores, tranquil harbors; lakes, great rivers, aerial, rather than aquatic fleets, and a sky always clear, especially in the morning. There are no terrestrial mornings as bright as ours.

“Meteorological conditions differ sensibly from those of the Earth, because the atmosphere being more rarified, the waters, which are shallow besides, evaporate more easily, and also because in condensing themselves anew, instead of forming clouds, they pass almost without change from the gaseous to the liquid state. We have few clouds and few fogs.

"The study of astronomy is favored, on our planet, by the clearness of the sky. We have two satellites, whose revolutions would appear strange to the astronomers of the Earth, for, while one of them gives us months of one hundred and thirty-one hours, or five Martian days and eight hours, the other, owing to the combination of its own motion with the diurnal rotation of the planet, rises in the West and sets in the East, traversing the heavens from the West to the East in five hours and a half, and passing from the one point to the other in less than three hours—this is a spectacle altogether unique in the solar system, and one which has greatly contributed to direct the attention of the inhabitants to the study of the heavens. In addition, we have lunar eclipses almost every day, but never total eclipses of the sun, because our satellites are too small.

"The Earth appears to us as Venus appears to you. She is our morning and evening star also. In former times, before the invention of optical instruments, by means of which we have learned that she is like your planet, inhabited—but by beings of an inferior grade—our ancestors worshipped her, regarding her as a tutelar deity. All the planets have in the first stages of their existence a mythology, and mythology had for

its origin, its foundation and its object, the aspects of the heavenly bodies.

"At times the Earth, accompanied by the Moon, passes between us and the Sun, on whose disk it projects its shadow, like a small, black spot, accompanied by another shadow still smaller. Here, everybody watches those celestial phenomena with interest. Our newspapers occupy themselves much more with scientific matters than with theatres, literary fantasies, political discussions or courts of law.

"The Sun appears to us a little smaller than it does to you, and we receive from it a slightly less degree of light and heat. Our eyes, more sensitive, can see better than yours. The temperature is a little higher."

"How," I rejoined: "you are further away from the Sun, yet your temperature is higher than ours?"

"Chamonnix is a little further from the noonday sun than the summit of Mont Blanc," he replied. "It is not the distance of a planet from the sun alone that governs the temperature; the constitution of the atmosphere must also be taken into account. Our polar snows melt more rapidly than yours under our summer sun."

"Which are the most populous countries of Mars?"

"Scarcely any part of the planet but the polar regions (where you can see from your earth, the ice and snow melting in the Spring) is uninhabited. The population of the temperate regions is very dense, but the equatorial regions are still more thickly populated—the population there is almost as dense as in China—and especially on the sea-coasts, notwithstanding the inundations. A great many cities are built almost on the water, suspended partly in the air above the reach of the inundations, counted upon beforehand and prepared for."

"And your arts and manufactures, do they resemble ours? Have you railroads, steamers, telegraphy, the telephone?"

"They are altogether different. We have never had either steamers or railroads, because we have always had a knowledge of electricity, and because aerial navigation is natural to us. Our ships are moved by electricity, and are aerial rather than aquatic. We live chiefly in the air, and have dwellings of neither stone, iron nor wood. We know nothing of the rigors of winter, because no one is exposed to them; those who do not inhabit the equatorial regions emigrate every autumn, like your birds. It would be extremely difficult for you to form an exact idea of our manner of life."

"Are there many human beings on Mars who have already inhabited the Earth?"

"No ; the greater number of the inhabitants of your planet are either ignorant of or indifferent to, or they are materialists and not prepared for, the life of the spirit. They are attached to the Earth and continue so for a long time. Many souls pass their entire lives in a sleep. Only those souls that truly live, that unfold their faculties, and aspire to a knowledge of the truth, are destined to a conscious immortality. These are the only souls whom the spiritual world interests, and who are capable of comprehending it. Those souls, when they quit the Earth, live again in other worlds. Many of them come to dwell for a time upon Mars, the first stage of the ultra-terrestrial journey, beyond the Sun, or on Venus, the first stage on this side of it. But Venus is a world similar to the Earth, and one still less favored, on account of the rapidity with which its seasons change, which subjects its inhabitants to violent alterations of temperature. Certain spirits take flight at once to the starry regions. As you know, space does not exist. To sum up, justice reigns in the system of the moral world, as equilibrium reigns in the system of the physical world, and the destiny of the soul is always the result of its aptitudes, its aspira-

tions, and, as a consequence, of its works. The day will come when there shall not be, even on your planet, any other creed, or any other religion, than a knowledge of the universe, and a conviction of immortal life in its boundless regions, its eternal domains."

"How strange it is," I exclaimed, "that on the Earth we should have no knowledge of those sublime truths! No one thinks of looking at the sky. We live here as if our little island were alone in the Universe."

"Terrestrial humanity is young," rejoined Spero. "You must not despair. It is in its childhood, and has not yet emerged from its primitive ignorance. It amuses itself with trifles and obeys masters whom it has imposed upon itself.

"You love to divide yourselves into nations, and to dress yourselves in national costumes that you may exterminate each other to the sound of music. Afterward you erect statues to those who have been your leaders in the butchery. You ruin yourselves and then commit suicide, yet you can exist at all only on condition of tearing from the bosom of the Earth your daily bread. A deplorable condition of things, truly, but one that suffices to the greater number of the inhabitants of your planet. If some few, of loftier aspirations,

have at times directed their thoughts to questions of a higher order—the nature of the soul, the existence of God—the result has been no better, for they have placed the soul outside of nature, they have invented strange gods, infamous gods who have never had an existence, save in their perverted imaginations, and in whose name they have committed every outrage against human conscience, sought to justify every crime, and enslaved weak minds in a bondage from which it will be difficult to free them. The lowest of the animals in Mars is better, more beautiful, gentler, more intelligent, more amiable, and greater than the god of the armies of David, Constantine, and Charlemagne, and all your crowned assassins. We should not be astonished, then, at the folly and grossness of terrestrial humanity. But the law of progress governs the world. You are more advanced than your ancestors of the Age of Stone, whose wretched existence was passed in defending themselves day and night against wild beasts. In some thousands of years you will be more advanced than you are now. Then Uranie will reign in your hearts.

“Some gross material fact is necessary in order to teach humanity and convince them. If, for instance, we could one day enter into communication with the neighboring planet

you inhabit—not into psychic communication with an isolated being, as I do now with you—but with the planet itself, in the presence of hundreds and thousands of witnesses, that would be a gigantic stride toward knowledge.

“You might do so now if you would, for so far as we on Mars are concerned, we are all ready for it, and have even made the attempt to do so several times. But you have never responded to us! Solar reflectors, tracing geometrical figures on our vast plains, prove to you that we exist. You could respond to us by similar figures traced on your plains, either during the day, by the sun, or during the night by electric light. But you do not even dream of this, and if anyone among you were to propose the attempt, your magistrates would prevent it, for the mere idea is immeasurably removed beyond the comprehension of the majority of the inhabitants of your planet. How do your scientific assemblies occupy themselves? In keeping alive the traditions of the past. How do your political assemblies occupy themselves? In increasing the public burdens. In the kingdom of the blind, the one-eyed is king.

“But we must not altogether despair. Progress carries you on in spite of yourselves. One day you too will know that you are dwellers in

the skies. Then you will live in the light, in knowledge, in the true world of the spirit !”

While the inhabitant of Mars was thus making me acquainted with the principal facts relating to his new country, the terrestrial globe had moved toward the East, the horizon had sunk and the moon was rising in the heavens, which she illumined with her light. Lowering my eyes suddenly to the spot where Spero was seated, I gave a start of surprise. The moon shed her light on his figure as on mine, but while my body cast its shadow on the parapet, his cast none !

I rose hastily, the better to convince myself of the fact, reaching out to touch his shoulder as I did so, and watching at the same time the shadow cast by the movement on the parapet. But my visitant had disappeared. I was entirely alone on the silent tower; my shadow, black and sharply defined, fell on the parapet. The moon shone brightly. The village slept at my feet. The air was warm and motionless.

I fancied that I heard steps, however. I listened attentively; they seemed to be drawing nearer. Some one was evidently ascending the stairs of the tower.

“Monsieur has not yet gone down?” said the guard, on reaching the top. “I was waiting to close the doors, and thought the experiments were certainly over by this time.”

IV.

THE CENTER OF GRAVITY OF THE UNIVERSE— FORCE.

THE recollection of Uranie and the celestial journey on which she had taken me, and of the truths she had helped me to divine, the history of Spero and his researches on the system of the Universe, his apparition and his account of another world—all these things occupied my thoughts, and kept constantly before me those problems which we have as yet only partially succeeded in solving. I felt that I had gradually attained to a clearer perception of the truth, and that the visible universe is indeed but an appearance under which we must look for the reality.

Everything is but an illusion of the senses. The Earth is not what it appears to us, Nature is not what we think it to be.

In the physical universe itself, where is the center of gravity, the point at which the material creation is in equipoise?

The plain and direct impression we receive from the observation of nature, is that we

dwell upon the surface of a solid and stable globe placed in the center of the Universe. Long centuries of study, and a boldness in scientific speculation bordering on rashness, were necessary to free the minds of humanity from this natural impression, and enable them to comprehend that the earth, on which we live, hangs without support in space, and revolves with velocity around its own axis and around the Sun. But for the ages anterior to scientific investigation, for the primitive peoples, and for three-quarters of the human race to-day, our feet rest on the solid earth, fixed immovably beneath the heavens, its foundations laid in eternity.

From the hour, however, in which it was settled beyond doubt that it is the Sun which rises and sets every day, and that the stars and the constellations revolve around the Earth, men were compelled to accept as an incontrovertible truth the fact that there is underneath the Earth the space necessary for the stars to move, from their rising to their setting. This first step in knowledge was of paramount importance. The admission that the Earth moves in space was the first great triumph of astronomers. It was not only the first, but the most difficult step. To sweep away the foundations of the Universe! Such a thought

could never have occurred to any mind were it not for the results of astronomical research, conducted under favoring conditions. Under a perpetually cloudy sky the old idea would have remained fixed to terrestrial soil like the oyster to its bed.

The Earth once proved to move in space, the first step was taken. Before this revolution in astronomic knowledge, the philosophic importance of which is equal to its scientific value, every imaginable form had been given to our sublunary abode. At first the Earth had been regarded as an island emerging from the bosom of a shoreless sea, and resting on foundations laid in the depths of infinite space. Then it was believed that the earth, with its oceans and seas, had the form of a flat, circular disk, on whose edge rested the vault of the firmament. Later it was successively supposed to be a cube, a cylinder, a polyhedron. The progress made in nautical knowledge, however, at last established the fact that the Earth was a sphere, and when it was proved, beyond question, to be surrounded on all sides by space, its spherical form was accepted as the natural corollary of the earth's motion, and of the revolution of the heavenly bodies around a globe supposed to be central.

The terrestrial globe once known to be sur-

rounded on all sides by space, to put it in motion was not difficult. Previous to this time, while the sky was regarded as a vast dome, covering a plain of limitless extent, it would have seemed as absurd to suppose that the Earth moved, as it would have been impossible to prove the fact of its doing so. But from the moment in which we conceive it as a globe, revolving among the heavenly bodies, the idea that this globe might revolve on itself, and thus save the entire Universe the trouble of performing that daily operation, would naturally occur to the minds of the thinkers. And in fact we find hints of this theory of the diurnal rotation of the Earth among the writings of the older civilizations—the Greeks, the Egyptians, the Indians, and others. It is only necessary to read a few chapters of Ptolemy, Plutarch or Surya-Siddhanta to be convinced of this.

But the new hypothesis, although the way had been prepared for it by the former one, was no less daring and opposed to the innate feeling of mankind of the reality of the apparent world. The thinkers of humanity were compelled to wait until the sixteenth century of our era, or rather until the seventeenth century, to know the true position of our planet in our universe, and to know by incontroverti-

ble proof that it moves with a two-fold motion, around itself daily, and annually around the sun.

Dating only from this epoch, the epoch of Copernicus, Galileo, Kepler and Newton, has Astronomy existed as a science.

This, however, was only a beginning, for the great reviver of the system of the world had no knowledge of the other movements of the earth, nor of the distances of the stars. It was not until our own age that the distances of the planets were computed, and it is only in our own day that astronomical discoveries have afforded us the necessary data to enable us to form some conception of the forces which maintain creation in equilibrium.

The old idea that the earth rested on foundations extending down into immensity, could not, it is plain, be altogether satisfactory to earnest minds seeking for a knowledge of the truth. It is absolutely impossible for us to form a conception of a material column of the same diameter as that of the earth, which should reach down into infinite space, just as it would be impossible to conceive of the existence of a stick that should have but one end. No matter how far our thought may descend toward the base of this material pillar, there must come a point where the end of it is to be found. Astronomy had sought to obviate the difficulty

by materializing the celestial sphere, and placing the world within it, occupying its lower part. But, on the one hand, the movement of the stars thus became difficult to prove; and on the other, the material universe, shut up in this immense globe of crystal, was itself supported by nothing, since space must extend around it on all sides, above as well as below. The first thing for men of science to do was to free their minds from the vulgar idea of weight.

Floating in space, like a child's balloon floating in the air, but still more helplessly, since the balloon is carried along by atmospheric currents, while the spheres move in the void, the Earth is the sport of the invisible cosmic forces which she obeys—a veritable soap bubble blown about by every breath. We can easily convince ourselves of this if we take a glance at her *eleven* principal movements. Perhaps they will help us to find that *center* of gravity, which it is the ambition of astronomers to discover.

Moving around the sun at a distance from it of ninety-five millions of miles, and performing, at this distance, her annual revolution around that body, she moves as a consequence with a velocity of 19,229,000 miles a day, or eight hundred and four thousand miles an hour, or eighty-nine thousand feet a second. This velocity is eleven times greater than that of a

lightning express, moving at a rate of 60 miles an hour. It is a ball moving with a velocity seventy-five times greater than that of a shell—moving ceaselessly on without ever reaching its goal. In three hundred and sixty-five days, six hours, nine minutes and ten seconds the terrestrial ball has returned to the same point in its orbit, relatively to the sun, from which she started, to begin anew her course. The sun, on his side, moves on in space, following obliquely the annual movement of the Earth, directing his course toward the constellation Hercules. From this it follows that, instead of describing a circle, the Earth describes a spiral, and, since its creation, has never passed twice through the same point in space. To her motion of annual revolution around the Sun, then, is added a second attraction, that of the Sun himself, who draws her, together with the whole solar system, in an oblique direction toward the constellation Hercules.

Meantime, our little globe revolves upon its axis in twenty-four hours, producing the succession of days and nights. Thus we have a third motion, her daily revolution.

She does not revolve on her axis vertically, as a humming top spins around on a table, but inclined, as every one knows, at an angle of $27^{\circ} 27'$. And this inclination is not always

the same; it varies from year to year, from century to century, oscillating slowly for secular periods. Here we have a fourth species of motion.

The orbit in which the Earth moves annually around the Sun, is not circular, but elliptical. This ellipse itself varies from year to year, from century to century; at times it is nearly circular; at times markedly eccentric. It is like an elastic hoop more or less pulled out of shape. This is a fifth variety of the motions of the Earth.

But this ellipse is not a fixed path in space, but turns around on its own axis in a period of twenty-one thousand years. The perihelion, which at the beginning of our era was at 65 degrees of longitude, reckoning from the spring equinox, is now at 101 degrees. This alteration, every hundred years, of the line of the apsides, makes a sixth complication in the movements of our planet.

Here is a seventh. We said just now that our globe moves, not vertically, but with an inclination on her axis, and every one knows that the imaginary prolongation of this line would end at the North star. But this axis itself is not fixed, it makes a revolution in 25,765 years, preserving an inclination of from 22 to 24 degrees; so that its prolongation

on the celestial sphere describes, around the pole of the ecliptic, a circle of from 44 to 48 degrees in diameter, according to the periods. It is owing to this alteration of the pole that Vega in twelve thousand years, will be the north star, as she was fourteen thousand years ago. Seventh species of motion.

An eighth motion, due to the action of the moon on the equatorial regions of the Earth, that of nutation, causes the pole of the equator to describe a small ellipse, in 18 years and 8 months.

A ninth motion, due also to lunar attraction, ceaselessly changes the position of the center of gravity of the globe, and the position of the Earth in space; when the moon is in front of us she accelerates the motion of our globe, when she is behind she retards it, acting thus as a rein—a monthly complication in the movements of the Earth, added to all the preceding ones.

When the Earth passes between the Sun and Jupiter, the attraction of the latter, notwithstanding his distance of 465 millions of miles, makes her deviate $2' 10''$ beyond her orbit. The attraction of Venus makes her deviate $1' 25''$ on the other side. Saturn and Mars exert their attraction also, but more feebly. Here are external perturbations which make a second

kind of influence to add to the other movements of our celestial boat.

The united mass of the planets being about the seven hundredth part of the mass of the Sun, the center of gravity around which the Earth annually revolves is never at the center of the Sun itself, but distant from it and often outside its circumference. But, speaking with exactness, the Earth does not revolve around the Sun, but these two bodies, the Sun and the Earth, revolve around their common center of gravity. The center of the annual motion of our planet changes its place constantly then, and we may add this eleventh complication to the preceding ones.

We might even add to these several others; but this will suffice to give an idea of the extreme lightness with which our island floats in the atmosphere, subject, as we see, to all the fluctuations of the celestial influences. Mathematical investigations go much deeper than this brief statement; they have discovered in the moon alone, that seems to move so tranquilly around the earth, more than sixty distinct causes of different motions.

The expression, then, is not exaggerated: Our planet is the sport of the cosmic forces that guide it in the fields of space, and the same thing is the case with all the worlds and

everything that exists in the Universe. Matter obeys blindly the law of attraction.

Where then is the center of gravity which it is our ambition to discover?

In point of fact our planet, formerly supposed to be beneath the heavens, is sustained in space at a certain distance from the Sun, whose attraction causes her to revolve around him with a velocity corresponding to this distance. This velocity, caused by the mass of the Sun, sustains our planet at the same mean distance from the Sun—a lesser velocity would cause the force of gravity to exert too powerful an influence on the Earth and draw her into the Sun. A greater velocity, on the other hand, would gradually and ceaselessly remove our planet from the source of heat and light that animates it. But the velocity resulting from the amount of attraction exerted is sufficient to keep our wandering abode in permanent stability. In the same way the Moon is sustained in space by the force of gravity of the Earth, which causes it to revolve around her with the requisite velocity to maintain her constantly at the same mean distance. The Earth and the Moon thus form a pair of planets sustaining themselves in perpetual equipoise under the sovereign sway of solar attraction. If the Earth were alone in the universe, it would re-

main forever motionless in that point in infinite space where she had been placed, without ever having the power either to rise or set or change her position in any way whatever, the expressions to rise, to set, right or left, having no positive signification. If this same Earth thus alone in the Universe had received any impulse whatsoever, had been set moving with any degree of velocity whatsoever, in any direction whatsoever, she would move eternally in a straight line in that direction, without ever having the power to stop, or to slacken her motion, or to change its direction. It would be still the same if the Moon were alone with her in the Universe. They would both turn around their common center of gravity fulfilling their destiny in the same spot in space, hurrying on together in the direction toward which they had been projected.* The Sun, however, having been created and being the center of his system, the Earth, all the planets and all their satellites depend on him, and their destiny is irrevocably joined to his.

The center of gravity we are in search of, the solid basis we seem to desire in order to assure the stability of the Universe, is it then on the colossal globe of the Sun that we shall find it?

Assuredly not, since the Sun himself is not

at rest, since he draws us on with all his system toward the constellation of Hercules.

Does our Sun gravitate around an immense Sun whose attraction extends to him and rules his destinies as he rules those of the planets? Do our astronomical researches give us reason to suppose that at some point situated at right angles to the Earth as she moves towards Hercules, there may exist a star of such power? No; our Sun is influenced by the attraction of the stars, but none of them seems to dominate over the others and rule our Sun with sovereign sway.

Although it is quite possible, or rather certain, that the sun which is nearest to our sun, the star Alpha, of the Centaur, and our own sun mutually attract each other, yet we cannot regard those two stars as forming a pair like binary stars; in the first place, because all the systems of binary stars known are composed of stars much nearer to each other than those; and secondly, because in the vastness of the orbit described according to this hypothesis, we must not lose sight of this attraction exerted by the neighboring stars; and, finally, because the actual velocity of these two suns is much greater than would be the result of their mutual attraction.

The little constellation of Perseus, especially,

may exercise an influence more powerful than that of the Pleiades or of any other cluster of stars, and constitute the center of gravity of the movements of our sun, of Alpheus, of the Centaur and the neighboring stars. Seeing that the constellation of Perseus is situated not only at right angles with the tangent of the Earth's path as she moves toward Hercules, but also in the great circle of the principal stars, and precisely at the intersection of that circle with the Milky Way, with its eighteen millions of suns, of which it would be daring indeed to seek the center of gravity.

But what is the whole Milky Way compared to the myriads of stars our thought contemplates in the bosom of the sidereal heavens? Does not this Milky Way itself move like an archipelago of floating islands? Is not each nebula, each cluster of stars a Milky Way moving under the influence of the gravitation of the other universes who call to it and beckon to it across infinite night.

Passing from constellation to constellation, from system to system, from region to region, our thought is brought face to face with the stupendous magnificence of the spectacle of heavenly bodies revolving with a velocity which we have begun to appreciate, but which already surpasses all conception. The yearly

revolution of the star Alpha in the Centaur is more than 549 millions of miles. The revolution of star 61 Cygni (the second sun in the order of distances) is equivalent to 1110 millions of miles a year; or about three millions of miles a day. The star Alpha of the Centaur approaches us in a straight line with a velocity of 1500 millions of miles a year. The motion on its axis of star 1830 in the Catalogue of Groombridge attains a velocity of 7770 millions of miles a year, which is equal to 21 millions of miles a day, 115,000 kilometres an hour, or 320,000 yards a second! Those are the minimum calculations, as we observe the stellar motions measured obliquely, not in a straight line.

What projectiles? Suns of millions and millions times greater density than the Earth, launched into the fathomless depths of immensity with a more than vertiginous velocity, revolving in space under the united action of all the stars of the universe! And those millions, those myriads of suns, of planets, of constellations, of *nebulæ*, of worlds which are beginning, of worlds which are coming to an end, rush with similar velocity towards an unknown goal, with an energy and intensity of action compared with which powder and dynamite are like the breathing of an infant in the cradle.

And thus they all rush through space, perhaps for all eternity, without ever approaching its limits, which do not exist. Everywhere motion, activity, light and life. Happily so, no doubt. If all these innumerable suns, planets, earths, moons, and comets, were fixed motionless, kings petrified in their eternal tombs, how much more awe-inspiring indeed, but how much more deplorable also, would be the aspect of such a universe! All Creation arrested in its course, congealed, mummified! Is not such a thought inconceivable. Is there not something ominous—something unsupportable in such a thought?

And what causes these motions? What sustains them, what guides them? The force of attraction everywhere reigning, that invisible force which the visible universe (that which we call matter) obeys. A body attracted from infinite space by the Earth, would attain to a velocity of 11,300 yards a second; thus a body projected from the Earth would never fall. A body attracted from infinite space by the sun, would attain a velocity of 608,000 yards; a body projected from the Sun with this velocity would never return to its point of departure. Certain constellations can cause a velocity of motion still greater, but which are explained by the law of attraction. It is enough to cast one's

eyes over a chart of the motions of the stars on their axis, to understand the variety and grandeur of these motions.

Thus, the stars, the suns, the planets, the comets, the shooting stars, the uranoliths—in a word, all the bodies that constitute this vast universe, rest, not on solid foundations, as the primitive and childish conception of our ancestors supposed, but on invisible and immaterial forces which govern their motions. Those myriads of celestial bodies owe their stability in the universe to their respective movements, and mutually sustain each other in the void that separates them. The mind that could divest itself of the notion of time and space would see the Earth, the planets, the Sun, the stars, falling in a shower from a heaven without bounds in every imaginable direction, like drops drawn into the vortex of a mighty whirlwind, and drawn not by one force, but by the attraction of each and all of them; each of those cosmic drops, each of those worlds, each of those suns is carried with a velocity so great, that the flight of a cannon-ball is rest in comparison. It is not a hundred, nor five hundred nor a thousand yards: it is ten thousand, twenty thousand, fifty thousand yards a second!

How does it happen that collisions do not take place in the midst of such perpetual move-

ment? Perhaps they do. The stars that appear and disappear, as if perpetually renewed from their ashes, would seem to indicate it. But, in point of fact, collisions could not take place because space is infinite relatively to the dimensions of the celestial bodies, and because the movement of each body prevents it suffering passively the attraction of another body and being drawn into it. It keeps its own motion, which cannot be destroyed, and glides around the center of light and heat that attracts it, as the butterfly circles around the flower that attracts it, but without burning itself. And then, speaking with exactness, those movements are not rapid.

In fact, all those bodies rush, fly, fall, roll through space, but at such distances from one another that they all seem at rest. If we were to place in a space the size of Paris, the stars of which the distances have been measured, up to the present day, the nearest star would be placed at a distance of two kilometres from the Sun, from which the Earth would be distant one centimetre, Jupiter five centimetres and Neptune 30. The star 61 Cygni would be distant four kilometres, Sirius 10 kilometres, the North star 27 kilometres and so on, and the great majority of the stars would remain beyond the department of the Seine. Now, putting all these bodies in

motion with their respective movements, the Earth would take a year to pass through its orbit—no larger than the centimetre of a ray of light, Jupiter twelve years to pass through his, measuring five centimetres, and Neptune a hundred and sixty-five years. The proper motion of the Sun and stars would be in the same proportion; that is to say, they would appear to be at rest even through the magnifying glass. Uranie reigns calm and serene in the immensities of the universe.

But the constitution of the sidereal universe is the same as that of the bodies we call material. Every body, organic or inorganic—man, animal, plant, stone, iron, bronze—is composed of molecules perpetually in motion, yet never touching each other. Each of these atoms is infinitely small, and invisible, not only to the naked eye, not only through the magnifying glass, but even to the thought, since it is possible these atoms are no more than centers of force. It has been estimated that in the head of a pin there are not less than eight sextillions of atoms, or eight thousand thousand millions of thousand millions, and that in a cubic centimetre of air there are no less than a sextillion of molecules. All these atoms, all these molecules are in motion, acted upon by forces which govern them, and separated, relatively to their

dimensions, by great distances. We may even think that there is, in principle, but one species of atoms, and that it is the number of primitive atoms, simple and homogeneous in essence, their modes of arrangement and their movements, which constitute the diversity of molecules. A molecule of gold or of iron would differ from a molecule of sulphur, of oxygen, of hydrogen, only in the number, the disposition and the movement of the primitive atoms which compose it; each molecule may be a system, a microcosm.

But whatever idea we may form of the constituent atoms of bodies, the fact accepted to-day and never again to be disputed, is that the imaginary center of gravity sought for, exists nowhere. Archimedes may ask in vain for a point of support for his lever to raise the world. Worlds, like atoms, rest on the invisible, on immaterial force; everything moves, acted upon by the force of attraction, and as if in search of that center of gravity which flies from us as we pursue it, and which has no existence, since in space the center is everywhere and nowhere. Those pretended positivists who affirm with so much assurance that only "matter and its properties exist," and who smile disdainfully at the researches of thinkers, should tell us first of all what they mean by

this much talked of "matter." If they carried their investigations beyond the surface of things, if they could imagine that appearances conceal intangible realities, they would doubtless be a little more modest.

For us who seek the truth without preconceived ideas, and without having a theory to support, it seems to us that the principle of matter remains as much unknown as the principle of force, the visible universe not being at all what it appears to our senses. In fact this visible universe is composed of invisible atoms; it rests in space, and the forces which govern it are themselves immaterial and invisible. It would be less daring to suppose that matter did not exist, that force is everything, than to maintain the existence of a universe exclusively material. As to the physical foundations of the world, they have disappeared, by a curious contradiction, precisely with the triumph of mechanics which proclaims the triumphs of the invisible. The center of gravity disappears in the balancing of forces everywhere, in the ideal harmony of the vibrations of ether; the more we seek it, the less we find it; and the final effort of our thought has for its final support, for supreme reality, the Infinite.

V.

A SOUL CLAD IN AIR.

SHE was standing, all alone at her bath, her arms raised, twisting the silky and luxuriant masses of her hair into a knot, which she was fastening on the top of her head. She was a youthful beauty, who had not yet reached her full development, but who was approaching it, radiant in the glow of her seventeenth year.

A daughter of Venice, the blue veins where ran the ardent current of her life, showed beneath her rose-tinted transparent skin; her eyes shone with a mysterious and captivating brilliancy, and the velvety redness of her lips, slightly parted, already gave promise of the fruit as well as the flower.

She looked marvelously beautiful, and if some modern Paris had to decide as to her charms, I do not know whether he would have placed at her feet the palm of grace, elegance or beauty, so equally did she unite in herself the animated charm of modern grace and the calm perfections of classic beauty.

A most fortunate and unexpected chance

had conducted the painter Falero and myself to her presence. One bright afternoon last spring we happened to be walking on the sea-shore; we had crossed one of those olive plantations, with melancholy foliage, which are to be seen between Nice and Monaco, and without being aware of it we had entered the grounds of an estate opening on the sea-shore. A picturesque path wound through it down the hill; we had left behind us a grove of oranges, whose golden fruit recalled the garden of the Hesperides. The air was balmy, the sky of a deep blue, and we were discussing the comparative merits of Art and Science, when my companion stopped suddenly, as if arrested by a spell, and making a sign to me to be silent, pointed before him. Behind a clump of cacti and Barbary fig-trees, a few steps distant from us, we could see through the open window of a luxurious bathing-house, near a marble basin into which the water fell with a melodious sound, a young girl standing before a long Psyche mirror, which reflected back her full-length figure. Doubtless the noise made by the falling water had prevented her hearing our approach. Discreetly, or rather, indiscreetly, we remained behind the cacti, motionless, mute, spellbound.

Beautiful as she was, she herself seemed to

be unconscious of her beauty. Her feet rested on a tiger-skin rug, and all her movements were leisurely. Finding that her long hair was still damp, she allowed it to fall again over her shoulders, and, turning around, came toward us to take a rose from the table near the window; then, going back to the mirror, she tranquilly completed the arrangement of her hair, placed the rose between its braids, and turning her back to the sun, leaned down, doubtless with the purpose of beginning to dress. But all at once she started up, gave a piercing cry, and burying her face in her hands, ran to hide herself in the darkest corner of the room.

Whether some unguarded movement had betrayed our presence, or she had caught the reflection of our figures in the mirror, we could not tell. Be that as it may, however, we thought it prudent to retrace our steps, and returned to the shore by the same path by which we had come.

"Never have I seen—not in any one of my models," said my companion, "not even in the model who stood for my painting of the 'Twin Stars,' and of 'Celia,' a more perfect form. What do you say? Does not this apparition come just in time to prove me in the right? It is in vain that you describe in eloquent words the delights of Science. Confess that

Art too has her charms. Are not the stars of the earth worthy rivals of the stars of heaven? Do you not admire with me the elegance of that figure? What outlines! What ravishing tones!"

"I would not have the bad taste not to admire what is really beautiful," I answered; "and I admit that human beauty (and I acknowledge without hesitation female beauty in particular), is the most perfect work of Nature on our planet. But do you know what I most admire in that young creature? It is not her artistic or æsthetic aspect, it is the scientific proof she affords, of a fact which is simply marvelous. In that enchanting form I behold a soul clothed in air."

"Oh, you delight in paradox, I know. A soul clothed in air! For so real a form the expression is somewhat idealistic. That that enchanting creature has a soul I do not doubt, but permit me, as an artist, to admire her form, her animation, her flesh, her color. I would willingly say with the poet of the *Orientales* :

"Car c'est un astre qui brille
Qu'une fille,
Qui sort d'un bain au flot clair
Cherche s'il ne vient personne,
Et frissonne
Toute mouillée, au grand air."

"I do not want to prevent you doing so. But it is precisely this physical beauty which makes me admire in her the soul, the invisible force that has formed it."

"What do you mean? There can be no doubt that we have a body. The existence of the soul is less evident."

"To the senses, yes. To the spirit, no. But our senses deceive us in regard to everything; to the movement of the Earth, the nature of the heavens, the apparent solidity of bodies, to beings and to things. Will you, for a moment, follow me in my reasoning?"

"When I inhale the perfume of a rose, when I admire the beauty of form, the delicacy of coloring, the grace of the flower in its first bloom, that which strikes me most is the work of the hidden, mysterious, unknown force which governs the life of the plant, which maintains it in existence, which selects the molecules of air, of water, of earth, adapted for its sustenance, and, above all, which unites those molecules and groups them delicately together, so as to form the graceful stem, those small, fine green leaves, those petals of so tender a rose color, those exquisite shades, that delicious perfume. This mysterious force is the principle of life of the plant. Place together in the earth the seed of a lily, an acorn,

a grain of wheat, and a peach stone, and each will reconstruct its own particular being.

"I once saw a maple that was dying amid the débris of a ruined wall, a few yards distant from the rich soil of a furrow, and which, in despair, adventurously threw out a root, reached the soil it had longed for, struck into it and rooted itself there so effectually that insensibly the tree itself became loosened from its place, and letting its old roots wither, quitted the stones and lived, resuscitated and transformed, on the roots which had been the means of preserving its life. I have known elm trees flourishing in the soil of a fertile field, from which sustenance had been cut off by the opening of a deep ditch, to send out boldly those roots which had not been cut, under the bottom of the ditch, to look for nutriment, and to succeed in their purpose, to the great astonishment of the gardener. I saw a heroic jasmine that sent its roots eight times through the holes of a plank that kept the light from it, and which a malicious observer turned back again, each time it did so, to the darkness, in the hope of wearying at last, the energy of the plant; he did not succeed in doing so.

"Plants breathe, drink, eat, select, reject or seek their nourishment, work, live, act accord-

ing to their instincts; that one thrives admirably; that one pines away; this other is nervous and agitated. The sensitive plant trembles and shrinks at the slightest touch; in certain hours of well-being the wake-robin is warm, the carnation is phosphorescent, the valisnérie descends to the bottom of the waters, to propagate its kind. In all these manifestations of an unknown life, the philosopher cannot but recognize in the vegetable world, a strain of the universal harmony.

"I do not, at present, go further than this with regard to the soul, superior in its nature though it be to the soul of the plant; and although it has created an intellectual world as far above all other forms of terrestrial life as the stars are above the Earth—it is not in regard to its spiritual faculties that I consider it now, but only as the animating force of the human being.

"Well, it awakens my admiration that this force should group together the atoms we breathe, or that we assimilate by nutrition so as to make of them a beautiful and charming being. Look back at this young girl from the day of her birth, and follow with your thought the gradual development of that slender form, through the years of awkward girlhood up to the budding grace of youth and early woman-

hood. How does the human organism maintain itself, develop itself, form itself? You know the answer: by respiration and nutrition.

"The air itself supplies three-fourths of our nutrition. The oxygen of the air keeps alive the fire of life, and the body may be compared to a flame being fed unceasingly, according to the laws of combustion. A want of oxygen extinguishes the flame of life as it extinguishes the flame of a lamp. Through respiration the dark venous blood is transformed into red arterial blood, and thus purified. The lungs are a delicate tissue, pierced with from forty to fifty millions of little cells small enough to allow the blood to filtrate through them, and large enough to allow the air to penetrate them. A perpetual exchange goes on between the air and the blood, the former furnishing the latter with oxygen, the latter eliminating the carbonic acid. On the one side the oxygen of the air consumes the carbon of the blood; on the other, the lungs exhale carbonic acid, azote and watery vapor. The plants breathe (during the day) by a process the reverse of this. Absorbing carbon and exhaling carbonic acid, helping to maintain in this way the general equilibrium of terrestrial life.

"Of what is the human body composed?

The adult man weighs on an average 154 pounds. Of this, 113 pounds are water which is in the blood and the tissues. Analyzing the substance of our bodies you will find in it albumen, fibrine, caseine and gelatine, that is to say organic substances composed originally of the four essential gases : oxygen, azote, hydrogen, and carbonic acid. There are also substances in it devoid of azote, such as gum, sugar, starch, fat ; these substances pass equally through our organism, their carbon and hydrogen are consumed by the oxygen inhaled during respiration and afterwards exhaled under the form of carbonic acid and of water.

“Water, as you know, is a combination of two gases, oxygen and hydrogen ; air, a mixture of two gases, oxygen and azote, to which are added, in lesser proportions, water under the form of vapor, carbonic acid, ammonia and ozone, this latter being only condensed oxygen, etc.

“Thus our body is composed only of gases under different forms.”

“But,” interrupted my companion, “we do not live only on air, We need besides that, at intervals more or less far apart, as the stomach may indicate, certain supplementary additions, such as the wing of a pheasant, a slice of sole, a glass of Chateau-Lafitte or of

champagne ; or, if you will, some asparagus, a bunch of grapes or a few peaches."

"Yes, all these are assimilated by our organism, renewing its tissues, and this with rapidity, for in a few months (not in seven years as was formerly supposed to be the case) our body is entirely renewed. Let us return to that charming creature who posed before us a short time ago. Well, that flesh that we admired did not exist three or four months ago ; those shoulders, that face, those eyes, that mouth, those arms, that hair, even those nails—all the component parts of that body were nothing more than a current of molecules, a flame unceasingly renewed, a river running during the term of existence, but with perpetually changing waters. But all this is still only gas, assimilated, condensed, modified ; above all, it is air. Even those bones, apparently so solid, took form and solidity imperceptibly. Bear in mind the fact that our entire body is formed of invisible molecules, which do not touch each other, and which renew themselves unceasingly.

"If we are vegetarians, if our table be supplied with vegetables and fruits, we assimilate substances drawn almost entirely from the air ; that peach is formed of water and air, that pear, that grape, that almond are all formed

of air, of water, of some liquid or gaseous element brought by the sap, the sunshine, the rain; asparagus and salad, peas and artichokes, lettuce and chicory, cherries, strawberries and raspberries, they all live in the air and by the air. The parts contributed by the earth, those which are drawn up through the roots, are gases also, and of the same nature, azote, oxygen, hydrogen, carbon, etc.

"If our aliment be a beefsteak or a chicken, or some other 'meat,' the difference is not very great. The sheep and the ox live on grass. Whether we eat a partridge with cabbage, a roast quail, a turkey with truffles, or a hare ragout, all these substances in appearance so diverse, are only vegetables under another form, which themselves are only a grouping of molecules drawn from the gases of which we have just spoken, air, watery vapor, molecules and atoms, in themselves almost imponderable, and absolutely invisible, besides, to the naked eye.

"Thus, whatever be our aliment, our body, formed, sustained, developed by the absorption of molecules through respiration and alimentation, is definitely only a current incessantly renewed by virtue of this assimilation, directed, governed and organized by the immaterial force which animates us. To this force we

may assuredly give the name of soul. It draws together the atoms which suit it, eliminating the useless ones, and starting from an imperceptible point, an indiscernible germ, ends by constructing here an Apollo Belvidere, there a Capitoline Venus. Phidias is but a coarse imitator compared to this secret and mysterious force. Pygmalion became the lover of the statue of which he was the creator, we are told in mythology. What an error! Pygmalion, Praxiteles, Michael Angelo, Benvenuto, Canova, created only statues. The power that can construct the living man and the living woman is a greater power.

"But this force is immaterial, invisible, intangible, imponderable, like the attraction which causes the spheres to move harmoniously in space, and the body, however material it may seem to us, is itself only a harmonious grouping together of molecules, brought about by the attraction of this inward force.

"You see then, that I am strictly within the limits of exact science, in calling this young girl a soul clothed with air—like you and me, indeed, neither more nor less.

"From the creation of mankind down to a few centuries ago, it was believed that sensation was perceived at the point where it was experienced. A pain felt in the finger

was supposed to have its seat in the finger itself.

"Children, and many grown people, still believe this to be the case. Physiology has demonstrated that sensation is transmitted from the ends of the fingers to the brain, through the nervous system. If the nerve is cut, the finger may be burned with impunity, the paralysis of sensation is complete. Even the time it takes a sensation to transmit itself, from any point whatsoever of the body to the brain, has been determined, and it has been ascertained that the velocity with which this transmission takes place is about eighty feet a second. Since this was proved, sensation has been located in the brain. But there scientific investigation stopped.

"The brain is matter, as the finger is matter, and like it renews itself perpetually. It is, less than any other part of the body, permanent, renewing itself more rapidly, and consequently being never the same.

"There does not exist, there cannot exist in the whole cerebral mass, a single lobe, a single cell, a single molecule which does not change. A stoppage in movement, in circulation, in transformation, would be a sentence of death. The brain exists and feels, only on condition of undergoing, like all the rest of the body, the

ceaseless transformations of organic matter, which constitute the vital circuit.

"It is not, it cannot be, then, in a certain cerebral mass, in a certain aggregation of molecules, that our personality, our identity, our individuality, our *ego*, which acquires and preserves a personal, intellectual and moral value, developed by culture, resides, our *ego*, which is, and feels itself to be, responsible for its acts, accomplished a month ago, a year ago, ten years, twenty years, fifty years ago—a period during which the molecular grouping has been *totally changed* several times.

"Those physiologists who assert that the soul does not exist, resemble their predecessors who asserted that a pain was felt by the finger or the foot. They are a little less far from the truth than those were, but in fixing their attention on the brain and making the human entity reside in the sensations of the brain, they place an obstacle in the way of scientific discovery. This supposition is the less excusable, as those very physiologists know perfectly well that personal sensation is always accompanied by a modification of substance. In other words, the *ego* of the individual continues to exist only so long as the identity of his physical part ceases to be.

"The seat of sensation, then, cannot be

material substance; it is placed in relation with the universe, through the impression received on the brain, by the chemical forces disengaged in the brain, resulting from material combinations. But it is not this.

“The constitution of our bodies, too, is perpetually undergoing transformation under the direction of a psychic principle.

“Such and such a molecule, which at present forms a part of the body, is eliminated in the process of breathing, of transpiration, etc., to remain in the atmosphere a longer or shorter time, then become incorporated in another organism, whether of a planet, an animal or a man. The molecules which constitute your body to-day did not all form a part of it yesterday, and a few months ago none of them were present in it. Where were they? In the atmosphere or in some other body. All the molecules which at present form the tissues of your body, your lungs, your eyes, your brain, your limbs, etc., have already served to form the tissues of other bodies. We are all dead bodies resuscitated, formed from the dust of our ancestors. If all the human beings who have lived upon the earth up to the present time were to return to life, there would be five of them to each square foot of land, and to maintain an upright position on the earth's sur-

face, they would be obliged to mount on one another's shoulders: but they could not resuscitate wholly, for many molecules have formed a part successively of several bodies. In the same way, our organs, separated into their constituent molecules, will one day form a part of the bodies of those who shall come after us.

"Each molecule of the atmosphere, then, passes perpetually from one form of life to another, escaping from each successively by death; by turns, wind, water, earth, animal or flower, it successively forms a part of innumerable organisms. The inexhaustible source from which every form of life takes its being—the air—is at the same time an immense reservoir into which every being that dies exhales its latest breath; from it vegetables and animals and the various forms of existence receive life, to die in their turn. Life and death are both alike in the air we breathe, and succeed each other perpetually in the exchange of gaseous molecules. The molecule of oxygen exhaled from yonder ancient oak flies to the lungs of the infant in the cradle, the latest sighs of the dying go to form a part of the brilliant corolla of the flower or to spread themselves, like a smile, over the verdant meadow; and thus through an infinite series of partial deaths, the atmosphere nourishes unceasingly the vari-

ous forms of life displayed on the surface of the globe.

"And if you object to this, I shall go still further and add that our garments themselves, as well as our bodies, are composed of substances which were all originally gaseous. Take this thread, pull it—how strong it is! How many fabrics—batiste, silk, linen, cotton, wool, have been manufactured by interweaving threads like this together. Yet what is this linen, hemp or cotton thread? Globules of air placed in juxtaposition with one another, and kept together only by molecular force. What is this thread of silk or wool? Another aggregation of similar molecules. Confess then, that our garments are also composed of air, of gas, of substances drawn originally from the atmosphere, of oxygen, azote, carbon and watery vapor."

"I observe with pleasure," resumed the painter, "that art is not so far removed from science as it is, in certain quarters, supposed to be. If your theories are for you purely science, for me they are art, and of the highest order. And besides, do all those distinctions exist in nature? No; there is in nature neither art, nor science, nor sculpture, nor painting, nor decoration, nor music, nor physics, nor chemistry, nor meteorology, nor astronomy, nor

mechanics. Behold that sky, that sea, those buttresses of the Alps, those rosy sunset clouds, those luminous spaces, stretching far away toward Italy. All this is one. And since molecular physics demonstrates to us that matter does not exist, that even in a bar of steel or platinum, the atoms do not touch each other, let our souls at least be left us ; no one will be the loser by it. Yes, this is a truth against which no prejudice will be able to prevail ; living beings are souls clothed with air. I pity the worlds destitute of an atmosphere."

We had returned from a long walk on the seashore, to a point not far distant from where we had set out, and we were passing before the battlemented wall of a villa, going toward Beaulieu, near Cape Ferrat, when two elegantly dressed ladies passed us. They were the Duchess de V—— and her daughter, whom we had met the Thursday before at the ball of the Prefecture. We saluted them and passed on under the shade of the olives. Daughter of Eve, the young girl unconsciously glanced back at us. I fancied that a sudden blush suffused her cheeks ; no doubt it was the reflection of the light of the setting sun.

"You think, perhaps, that you have lessened my admiration for beauty?" said the artist,

glancing behind also. "No ; I appreciate it better than before. I admire in it the harmony and all those other fine things of which you spoke just now ; and, shall I confess it?—the human body regarded as the visible manifesting of a directing soul, seems to me invested with new nobility, new beauty, new brightness."

VI.

AD VERITATEM PER SCIENTIAM—THE LEGACY OF SPERO TO SCIENCE.

I WAS occupied in my library writing a treatise on the conditions of life in other worlds revolving around other suns, and receiving from them light and life, when, raising my eyes to the chimney-piece, I was struck by the expression, I might almost say, of animation, on the countenance of my dear Uranie. It was the same gracious and animated expression that formerly—Ah! how rapidly the Earth revolves, and how quickly a quarter of a century passes!—that formerly—and it seems to me as if it were but yesterday—that formerly, in those youthful days so swiftly flown, had captivated my thoughts and inflamed my heart. I could not help letting my gaze dwell upon her even now. She was, in truth, as beautiful as then, and my feelings had not changed. She attracted me as the flame attracts the moth. I rose from the table to approach her, and observe anew the singular effect of the light upon her changing countenance, and, held by

the spell, remained standing before her, forgetful of my work.

Her gaze seemed to pierce into distance, yet it was animated, and seemed fixed upon some object. On what? On whom? I had a curious conviction that she could really see, and, following the direction of her glance, steadfast and solemn, although not severe, my eyes fell upon the portrait of Spero, hanging on the wall between two book-cases.

Uranie's gaze was fixed steadfastly upon him. Suddenly the portrait fell with a crash to the ground, its frame breaking into pieces with the fall.

I rushed forward. The picture lay before me on the carpet, the mild face of Spero looking up at me. As I raised it I saw on the ground a large sheet of paper, discolored with age, and covered on both sides with written characters in Spero's handwriting. How was it that I had never observed this paper before? True, it might easily have remained there unobserved, concealed from view by the paste-board at the back of the portrait. Indeed, when I had brought the picture with me from Christiania, it had not occurred to me to notice how it was framed. But who could have had the strange idea of placing the sheet of paper there? It was with extreme surprise that I

recognized my friend's handwriting, and read those two pages. According to all appearance, they had been written on the last day of the terrestrial existence of the young scientist—the day of his ascent toward the region of the Aurora Borealis—and, doubtless, the father of Iclea had, for greater security, placed these, the last supreme thoughts of Spero, in the frame with his likeness. He had forgotten to tell me of this when he gave me the portrait of my friend, at the time of my pilgrimage to the tomb of the lovers.

Be this as it may, I experienced a vivid emotion as, placing the picture carefully upon the table, I examined each trait of that beloved countenance. How well I remembered those eyes, so mild and yet so piercing, with their mysterious depths, that broad and serene brow, that delicate yet slightly sensual mouth, the transparent coloring of face, neck and hands. No matter where I placed the portrait, its gaze seemed to follow me, but without quitting Uranie. It was a singular fancy of the painter! I could not help thinking of the eyes of the goddess, which seemed to rest with a tender melancholy on her young adorer. As the shades of twilight darken a serene day, so did a divine sorrow seem to cloud that noble countenance.

But I remembered at last the mysterious sheet of paper. The writing upon it was neat and precise, without any erasure. I transcribe it here as it was, without altering a single word or even a comma, for it seems to form the natural conclusion to the events which it has been the purpose of this book to narrate.

It was, word for word, as follows:

This is the legacy left to science by a soul that even here on earth sought without ceasing to disengage itself from the bonds of matter, and who aspires to be freed from them.

I desire to leave behind me in the form of aphorisms, the result of my researches. I believe we can only arrive at a knowledge of the truth through the study of Nature, that is to say, through science. Here then are what seem to me to be the natural deductions founded on this method of observation.

I.

The visible, tangible, and ponderable universe, incessantly in motion, is composed of invisible, intangible, imponderable and inert atoms.

II.

In order to form bodies and organise beings those atoms must be acted upon by forces.

III.

Force is the essential element of being.

IV.

Visibility, tangibility, solidity, density, weight, are relative properties, not absolute realities.

V.

The infinitely little:

Experiments made in gold-beating, show that ten thousand of those leaves occupy a space no thicker than a millimetre.

This quantity has been sub-divided into a thousand equal parts, and infusoria so small, are known to exist, that their bodies placed on a glass slide between two of these atoms do not touch them; the limbs and organs of these beings are composed of cells, those of molecules, those of atoms. Twenty cubic centimetres of oil spread over the surface of a lake will cover a space of 4000 square yards, so that the coating of oil thus spread measures no more than the two hundredth of a millimetre in thickness. Spectrum analysis reveals the presence in a flame of a millionth of a millegram of sodium. The waves of light are composed between 4 and 8 ten-thousandth of a millimetre of violet to red. 2300 waves of light occupy only the space of a millimetre. In the dura-

tion of a second the ether which transmits light, performs seven hundred thousand thousand millions of vibrations, each one of which can be mathematically defined. The sense of smell perceives 604,000,000 of a milligram of mercaptan in the air we breathe. The dimension of an atom must be less than a millionth of a millimetre in diameter.

VI.

Atoms, intangible, invisible, scarcely conceivable by our minds accustomed to judge by appearances, constitute the only real matter, and that which we call matter is only the effect produced upon our senses by the movements of atoms, that is to say, an incessant possibility of sensations.

It results from this, that matter, like the manifestations of force, is only a mode of motion; if motion were arrested, if force could be annihilated, if the temperature of bodies were reduced to an absolute zero, matter, as we perceive it by our senses, would cease to exist.

VII.

The visible universe is composed of invisible atoms. That which we see is made of things which we do not see.

There is only one species of primitive atoms; the constituent molecules of different bodies,—

iron, gold, oxygen, hydrogen, differ only in naming and in the grouping and the action of the atoms which compose them.

VIII.

That which we call matter vanishes when scientific analysis believes it has grasped it. That which maintains the universe in existence, the principle of all the forms of matter, is force, the dynamic elements.

By the exercise of my will I can cause the moon to deviate from her course.

The movements of all the atoms on our earth are the mathematical result of all the undulations of ether, as they reach them from the abysses of infinite space.

IX.

The essential principle of the human being is the soul. The body is apparent and transitory.

X.

Atoms are indestructible.

Force, which moves atoms, and rules the universe, is indestructible.

The human soul is indestructible.

XI.

The existence of the soul as an individual entity on the earth, is of recent date. Our

planet was first nebulous, then a globe of fire, then chaos; at that time no terrestrial being existed. Life commenced with the most rudimentary organism; it has taken centuries to reach its present state, which is not to be its final one. Intelligence, reason, conscience, what we call the faculties of the soul, are of modern date. Spirit has gradually liberated itself from matter as—if the comparison be not too material—gas liberates itself from coal, the perfume from the flower, the flame from the fire.

XII.

Psychic force began to assert itself thirty or forty centuries back: in the superior spheres of terrestrial being its action is as yet in its dawn.

Souls, whether or not they be conscious of their individuality, are, by their very nature, removed from the conditions of time and space. After the death of the body, as during life, they occupy no space. It may be that they go to inhabit other worlds.

Only those souls are conscious of their existence out of the body, and, of their immortality, who are freed from the bonds of matter.

XIII.

Earth is only a province of the eternal country; it is a part of heaven. Heaven

is infinite. All the worlds form a part of Heaven.

XIV.

The planetary and sidereal systems which constitute the universe are in different grades of organization and progress. The extent of their diversity is infinite; the inhabitants of a world are always in harmony with their environment.

XV.

All the worlds are not at present inhabited. The present epoch is of no more importance than the epochs which precede, or than those which are to follow it. Such and such worlds were inhabited in the past, myriads of years ago; such and such others will be inhabited in the future during myriads of ages yet to come. One day nothing will remain of the Earth, and its very ruins will be destroyed.

XVI.

Terrestrial life is not the type of life on other globes. Infinite diversity reigns throughout the universe. There are abodes where gravity is intense, where light is unknown, where the sense of touch, of smell, of hearing, are the only senses, and where the optic nerve not being formed, all the beings are blind. There are others where gravity is scarcely

sensible, and where beings are so light and so tenuous that they would be invisible to terrestrial eyes, where senses of an exquisite delicacy reveal to privileged spirits, sensations unknown to terrestrial humanity.

XVII.

The space existing between the worlds scattered throughout the universe, does not isolate them from one another. They are all in perpetual communication with each other through the force of attraction which is constantly exerted through space.

XVIII.

The Universe is a unity.

XIX.

The system of the physical world is the material basis, the habitat of the system of the moral or physical world.* Astronomy, therefore, should be the basis of every religious or philosophical creed.

Every thinking being bears within himself the feeling—but also the doubt—of immortality. This is because we are the infinitely little parts of an unknown mechanism.

XX.

Man makes his own destiny. He elevates himself, or he lowers himself by his works.

Those who are attached to material interests, those who are ambitious, misers, hypocrites, liars, the sons of Tartufe, dwell, with the perverse, in the inferior zones.

But a primordial and absolute law rules the Creation; the law of Progress. In the infinite all things tend upward; faults are falls.

XXI.

In the upward progress of souls, moral qualities have no less value than intellectual qualities. Goodness, self-devotion, abnegation, sacrifice, purify the soul and exalt it, as knowledge and study do.

XXII.

Universal creation is a grand symphony of which the Earth is only an insignificant strain, dull, and unintelligible.

XXIII.

Nature is a perpetual becoming. *Progress is the law.* Progression is eternal.

XXIV.

Eternity would not suffice a soul, to explore the infinite, and learn all that is to be known.

XXV.

The destiny of the soul is to liberate itself more and more from the material world and to belong definitely to the *higher Uranian life*,

where it dominates matter and suffers no longer. The supreme end of being is a perpetual progress toward absolute perfection and divine happiness.

Such was the legacy left to science and philosophy by Spero. Does it not seem to have been dictated by Uranie herself?

The nine Muses of ancient mythology were sisters. Modern scientific conceptions tend also, in their turn, to unity. Astronomy, or the knowledge of the material world, psychology, or the knowledge of being, unite to-day to form the only basis on which it is possible to construct the philosophy of the future.

* * * * *

P. S.—The preceding episodes, the researches recorded, and the reflections accompanying them are here brought together in a sort of *Essay*, to serve as beacons in the solution of the greatest of the problems which can interest the human mind. It is as such that the present work is presented to the attention of those who, as Dante says, occasionally pause "midway in the path of life," to ask themselves what they are, what are their aims, their thoughts, their dreams.

THE END.