

# **Studies of Nature**

Bernadin de Saint-Pierre



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Translated by Henry Hunter

The wretchedness of the lower orders is, therefore, the principal source of our physical and moral maladies. There is another, no less fertile in mischief, I mean the education of children. This branch of political economy engaged, among the ancients, the attention of the greatest legislators; with us education has no manner of reference to the constitution of the state. In early life are formed the inclinations and aversions which influence the whole of our existence. Our first affections are likewise the last; they accompany us through life, reappear in old age, and then revive the sensibilities of childhood with still greater force than those of mature age.

Wise Nature, in giving so much more force to early habits, intended that our happiness should depend on those most concerned to promote it — our parents; for on the affections they at that season inspire depends the affection we are one day called upon to return. But with us, as soon as the child is born, he is transferred to a mercenary nurse. The first bond Nature intended should attach him to his parents is burst asunder before it is formed. The day will come, perhaps, when he will behold the funeral procession of those who gave him birth leave his father's door with as much indifference as they saw his cradle turned out. He may be recalled home, it is true, at the age when the graces, when innocence, when the necessity of having an object of affection, should fix him there for ever. But he is permitted to taste those sweets only to make him feel, in a little while, the bitterness of losing them. He is sent to school, and boarded far from home. There he is doomed to shed tears which no maternal hand is ever more to wipe away; there he is to form friendships with strangers pregnant with regret and repentance; and there he must learn to extinguish the natural affections of brother, sister, father, and mother, the most powerful and the sweetest chains by which Nature attaches us to our country.

After this first horrid outrage committed on his young heart, others equally violent are offered to his understanding. His tender memory must be loaded with ablatives, conjunctions, conjugations. The blossom of human life is sacrificed to the metaphysical jargon of a dead language. What Frenchman could submit to the torture of learning his own in that manner? And if there be those who have exercised such laborious patience, do they speak better than persons who have never endured such drudgery? Who writes best, a lady of the court, or a

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pedantic grammarian? To learn to speak by grammar rules, is the same thing with learning to walk by the laws of equilibrium. Practice teaches the grammar of a language, and the passions are our best instructors in the rhetoric of it. A period of life all fire and activity is thus repressed by an unnatural constraint, transforming it into a state, sad, sedentary, and speculative, which has a dismal influence on the temperament, by ingrafting upon it maladies without number.

Of love and ambition, the two moving principles of the human heart, the last is by far the most durable and dangerous. It dies last in the aged, and our education puts it prematurely in motion in the young. It would be infinitely better to assist them in directing their early tender affections toward an amiable object. Most men are destined to feel the power of this gentle passion, which Nature has made the firmest cement of society. If their age forbid a commerce of early love, their affections ought to be directed into the channel of friendship, and thus battalions of friends might be formed among them, prepared to devote themselves in the service of their country. Note: Children, at Sparta, were taught only to obey, to love virtue, to love their country, and to live in the most intimate union, till they were divided in their schools into two classes, of Lovers and Beloved.

Ambition, give it what specious name you please, is the sworn enemy of all virtue, the source of the most dangerous and detestable vices, every one being disposed to gratify it in his own way. It is forbidden by Nature and Religion. But emulation, we are told, awakens talents. It would be easy to demonstrate that the most celebrated writers, in every walk of literature, never were brought up at college, from Homer, acquainted with no language but his own, down to J. J. Rousseau, who was a very indifferent Latin scholar. How many young men have made a brilliant figure in the run of the classes, who were by and by totally eclipsed in the vast sphere of literature! Italy is crowded with colleges and academies; but can she boast, at this day, of so much as one man eminently distinguished? Do we not see there, on the contrary, talents distracted, by ill-assorted societies, jealousies, cabals, intrigues, and ambition, become enfeebled and melt away?

I think I perceive another reason of this decline; nothing is studied in those seminaries but methods and forms of learning, or what is called *manner*. This study, by fixing us in the track of a master, forces us out of the path of nature, the source of all talents. Observe the arts brought to the highest perfection in France, and you will find they are those for which there is no public school, no prize, no academy; such as milliners, jewellers, hair-dressers, cooks, &c. We have, in is true, men of high reputation in the liberal arts, and in the sciences; but these men acquired their talents before they were admitted into academies. But admitting that talents are formed in colleges, they would not for that be less prejudicial to the nation; for it is more important that a country should possess virtue than talents, and that men should be happy than renowned. A treacherous glare covers the vices of those who succeed in our colleges. But in the multitude of who never succeed, all the vices of a negative ambition are already in a state of fermentation, and prepared to burst forth, at the command of their leader, upon the world.

After having elevated a poor boy about his equals, by the title of emperor, and even above the whole human race, by that of son of the church, he is cruelly brought low by rigorous and degrading punishments. Note: Consult Montagne's Essays, book i. chap. 25. — Montagne was one of those men not educated at college. He was instructed without tasting corporal punishment, and without emulation, under the paternal roof, by the gentlest of fathers, and by preceptors whose memory he has preciousy embalmed in his writings. He became, by means of an education diametrically opposite to ours, one of the best and most intelligent men of the nation. I have seen, at college, many a pretty creature, ready to swoon with pain, receive on their little hands a dozen sharp strokes; and by the infliction of this punishment, the skin separated from the tip of their fingers. What shall be said of those infamous punishments, which produce a disgraceful effect on the morals of both scholars and regents? It is impossible to enter on this subject without putting modesty to the blush. And yet they are employed by priests!

Our children, subverted by the vices of a faulty education become false reasoners, knavish, hypocritical, envious, ugly, and wicked. In proportion as they increase in age, they increase also in malignity and the spirit of contradiction. Not a schoolboy knows any thing of the laws of his country, but some may have heard talk about those of the twelve tables. No one of them can tell how our own wars are conducted; but many can entertain you with those of the greeks and Romans. They all know single combat is prohibited; yet many go to the fencing-schools, where the only thing taught is to fight duels.

Others, destined to functions more peaceful, are put to school to learn the art of disputation. Truth, we are gravely told, is struck out of the collision of opinions. Out of disputations have arisen sophisms, paradoxes, errors of every kind. Truth never shows her face before tyrants; and every man who disputes would be a tyrant if he

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could. The light of truth has no resemblance to the fatal coruscations of thunder, but to the brightness of the sun when heaven is without a cloud.

I shall not follow our youth into the world, where he would be sufficiently unhappy, supposing him to have preserved only that fear of blame and desire of commendation under which his studies were conducted. Influenced by the opinion of another, himself possessing no steady principle, the silliest of women will rule over him with more unbounded empire than his professor. All I plead for is, that children should be delivered, at least, from that tedious apprenticeship of misery, by which they are depraved, at the happiest and most amiable period of their existence, and which has afterward so much influence on their characters. Man is born good, society renders him wicked, and our mode of education prepares the way for it.

Trace the history of a villain's life, and we shall find his infancy has been miserable. Where children were unhappy, I have observed them wicked and ugly; but where I saw them happy, they were beautiful and good. In Holland and Flanders, where they are brought up with the greatest gentleness, their beauty is singularly remarkable. You never hear them, as in our cities, uttering loud and bitter cries; still less are they threatened with the rod by their mothers and nurses; they are not gay, but contented. You observe on their countenance an air of tranquillity and satisfaction perfectly enchanting, and infinitely more interesting than the boisterous mirth of our young people, when they are no longer under the eye of their fathers or preceptors.

This calmness diffused over all their actions, is the source of a happy composure during their whole life. I never saw any country where parental tenderness was so strikingly expressed; the children repay in their old age the indulgence with which they were treated in helpless infancy. By bonds so endearing are those people so powerfully attached to their country, that we find very few of them settling among strangers. With us, fathers like better to see children sprightly than good, because in an ambitious society, spirit raises man to the head of a party, but goodness makes dupes. They have epigrams composed by their children; but wit being only the perception of the relations of society, children scarcely ever have any but what is borrowed. Wit itself is frequently, in them, the proof of a miserable existence, as may be remarked in the schoolboys of our cities, who usually are sprightlier than the children of the peasantry; but in general they are all forward in point of feeling; and this reflects great blame on those who degrade them, at an age when they feel more delicately than men.

Affecting instances of sensibility are not unfrequent in the children of the common people. Walking through the Pre St. Gervais, about the setting in of winter, I observed a poor woman, lying along the ground, weeding a bed of sorrel; close by her was a little girl, of six years old at most, standing motionless and quite impurpled with the cold. I addressed myself to the woman, who was indisposed, and inquired into the nature of her malady. 'Sir,' said she, 'for three months past, I have suffered severely from the rheumatism; but my disease gives me less pain than that poor child does: she will not quit me a single moment. If I say to her, See, you are quite benumbed with cold, go and warm yourself; she replies, Alas! mother, if I leave you, your complaints will be your only companion.'

Another time, being in the park at Marly, I there found three children, two little girls, employed with singular activity in picking up the scattered sticks of dry wood, which they deposited in a basket, and a little boy, all in tatters, and extremely lean, devouring a morsel of bread. I asked the tallest what she intended to do with the wood; she replied, 'Look, sir, at that poor boy; he is very miserable! He is so unfortunate as to have a step-mother, who sends him out, all day long, to pick up wood: if he carries none home, he is beaten severely; when he happens to have got a little, and is carrying it off, the Swiss at the park gate takes it from him, and applies it to his own use. He is half dead with hunger, and we have given him our breakfast.' Having thus spoken, she and her companion filled the little basket; helped him up with it on his back, and ran away before their unhappy friend to the gate of the park, to see if he could pass unmolested.

Foolish instructors! Human nature, you tell us, is corrupted: yes, but you are the persons who corrupt it by contradictions, by unprofitable studies, by dangerous ambition, by shameful chastisements: and by an equitable reaction of Divine Justice, that feeble and unfortunate generation will one day give back to that which oppresses it, all the mischief which it first received.

## STUDY EIGHTH. REPLY TO THE OBJECTIONS AGAINST A DIVINE PROVIDENCE, AND THE HOPES OF A LIFE TO COME, FOUNDED ON THE INCOMPREHENSIBLE NATURE OF GOD AND ON THE MISERIES OF A PRESENT STATE.

'WHAT avails it me,' some one will say, 'that my tyrants are punished, if I am still to be the victim of tyranny? Is it possible that such compensations should be the work of GOD? Great philosophers, who have devoted their whole life to the study of Nature, have refused to acknowledge its Author. Who hath seen GOD at any time? What is it that constitutes GOD? But taking it for granted that an intelligent BEING directs the affairs of this universe, man assuredly is abandoned to himself: no hand has traced his career: as far as he is concerned, there are, apparently, two Deities; the one inviting him to unbounded enjoyment, and the other dooming him to endless privation; one God of Nature, and another God of Religion. Man is left totally uncertain whether of the two he is bound to please; and whatever be the choice which he is determined to make, how can he tell whether he is rendering himself an object of love or of hatred?

His virtue itself fills him with doubts and scruples; it renders him miserable, both inwardly and outwardly; it reduces him to a state of perpetual warfare with himself, and with the world, to the interests of which he is obliged to make a sacrifice of himself. If he is chaste, the world calls him impotent; if religious, he is accounted silly; if he discovers benignity of disposition, it is because he wants courage; if he devotes himself for the good of his country, he is fanatic; if simple, he is duped; if modest, he is supplanted; everywhere he is derided, betrayed, despised, now by the philosopher, and now by the devotee. On what foundation can he build the hope of a recompense for so many struggles and mortifications? On a life to come? What assurance has he of its existence? Where is the traveller that ever returned from thence?

'What is the soul of man? Where was it a hundred years ago? Where will it be a century hence? It expands with the senses, and expires when they expire. What becomes of it in sleep, in a lethargy? It is the illusion of pride to imagine it immortal: Nature universally points to death, in his monuments, in his appetites, in his loves, in his friendships: man is universally reduced to the necessity of drawing a veil over this idea. In order to live less miserable, he ought to *divert* himself, that is, as the word literally imports, he ought to *turn aside* from that dismal perspective of woes which Nature is presenting to him on every side. To what hopeless lobbies has she not subjected his miserable life? The beasts of the field are a thousand times happier; clothed, lodged, fed by the hand of Nature, they give themselves up without solicitude to the indulgence of their passions, and finish their career without any presentiment of death, and without any fear of an hereafter.

'If there be a GOD who presides over the destiny of all, he must be inimical to the felicity of the human race. What is it to me that the earth is clothed with vegetables, if I have not the shade of a single tree at my disposal? Of what importance to me are the laws of harmony and of love, which govern Nature, if I behold around me only objects faithless and deceiving; or if my fortune, my condition, my religion, impose celibacy upon my? The general felicity diffused over the earth, serves only as a bitter aggravation of my particular wretchedness. What interest is it possible for me to take in the wisdom of an arrangement which renovates all things, if, as a consequence of that very arrangement, I feel myself sinking, and ready to be lost for ever? One single wretch might arraign Providence, and say with Job the Arabian, chap. iii. 20, *Wherefore is light given to him that is in misery, and life unto the bitter in soul?* Alas! the appearances of happiness have been disclosed to the view of man, only to overwhelm him with despair of ever attaining it. If a GOD, intelligent and beneficent, governs Nature, diabolical spirits direct and confound at least the affairs of the children of men.'

I shall, first, reply to the principal authorities on which some of these objections are supported. They are extracted, in part, from a celebrated poet, and a learned philosopher, namely, Lucretius and Pliny.

Lucretius has clothed the philosophy of Empedocles and Epicurus in very beautiful verses. His imagery is enchanting; but that philosophy of atoms, which adhere to each other by chance, is so completely absurd, that wherever it appears, the beauty of the poetry is impaired. To what, we may ask him, do these primary atoms, out of which you construct the elements of Nature, owe their existence? Who communicated to them the first movement? How is it possible they should have given to the aggregation of a great number of bodies, a spirit of



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life, a sensibility, and a will, which they themselves possessed not?

If you believe, with Leibnitz, that those *monads*, or unities, have perceptions peculiar to themselves, you give up the laws of chance, and must allow to the elements of Nature the intelligence you refuse to its AUTHOR. Descartes has subjected those impalpable principles to the laws of an ingenious geometry; and after him, the heard of philosophers, seduced by the facility of erecting all sorts of systems with the same materials, have applied to them, by turns, the laws of attraction, of fermentation, of crystallization; but all without success.

Lucretius has thought proper to pursue a method still more strange, namely, that in a work, the professed object of which is to materialize the Deity, he sets out with deifying matter. He has given way to this universal principle, that we find it impossible powerfully to interest mankind, whatever be the object, without presenting to the mind some of the attributes of Deity. On this hypothesis, therefore, in his first book *De Rerum Natura*, he deifies Venus; ascribes to her the creation of the world; addresses prayers, and bestows on her person the epithet of sacred; he invests her with the character of goodness, justice, intelligence, and power, which belongs to GOD only; in a word, the attributes are so exactly the same, that, suppressing only the word Venus, in the invocation of his poem, you may apply it almost entirely to the Divine Wisdom. He is constrained to admit, in the sequel of his poem, that this goddess, so wonderfully beneficent, is directly chargeable with the ruin of health, of fortune, and, sooner or later, with the loss of reputation: that, from the very lap of the pleasures which she bestows, there issues a something which imbitters enjoyment, torments a man, and renders him miserable.

Pliny takes the directly opposite course. In the very threshold of his Natural History, he affirms there is no God, and the whole work is an elaborate demonstration of the being of GOD. His authority must be of considerable weight, as it is not that of a poet to whom opinions are a matter of indifference, provided he can produce a striking picture; nor that of a sectary, obstinately determined to support a party, whatever violence may be done to conscience; nor, finally, that of a flatterer, making his court to vicious princes. Pliny wrote under the virtuous Titus, and dedicated his book to him. He carries to such a height the love of truth, and contempt of the glory of the age in which he lived, as to condemn the victories of C'sar, in Rome itself, and when addressing a Roman emperor. He is replete with humanity and virtue; and exposes the cruelty of masters to their slaves, the luxury of the great, nay, the dissolute conduct of several empresses. He sometimes pronounces the panegyric of good men; and exalts even above the inventors of arts persons who have rendered themselves illustrious by their continency, modesty, and piety.

His work is a combination of brilliancies, a real encyclopedia, containing the history of the knowledge and the errors of this time. These last are sometimes imputed to him unjustly, for he frequently brings them forward in the view of refuting them. The physicians and apothecaries, who have extracted many of their prescriptions from him, abuse him, because he finds fault with their conjectural art and systematic spirit. He abounds, besides, in curious information, in profound views, and interesting traditions; and what renders his performance invaluable, he uniformly expresses himself in a picturesque manner. With all this taste, judgment, and knowledge, Pliny is an atheist. Nature, from whom he has derived such various intelligence, may address him in the words of C'sar to Brutus: *What, you too, my son!*

If I may be permitted to say it, in justification of Pliny, I believe his immortal work to be falsified, where is made to reason as an atheist. All his commentators agree that no author has suffered more from the unfaithfulness of transcribers than he has done; that copies of his Natural History exist in which whole chapters are entirely different. I shall here observe, that the writings of the ancients have passed through more than one unfaithful language, nay worse, more than one suspicious hand. They have met with the fate of their monuments, among which their temples have been most of all degraded. Their books have also been mutilated, chiefly in passages favourable to religion, or the reverse. An instance of this we have in the transcription of Cicero's Treatise on the Nature of the Gods, in which the objections against Providence are omitted.

Montagne upbraids the first Christians with having suppressed, on account of four or five articles which contradicted their creed, a part of the works of Cornelius Tacitus, 'though the emperor Tacitus, his relation, had, by his express edicts, furnished all the libraries in the world with them.' Note: Essays, book ii, chap. xix.

In our own days, every party exerts itself to run down the reputation and opinions opposed to it. Mankind is, in the hands of religion and philosophy, like the old man in the fable, between two dames of different ages. They had both a mind to trim his locks, each in her own way. The younger picked out all the white hairs, which she could not bear; the old one, for an opposite reason, removed the black; consequently his head was speedily reduced to

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complete baldness.

It is impossible to adduce a more satisfactory demonstration of this ancient infidelity of the two parties, than an interpolation to be found in the writings of Flavius Josephus, who was contemporary with Pliny. He is made to say, in so many words, that the Messiah was just born; and he continues his narration, to the end of a voluminous history, without once referring to this wonderful event. How can it be believed that Josephus, who frequently indulges himself in a tedious detail of minute circumstances, should not have reverted a thousand and a thousand times to a birth so deeply interesting to his nation, considering that its very destiny was involved in that event, and that even the destruction of Jerusalem was only one of the consequences of the death of JESUS CHRIST? He, on the contrary, perverts the meaning of the prophecies which announce Him, applying them to Vespasian and Titus; for he, as well as the other Jews, expected a Messiah triumphant. Besides, had Josephus believed in CHRIST, would he not have embraced his religion?

For a similar reason, is it credible that Pliny should commence his Natural History with denying the existence of GOD, and afterwards fill every page of it with expatiating on the wisdom, goodness, providence, and majesty of Nature; on the presages and premonitions, sent expressly from the gods; and even on the miracles divinely operated through the medium of dreams?

Certain savage tribes have been adduced as examples of atheism, and every sequestered corner of the globe has been for this purpose explored. But obscure tribes were no more intended to serve as an example to the human race, than certain mean and obscure families among ourselves could be proposed as proper models to the nation; especially when the object is to support by authority an opinion necessarily subversive of all society. Besides, such assertions are absolutely false. I have read the history of voyages from which they are extracted. The travellers acknowledge they had but a transient view of those people, and were totally unacquainted with their languages. They supposed there could be no religion among them, because they saw no temples; as if any other temple were necessary to the belief in GOD than that of Nature! These same travellers contradict themselves, by relating that those nations, elsewhere represented as destitute of all religion, make obeisance to the moon, by prostrating themselves to the earth, or lifting up their hands to heaven: that they pay respect to the memory of their forefathers, and place viands on their tombs. The immortality of the soul, admitted how you will, necessarily supposes the existence of GOD.

But if the first of all truths stood in need of testimony from men, we could collect that of the whole human race, from geniuses the most exalted, down to the lowest state of ignorance. This unanimity of testimony is of irresistible weight; for it is impossible that such a thing should exist on the earth as universal error.

Newton, who pursued his researches into the laws of Nature so profoundly, never pronounced the name of GOD without moving his hat, and otherwise expressing the most devout respect. He took pleasure in recalling this sublime idea, and considered it as the natural bond of union among all nations. Corneille le Bruyn, the Dutch painter, relates, that happening to dine one day at his table, in company with several other foreigners, Newton, when the desert was served up, proposed a health to the men of every country who believe in GOD. This was drinking the health of the human race. A belief in GOD arises from the spectacle of Nature simply. A poor ignorant Arabian of the desert was one day asked, How he came to be assured there was a God? 'In the same way,' he replied, 'that I am able to tell by the print impressed on the sand whether it was a man or a beast which passed that way.' Note: Travels through Arabia, by Mons. d'Arvieux.

Man, as has been said, cannot imagine any form, or produce a single idea, of which the model is not in Nature. He expands his reason only on the reasons Nature has supplied. GOD must, therefore, necessarily exist, were it but for this, that man has an idea of him. But if we attentively consider that every thing necessary to man exists in a most wonderful adaptation to his necessities, for the strongest of all reasons GOD likewise must exist, He who is the universal adaptation of all the societies of the human race.

But I should wish to know, in what way those who doubt of his existence, on a review of the works of Nature, would desire to be assured of it? Do they wish he should appear under a human form, and assume the figure of an old man, as he is painted in some of our churches? They would say, this is a man. Were He to invest himself with some unknown and celestial form, could we in a human body support the sight? The complete and unveiled display of even a single one of his works on the earth would be sufficient to confound our feeble organs. For example, if the earth wheels around its axis, as is supposed, there is not a human being in existence, who, from a fixed point in the heavens, could view the rapidity of its motion without horror; for he would behold rivers,

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oceans, kingdoms, whirling about under his feet with a velocity almost thrice as great as a cannon-ball. But even the swiftness of this diurnal rotation is a mere nothing: for the rapidity with which the globe describes its annual circle, and hurls us round the sun, is seventy-five times greater than that of a bullet shot from the cannon. Were it but possible for the eye to view through the skin the mechanism of our own body, the sight would overwhelm us. Durst we make a single movement if we saw our blood circulating, the nerves pulling, the lungs blowing, the humours filtrating, and all the incomprehensible assemblage of fibres, tubes, pumps, currents, pivots, which sustain an existence at once so frail and so presumptuous?

Would we wish, on the contrary, that GOD should manifest himself in a manner more adapted to his own nature, by the direct and immediate communication of his intelligence, to the exclusion of every intervenient mean?

When some striking truth or affecting sentiment impresses an audience at a theatre, some are melted into tears, others almost choked with an oppressed respiration, others quite in a transport, clapping their hands and stamping with their feet; the females in the boxes actually fainting away. Were these violent agitations of spirit to go on progressively but for a few minutes only, the persons subject to them might lose their reason, perhaps life. What would be the case, then, if the Source of all truth and feeling were to communicate himself to us in a mortal body? GOD has placed us at a suitable distance from his infinite Majesty; near enough to perceive, but not so near as to be annihilated by it. He veils intelligence under the forms of matter, and He restores our confidence respecting the movements of the material world by the sentiment of his intelligence. If at any time he is pleased to communicate himself in a more intimate manner, it is not through the channel of haughty science, but through that of modest virtue. He discloses himself to the simple, and hides his face from the proud.

'But,' it is asked, 'what made GOD? Why should there be a God? Am I to call in question his existence because I am incapable of comprehending his origin? This style of reasoning would lead us to conclude that man does not exist: for, Who made man? Why should there be men? Why am I in the world in the eighteenth century? Why did I not arrive in some of the ages which went before? and, Wherefore should I not be here in those which are to come? The existence of GOD is at all times necessary, and that of men only contingent. Nay, the existence of man is the only apparently superfluous existence in the order established upon earth. Many islands have been discovered without inhabitants, which presented abodes the most enchanting, from the disposition of the valleys, of the waters, of the woods, of the animals. Man alone deranges the plans of Nature: he diverts the current from the fountain; he digs into the side of the hill; he sets the forest on fire; he massacres without mercy every thing that breathes; everywhere he degrades the earth, which could do very well without him.

The harmony of this globe would be partially destroyed, perhaps entirely so, were but the smallest genus of plants to be suppressed; for its annihilation would leave a certain space of ground destitute of verdure, and thereby rob of its nourishment the species of insect which there found the support of life. The destruction of the insect again would involve that of the species of bird which in these alone finds the food proper for their young; and so on to infinity. The total ruin of the vegetable and animal kingdoms might take its rise from the failure of a single moss, as we may see that of an edifice commence in a small crevice. But if the human race existed not, it would be impossible to suppose that any thing had been deranged: every brook, every plant, every animal, would always be in its place. Indolent and haughty philosopher, who presumest to demand of Nature wherefore there should be a God, why demandest thou not rather wherefore there should be men?

All his works speak of their AUTHOR. The plain which gradually escapes from my eye, and the capacious vault of heaven which encompasses me on every side, convey to me an idea of his immensity; the fruits suspended on the bough within reach of my hand, announce his providential care; the constant revolution of the seasons display his wisdom; the variety of provision which his bounty makes, in every climate, for the wants of every thing that lives, the stately port of the forests, the soft verdure of the meadow, the grouping of plants, the perfume and enamel of flowers, an infinite multitude of harmonies, known and unknown, are the magnificent languages which speak of Him to all men in a thousand and a thousand different dialects. Nay, the very order of Nature is superfluous: GOD is the only being whom disorder invokes, and whom human weakness announces. In order to attain the knowledge of his attributes, we need only have a feeling of our own imperfections.

Man has given nothing to himself, he has received all. — But I should consider it an insult to the understanding of my reader, were I to insist longer on the proofs of the existence of GOD. I shall now reply to the objections against his goodness.

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The laws which govern man are derived from the same plan of wisdom which has constructed the universe. Man is not a being of a nature perfectly simple. Virtue, which ought to be the great object of his pursuit on earth, is an effort which he makes over himself for the good of mankind, in the pleasing view of GOD only. It proposes to him the Divine Wisdom as models, and presents the most secure and unerring path to happiness. Study Nature, and you will perceive that nothing can be more adapted to the felicity of man, and that virtue carries her reward in her bosom, even in this world.

Let us not complain that GOD has made an unfair distribution of his gifts, when we see the abundance in which bad men live. Whatever is on the earth most useful, beautiful, and best, is within the reach of every man. Obscurity is better than glory, and virtue than talents. The light of the sun, a little field, a wife and children, are sufficient to employ a succession of pleasures to him. Must he have luxuries too? A flower presents him colours more lovely than the pearl dragged from the abysses of the ocean; and a burning coal on his hearth has a brighter lustre, and is infinitely more useful, than the famous gem which glitters on the head of the Grand Mogul.

After all, What did GOD owe to man? Water from the fountain, a little fruit, wool to clothe him, as much land as he is able to cultivate with his own hands. So much for the wants of his body. As to those of the soul, it is sufficient for him to possess in infancy the love of his parents; in maturity that of his wife; in old age the gratitude of his children; at all seasons the good will of his neighbours, the number of whom is restricted to four or five, according to the extent and form of his domain; so much knowledge of the globe as he can acquire by rambling about for half a day, so as to get home to his own bed at night, or, at most, to the extremity of his domestic horizon; such a sense of Providence as Nature bestows on all men, and which will spring up in his heart fully as well after he has made the circuit of his own field, as after returning from a voyage round the world.

With corporeal enjoyments and mental gratifications like these he ought to be content; whatever more he desires is above his wants, and inconsistent with the distributions of Nature. He cannot acquire superfluity but by the sacrifice of some necessary; public consideration he must purchase at the price of domestic happiness; and a name in the world of science by renouncing his repose. Besides, these honours, attendants, riches, that submission, men so eagerly hunt after, are desired unjustly: a man cannot obtain them but by plundering and enslaving his fellow-citizens: their acquisition exposes to incredible labour and anxiety, the possession is disturbed by incessant care, and privation tears the heart with regret. By pretended blessings such as these, health, reason, conscience, all, is depraved and lost.

Virtuous persons, in truth, are sometimes destitute not only of the blessings of society, but of those of Nature. To this I answer, that their calamities frequently are beneficial to them. When persecuted by the world, they are usually incited to engage in some illustrious career. Affliction is the path of great talents, or of great virtues, which are infinitely preferable.

A resignation to the will of GOD ought in every situation to sooth the soul to peace. But if the illusions of a vain world should ruffle our spirit, let me suggest a consideration which may go far toward restoring our tranquillity. When any thing in Nature bears hard upon us, and inspires mistrust of its AUTHOR, let us suppose an order of things contrary to that which galls us, and we shall find a multitude of consequences resulting from this hypothesis that would involve much greater evils than those of which we complain. If you wish to justify the order of Nature, it is sufficient to deviate from it; and, in order to refute all human systems, nothing more is necessary than to admit them.

For example, complaints are made of death: but if men were not to die, What would become of their posterity? Long before now there would not have been room for them on the earth. Death, therefore, is a benefit. Men complain of the necessity of labouring: but unless they laboured, How could they pass their time? The reputedly happy of the age, who have nothing to do, are at a loss how to employ it. Labour, therefore, is a benefit. Men envy the beasts the instinct which guides them: but if, from their birth, they knew, like them, all that they ever are to know, What should they do in the world? They would saunter through it without interest or curiosity. Ignorance, therefore, is a benefit.

The other ills of Nature are equally necessary. Pain of body and vexation of spirit are barriers erected by Nature to prevent our deviating from her laws. But for pain bodies would be broken to pieces on the slightest shock; but for chagrin the mind would become the victim of every sickly appetite. Diseases are the efforts of temperaments to purge off some noxious humour. Nature employs disease not to destroy the body, but to preserve it; it is ever the consequence of some violation of her laws, physical and moral. The remedy is frequently obtained

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by leaving her to act in her own way. The regimen of aliments restores our health of body, and that of men, tranquillity of mind. Whatever opinions disturb our repose in society, they almost always vanish in solitude. Sleep itself dispels our chagrin more gently and infallibly than a book of morals. If our distresses are such as to break our rest, they may be mitigated by having recourse to GOD. Here is the central point towards which all the paths of human life converge. Prosperity, at all seasons, invites us to his presence, but adversity leaves us no choice.

The evils of society are no part of the plan of Nature, but they demonstrate the existence of another order of things: for is it natural to imagine, that the BEING good and just, who has disposed every thing on earth to promote the happiness of man, will permit him to be deprived of it without punishing the wretch who dared to counteract his gracious designs? Will He do nothing in behalf of the virtuous but unfortunate man, whose constant study was to please him, when he has loaded with blessings so many miscreants who abuse them? After having displayed a bounty which has met with no return, will he fail in executing necessary justice?

'But,' we are told, 'every thing dies with us. Here we ought to believe our own experience; we were nothing before our birth, and we shall be nothing after death.' I adopt the analogy; but if I take my point of comparison from the moment I was nothing, and when I came into existence, what becomes of this argument? Is not one positive proof better than all the negative proofs in the world? You conclude from an unknown past to an unknown future to perpetuate the nothingness of man; and I, for my part, deduce my consequence from the present which I know, to the future which I do not know, as an assurance of this future existence. I proceed on the presumption of a goodness and a justice to come, from the instances of goodness and justice which I see actually diffused over the universe.

Besides, if we have in our present state the desire and presentiment only of a life to come; and if no one ever returned thence to give us information concerning it, the reason is, a proof more sensible would be inconsistent with the nature of our present life on the earth. Evidence on this point must involve the same inconveniences with that of the existence of GOD. Were we assured by some sensible demonstration that a world to come was prepared for us, I have the fullest conviction that all the pursuits of this world would from that instant be abandoned. The passage from the one world to the other being in every man's power, the gulf would be quickly shot: but Nature has involved it in obscurity, and planted doubt and apprehension to guard the passage.

It would appear, we are told by some, that the idea of the immortality of the soul could arise only from the speculations of men of genius, who, considering the combination of this universe, and the connexion which present scenes have with those which preceded them, must have thence concluded that they had a necessary connexion with futurity; or else that this idea of immortality was introduced by legislators to console mankind under the pressure of their political injustice. But if this were the case, how could it have found its way into the deserts, and been diffused at once, over the islands of the South Seas and Lapland, over Asia and North America, among the inhabitants of Paris and those of the New Hebrides? How is it possible that so many nations, separated by vast oceans, so different in manners and in language, should all believe in the immortality of the soul? Whence could they have derived a belief so flatly contradicted by their daily experience? They every day see their friends die, but the day never comes when any one reappears.

Shall we be told that pride cherishes this fond opinion in their breasts? What, is it pride that induces a wretched negro in the West Indies to hang himself, in the hope of returning to his own country, where a second state of slavery awaits him? Other nations, such as the islanders of Otaheite, restrict the hope of this immortality to a renovation of precisely the same life they are going to leave. Ah! the passions present to man far different plans of felicity; the miseries of his existence, and the illumination of his reason, would long ago have destroyed the life that is, had not the hope of a life to come been, in the human breast, the result of a supernatural feeling.

But wherefore is man the only one of the animals subjected to other evils than those of Nature? Wherefore should he have been abandoned to himself, disposed as he is to go astray? He is, therefore, the victim of some malignant being.

It is the province of religion to take us up where philosophy leaves us. The nature of the ills we endure unfolds their origin. If man renders himself unhappy, it is because he would himself be the arbiter of his own felicity. Man is a god in exile. The reign of Saturn, the Golden Age, Pandora's box, from which issued every evil, at the bottom of which hope only remained: a thousand similar allegories, diffused over all nations, attest the felicity and the fall of a first man.

But there is no need to have recourse to foreign testimonies. We carry the most unquestionable evidence in

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ourselves. The beauties of Nature bear witness to the existence of GOD, and the miseries of man confirm the truths of religion. Animals are lodged, clothed, fed, by the hand of Nature, without care, and almost without labour. Man alone is overwhelmed with calamity. First, he is born naked; and is possessed of so little instinct, that if his mother were not to rear him for several years he would perish of hunger, heat, or cold. He knows nothing but from the experience of his parents. They must find him a place to lodge, weave garments for him, provide his food for eight or ten years. Encomiums have been passed on certain countries for their fertility and mildness of climate, but I know of none where subsistence of the simplest kind does not cost man solicitude and labour. In India he must be sheltered from heat, from rain, and from insects. He must there cultivate rice, weed, thrash, shell, and dress it. The banana, useful as it is, must be watered and hedged round, to secure it from the wild beasts. Magazines of provisions must be provided during those seasons when the earth produces nothing. When man has thus collected around him every thing necessary to a quiet and comfortable life, ambition, jealousy, avarice, gluttony, incontinency, or langour, take possession of his heart. He perishes, the victim of his own passions. Undoubtedly to have sunk thus below the level of the beasts, man must have aspired at an equality with the DEITY.

Wretched mortals! See your happiness in virtue, and you will have no ground of complaint against Nature. Despise that useless knowledge, those unreasonable prejudices, which have corrupted the earth, and which every age subverts in its turn. Love those laws which are eternal. Your destiny is not abandoned to chance, nor to mischievous demons. Recall those times, the recollection of which is still fresh among all nations. The brute creation everywhere found the means of supporting life; man alone had neither aliment, nor clothing, nor instinct.

Divine Wisdom left man to himself, in order to bring him back to GOD. She scattered her blessings over the earth, that to gather them he might explore every region of it; that he might expand his reason by the inspection of her works, and that he might love her from a sense of benefits. She placed between herself and him harmless pleasures, rapturous discoveries, pure delights, and endless hopes, to lead him to herself through the path of knowledge and happiness. She fenced his way on both sides, by fear, languor, remorse, pain, and all the ills of life, as boundaries destined to prevent him from losing himself. The mother thus scatters fruit along the ground to induce her children to learn to walk; she keeps at a little distance, smiles, calls, stretches out her arms towards him; but if he happens to fall, she flies to his assistance, wipes away his tears, and comforts him.

Thus Providence relieves man, supplying his wants in a thousand extraordinary ways. What would have become of him in the earliest ages, had he been abandoned to his own reason, still unaided by experience? Where found he corn, a principal part of the food of so many nations, and which the earth, while it spontaneously produces all sorts of plants, nowhere exhibits? Who taught him agriculture, an art so simple that the most stupid of mankind is capable of learning it, and yet so sublime, that the most intelligent of animals can never pretend to practise it? There is scarcely an animal but what supports its life by vegetables, no one but what has daily experience of their reproduction, and does not employ, in quest of those that suit him, many more combinations than would have been necessary for resowing them.

But on what did man himself subsist till an Isis or a Ceres revealed to him this blessing of the skies? Who showed him, in the first ages of the world, the original fruits of the orchard, scattered over the forest, and the alimentary roots concealed in the bosom of the earth? Must he not have died of hunger before he had collected a sufficiency to support life, or perished by poison before he had learned to select, or sunk under fatigue or restlessness before he had formed round his habitation grass-plots and arbours? This art, the image of creation, was reserved for that being alone who bore the impression of the Divinity.

If Providence had abandoned man to himself, on proceeding from the hands of the Creator, what would have become of him? Could he have said to the plains: Ye unknown forests, show me the fruits, my inheritance? Earth, open, and disclose, in thy roots buried under thy surface, my destined aliment? Ye plants, on which my life depends, manifest to me your qualities, and supply the instinct which Nature has denied? Could he have had recourse, in his distress, to the compassion of the beasts, and, ready to perish with hunger, have said to the cow: Take me into the number of thy children, and let me share, with thy offspring, the produce of one of thy superfluous teats? When the north wind made him shiver with cold, would the wild goat and timid sheep have run at his call to warm him with their fleeces? Wandering, without a protector or asylum, when he heard by night the howlings of ferocious animals demanding their prey, could he have made supplication to the generous dog, and said to him: Be thou my defender, and I will make thee my slave? Who could have subjected to his authority so

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many animals which stood in no need of him, which surpassed him in cunning, in speed, in strength, unless the hand which, notwithstanding his fall, destined him still to empire, had humbled their heads to the obedience of his will?

How was it possible for him, with reason less infallible than their instinct, to raise himself up to the heavens, measure the course of the stars, cross the ocean, call down the thunder, and imitate most of the works and appearances of Nature? We are astonished at these things now; but I am much rather astonished that a sense of Deity should have spoken to his heart long before a comprehension of the works of Nature had perfected his understanding. View him in the state of nature, engaged in perpetual war with the elements, with beasts of prey, with his fellow-creatures, with himself; frequently reduced to situations of subjection no other animal could possibly support; and he is the only being who discovers, in the very depth of misery, the character of infinity, and the restlessness of immortality. He erects trophies, engraves the record of his achievements on the bark of trees, celebrates his funeral obsequies, and puts reverence on the ashes of his forefathers, from whom he has received an inheritance so fatal.

Agitated by the rage of love or vengeance, when he is not the victim of his fellow-men, he is their tyrant: and he alone knows that justice and goodness govern the world, and that virtue exalts man to heaven. He receives from his cradle none of the presents of nature, no soft fleece, no plumage, no defensive armour, no tool, for a life to painful and so laborious; and he is the only being who invites the gods to his birth, to his nuptials, and to his funeral obsequies.

However far he may have been misled by extravagant opinions, as often as he is struck by unexpected bursts of joy or grief, his soul, by an involuntary movement, takes refuge in the bosom of Deity. He cries out: Ah, my GOD! He raises to heaven suppliant hands, and eyes bathed with tears, in hope of there finding a father. Ah! the wants of man bear witness to the providence of a Supreme Being. He has made man feeble and ignorant, only that he may stay himself on his strength, and illuminate himself by his light; and so far is it from being true, that chance or malignant spirits domineer over a world, where every thing concurred to destroy a creature so wretched, his preservation, his enjoyments, and his empire, demonstrate that, at all times, a beneficent GOD has been the friend and protector of human life.

**STUDY TENTH. OF SOME GENERAL LAWS OF NATURE;**



## AND FIRST, OF PHYSICAL LAWS.

WE shall divide these laws into *physical* and *moral*, and endeavour to unfold the means of diminishing the sum of human wretchedness. I am presuming to open a path hitherto unattempted, and dare not flatter myself that my progress and success keep pace with the ardour of my imagination and the anticipations of my heart. But the imperfect materials I have collected may perhaps one day assist men of greater ability in raising to Nature a temple more worthy of her.

## OF CONFORMITY.

Though conformity be a perception of our reason, I place it at the head of our physical laws, because it is the first feeling we endeavour to gratify in examining natural objects. Nay, there is a connexion so intimate between the physical character of those objects and the instinct of every being possessed of sensibility, that a colour simply is sufficient to rouse the passions of animals. A red object puts the bullock into a rage, and suggests to most fowls and fishes the idea of prey. The objects of Nature display in man a feeling of a higher order, independent of his wants; it is that of conformity. It is by means of the multiplied conformities of Nature that man has formed his own reason; for *reason* means nothing else but the *relation* or *conformity* of things that exist.

Animals have a sensibility only of objects having conformities to their wants; and they have, in this respect, a share of reason as perfect as our own. But man differs from animals in his capacity of extending this sentiment of conformity to all the relations of Nature, however foreign to his personal demands; and this extension of reason has procured him, by way of eminence, the denomination of a rational animal.

It is true, that if all the particular rationality of animals were united, the sum would probably transcend the general reason of man; for human reason has devised most of its arts and crafts from an imitation of their productions: besides, all animals come into the world with their peculiar industry, whereas man must acquire his by time and reflection, and by imitating the industry and skill of another. But man excels them, not only by uniting in himself the intelligence of all, but by his capability of rising upward to the source of all conformities, to GOD himself.

The only character which essentially distinguishes man from the animal is, he is a religious being. They partake not with him of this sublime faculty, the principle of human intelligence. By it man is exalted above the beasts, enabled to form a conception of the general plans of Nature, and supposes an order of things from having caught a glimpse of an Author. It was not Nature which first pointed out GOD to man, but a sense of the DEITY in man which indicated to him the order of Nature. The savages are religious long before they are naturalists.

Accordingly, by the sentiment of this universal conformity man is struck with all possible conformities, though foreign to him. He takes an interest in the history of an insect; and if his attention is not engaged in behalf of all the insects which surround him, it is because he perceives not their relations, or else the constant habit of seeing them renders them insipid; perhaps it may be some contemptible prejudice, for he is affected still more by moral than physical ideas, and by his passions more than by his reason.

We shall farther remark, that all the sentiments of conformity spring up in the heart of man at the sight of some useful end, which frequently has no relation to his own personal wants; it follows that man is naturally good, because he is rational; seeing the aspect alone of a conformity, though foreign to him, communicates pleasure. From this natural sentiment of goodness the sight of well-proportioned animals conveys to us agreeable sensations, increasing in proportion as the creature unfolds its instinct. Want of conformity also communicates a painful sensation, always excited at the sight of any thing incongruous. We are shocked on looking at a monster, pained to see an animal wanting a foot or an eye, nay, at the sight of incongruity even in insensible objects. Withered plants, mutilated trees, an ill-assorted edifice, hurt our feelings. These sensations are perverted or suppressed in man only by prejudice or by education.

A series of conformities, with a common centre, constitutes order. There are conformities in the members of an animal, but order exists only in the body. Conformity refers to the detail, order to the combination. Order extends our pleasure, by collecting conformities, and fixes them by a determination towards one centre. It discovers at once, in a single object, a succession of particular conformities, and the leading one to which they all refer.

Thus, as being endowed with a reason which embraces all Nature, it affords us pleasure to review the relations between the proboscis of a bee and the nectareous juices of flowers; between those of her thighs, hollowed into spoons, and bristled with hairs, to the fine powder of the stamina which she there collects; the use of a long sting, furnished for the defence of her property, and all the conformities of the organs of this small insect, are more ingenious and in much greater number than those of the largest animals.

The interest, however, grows upon us when we see her covered with a yellow powder, her thighs pendent and

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half oppressed with her burden, directing her flight across plains, rivers, and shady groves, under points of the wind, with which she is well acquainted, and alighting with a humming sound, on the cavernous trunk of some aged oak; that one, whose particular conformities we have been admiring, is only a single member of a numerous republic; this republic itself is but a small colony of the immense nation of bees spread over the whole earth, from the line to the shores of the frozen oceans. This nation again is subdivided into species, conformably to the variety of flowers; for some being destined to live on flowers which have no depth, such as the radiated, are armed with five hooks, to prevent their sliding on the petals. Others, such as the bees of America, have no stings, because they construct their hives in the trunks of prickly trees, very common there, which accordingly afford them protection. Many are the conformities among other species of bees, totally unknown to us; yet this vast nation is but one little family of the class of flies, of which we know, in our climate alone, near 6000 species, as distinct, as to forms and instincts, as bees themselves are from other flies.

Were we to compare the relations of this volatile class, so numerous in itself, with all the parts of the vegetable and animal kingdoms, we should find an innumerable multitude of different orders of conformity, endless classes, with their divisions and subdivisions, the minutest individual of which presents a very extensive sphere of conformities, are themselves only particular conformities, only rays and points in the general sphere, of which man alone occupies the centre, and apprehends the immensity.

From a sense of the general order two sentiments obviously result; the one throws us imperceptibly into the bosom of the DEITY, and the other recalls us to the perception of our wants; the one exhibits to us, as the original cause, a Being infinitely intelligent without us; the other, as the ultimate end, a very limited being in our own person. These sentiments characterize the spiritual and corporeal powers of man, and are the general sources of the pleasure we derive from the order of Nature.

A bee has a sentiment of the order of her hive, yet knows not how the ants regulate their nest, though she may have seen them labour. To no purpose would she resort, in the event of her hive's being destroyed, to seek refuge, as a republican, in the midst of their republic; she would meet from them no hospitality, no consideration, no compassion. Hence it follows, that the society of animals could not subsist independent of the passions, nor human society independent of virtue. Man alone, of all animals, possesses the sentiment of universal order, that of DEITY himself; and by carrying over the whole earth the virtues which are the fruits of it, whatever may be the differences which prejudice interposes between man and man, it is sure of alluring all hearts to itself.

## OF HARMONY.

Nature opposes beings to each other, in order to produce between them agreeable conformities. This law has been acknowledged from the highest antiquity. It is to be found in many passages of the holy Scriptures. I produce one from the book of Ecclesiasticus: Note: Chap. xiii. ver. 34, 25. 'All things are double one against another; and He hath made nothing unperfect: one thing establisheth the good of another.'

I consider this great truth as the key of all philosophy. It has been fruitful in discovery, as well as that other: *Nothing has been created in vain*. It has been the source of taste in arts and eloquence. Out of contraries arise the pleasures of vision, hearing, touching, tasting, and all the various attractions of beauty. But from contraries likewise arise ugliness, discord, and all disgusting sensations. Is it wonderful that Nature should employ the same causes to produce opposite effects? When she opposes contraries to each other, painful affections are excited in us; but when she blends them, we are agreeably affected. From the opposition of contraries springs discord, from their union results harmony.

Let us find in Nature some proofs of this law. Cold is the opposite of heat, light of darkness, earth of water; and the harmony of these contrary elements produces effects the most delightful; but if cold succeeds rapidly to heat, or heat to cold, most vegetables and animals are in danger of perishing. The light of the sun is agreeable; but if a black cloud suddenly intercepts the lustre of his rays, or if lightning bursts from the bosom of a dark night, the eye undergoes a painful sensation.

Nature opposes, at sea, the white foam of the billows to the black colour of the rocks, to announce to mariners from afar the danger of shallows. She frequently presents to them forms analogous to destruction, such as those of ferocious animals, edifices in ruins, or the keels of ships turned upward. She even extracts from these awful forms hollow noises resembling groans, and broken off by long intervals of silence. She employs also those clashing oppositions and ominous signs to express the characters of savage and dangerous animals. The lion strolling through the solitudes of Africa announces his approach by roarings resembling thunder. The vivid and instantaneous flashes of fire, which dart from his eyes in the dark, exhibit besides the appearance of lightning. During the winter season the howlings of wolves in the forests of the north resemble the whistling of the winds among trees; the cries of birds of prey are shrill, piercing, and now and then interrupted by hollow notes. Nay, some emit the sounds of a human being in pain. Such is the lom, a species of sea-fowl, which feeds on the shelvy coasts of Lapland, Note: See John Sch'ffer's History of Lapland. on the dead bodies of animals thrown ashore: he cries like a man drowning.

Noxious insects exhibit the same oppositions and signals of destruction. The gnat, thirsting after human blood, announces himself to the eye by the white points on his brown-coloured body, and to the ear by his shrill notes, which disturb the tranquillity of the grove; the carnivorous wasp is speckled with black stripes on a yellow ground; and the insects which attack our persons more immediately, are distinguished by glaring oppositions of colour to the field on which they settle.

But when two contraries come to be blended, the combination produces pleasure, beauty, and harmony. I call the instant and the point of their union *harmonic expression*. This is the only principle I have perceived in Nature, for the elements themselves, as we have seen, are not simple; they always present accords formed of two contraries to analyses multiplied without end. Thus the gentlest temperature, and the most favourable to every species of vegetation, are those of the seasons in which the cold is blended with heat, as spring and autumn. They are then productive of two saps in trees, which the strongest heats of summer do not effect. The most agreeable production of light and darkness is perceptible at those seasons when they melt into each other, and form what painters call the *clear-obscure* and *half-lights*. Hence the most interesting hours of the day are those of morning and evening; when the shade and light strive for the mastery of the azure fields. The most lovely prospects are those in which land and water are lost in each other; this suggested that observation of honest Plutarch, namely, that the pleasantest land-journeys are those along the shore of the sea; and the most delightful voyages those which are coasting along the land. You will observe these same harmonies result from savours and sounds the most opposite, in the pleasures of the palate and of the ear.

We shall proceed to examine the uniformity of this law, in the very principles by which Nature gives us the

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first sensations of her works, viz. colours, forms, and motions.

## OF COLOURS.

Colours, say naturalists, are refractions of light on bodies, demonstrated by the prism, which, by breaking a ray of the sun, decomposes it into seven coloured rays, displaying themselves in the following order: red, orange, yellow, green, blue, indigo, and violet. These are, as they will have it, the seven primitive colours; but as we do not know what is primitive in Nature, I shall content myself with a few reflections on the number and order of those seven pretended primitive colours.

First, it is evident four of these are compounded; for orange is made up of yellow and red; green of yellow and blue; violet of blue and red; and indigo is only a tint of blue surcharged with black. This reduces the solar colours to three primordial; namely, yellow, red, and blue; to which if we add white, the colour of light, and black, the privation of it, we shall have five simple colours, with which may be compounded all imaginable shades of colour.

I must here observe, that our philosophical machinery deceives us with its affectation of superior intelligence, not only in ascribing false elements to Nature, as when the prism displays compound for primitive colours, but by stripping her of such as are true; for how many white and black bodies must be reckoned colourless, considering that this same prism does not exhibit their tints in the decomposition of the solar ray!

This instrument leads us farther into an error respecting the natural order of these very colours, by making the red ray the first in the series, and the violet ray the last. The order of colours in the prism, therefore, is only a triangular decomposition of a ray of cylindrical light, the two extremes of which, red and violet, participate the one of the other, without terminating it; so that the principle of colours, which is the white ray and its progressive decomposition, is no longer manifested in it. I believe it is even possible to cut a crystal with so many angles as would give to the refractions of the solar ray an order entirely different, and multiply the pretended primitive colours far beyond the number seven. The authority of such a polyedron would be as respectable as that of the prism, if the algebraists were to apply to it a few calculations, somewhat obscure, with a seasoning of the corpuscular philosophy, as they have done with regard to the effects of the triangular instrument.

We shall employ a method, not quite so learned, to convey an idea of the generation of colours, and the decomposition of the solar ray. Instead of examining them in a prism of glass, we shall consider them in the heavens, and there we shall behold the five primordial colours unfold themselves in the order which we have indicated.

In a fine summer's night, when the sky is loaded only with some light vapours, sufficient to stop and to refract the rays of the sun, walk out into an open plain, where the first fires of Aurora may be perceptible. You will first observe the horizon whiten at the spot where she is to make her appearance; and this radiance, from its colour, has procured for it, in the French language, the name of *aube*, (the dawn,) from the Latin word *alba*, white. This whiteness insensibly ascends in the heavens, assuming a tint of yellow some degrees above the horizon; the yellow as it rises passes into orange; and this shade of orange rises upward into the lively vermilion, which extends as far as the zenith. From that point you will perceive in the heavens behind you the violet succeeding the vermilion, then the azure, after it the deep blue or indigo colour, and, last of all, the black, quite to the westward.

Though this display of colours presents a multitude of intermediate shades, which rapidly succeed each other, yet at the moment the sun is going to exhibit his disk, the dazzling white is visible in the horizon, the pure yellow at an elevation of 45 degrees; the fire colour in the zenith; the pure blue 45 degrees under it, toward the west; and in the very west the dark veil of night still lingering on the horizon. I think I have remarked this progression between the tropics, where there is scarcely any horizontal refraction to make the light prematurely encroach on the darkness, as in our climates.

Sometimes the trade-winds, from the north-east or south-east, blow there, card the clouds through each other, then sweep them to the west, crossing and recrossing them over one another, like the osiers interwoven in a transparent basket. They throw over the sides of this chequered work the clouds which are not employed in the contexture, roll them up into enormous masses, as white as snow, draw them out along their extremities in the form of a crupper, and pile them upon each other, moulding them into the shape of mountains, caverns, and rocks; afterwards, as evening approaches, they grow somewhat calm, as if afraid of deranging their own workmanship.

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When the sun sets behind this magnificent netting, a multitude of luminous rays are transmitted through the interstices, which produce such an effect, that the two sides of the lozenge illuminated by them have the appearance of being girt with gold, and the other two in the shade seem tinged with ruddy orange. Four or five divergent streams of light, emanated from the setting sun up to the zenith, clothe with fringes of gold the undeterminate summits of this celestial barrier, and strike with the reflexes of their fires the pyramids of the collateral aerial mountains, which then appear to consist of silver and vermilion. At this moment of the evening are perceptible, amidst their redoubled ridges, a multitude of valleys extending into infinity, and distinguishing themselves at their opening by some shade of flesh or of rose colour.

These celestial valleys present in their different contours inimitable tints of white, melting away into white, or shades lengthening themselves out without mixing over other shades. You see, here and there, issuing from the cavernous sides of those mountains, tides of light precipitating themselves, in ingots of gold and silver, over rocks of coral. Here it is a gloomy rock, pierced through and through, disclosing, beyond the aperture, the pure azure of the firmament; there it is an extensive strand, covered with sands of gold, stretching over the rich ground of heaven; poppy-coloured, scarlet, and green as the emerald.

The reverberation of those western colours diffuses itself over the sea, whose azure billows it glazes with saffron and purple. The mariners, leaning over the gunwale of the ship, admire in silence those aerial landscapes. Sometimes this sublime spectacle presents itself to them at the hour of prayer, and seems to invite them to lift up their hearts with their voices to the heavens. It changes every instant into forms as variable as the shades, presenting celestial colours and forms which no pencil can pretend to imitate, and no language can describe.

Travellers who have, at various seasons, ascended to the summits of the highest mountains on the globe, never could perceive, in the clouds below them, any thing but a gray and lead-coloured surface, similar to that of a lake. The sun, notwithstanding, illuminated them with his whole light; and his rays might there combine all the laws of refraction to which our systems of physics have subjected them. Hence not a single shade of colour is employed in vain, through the universe; those celestial decorations being made for the level of the earth, their magnificent point of view taken from the habitation of man.

These admirable concerts of lights and forms, manifest only in the lower region of the clouds the least illuminated by the sun, are produced by laws with which I am totally unacquainted. But the whole are reducible to five colours: yellow, a generation from white; red, a deeper shade of yellow; blue, a strong tint of red; and black, the extreme tint of blue. This progression cannot be doubted, on observing in the morning the expansion of the light in the heavens. You there see those five colours, with their intermediate shades, generating each other nearly in this order: white, sulphur yellow, lemon yellow, yolk of egg yellow, orange, aurora colour, poppy red, full red, carmine red, purple, violet, azure, indigo, and black. Each colour seems to be only a strong tint of that which precedes it, and a faint tint of that which follows; thus the whole together appear to be only modulations of a progression, of which white is the first term, and black the last.

Indeed trade cannot be carried on to any advantage, with the Negroes, Tartars, Americans, and East Indians, but through the medium of red cloths. The testimonies of travellers are unanimous respecting the preference universally given to this colour. I have indicated the universality of this taste, merely to demonstrate the falsehood of the philosophic axiom, that tastes are arbitrary, or that there are in Nature no laws for beauty, and that our tastes are the effects of prejudice. The direct contrary of this is the truth; prejudice corrupts our natural tastes, otherwise the same over the whole earth.

With red Nature heightens the brilliant parts of the most beautiful flowers. She has given a complete clothing of it to the rose, the queen of the garden: and bestowed this tint on the blood, the principle of life in animals: she invests most of the feathered race, in India, with a plumage of this colour, especially in the season of love; and there are few birds without some shades, at least, of this rich hue. Some preserve entirely the gray or brown ground of their plumage, but glazed over with red, as if they had been rolled in carmine; others are besprinkled with red, as if you had blown a scarlet powder over them.

The red colour, situated in the midst of the five primordial colours, is the harmonic expression of them by way of excellence; and the result of the union of two contraries, light and darkness. There are, besides agreeable tints, compounded of the oppositions of extremes. For example, of the second and fourth colour, that is, of yellow and blue, is formed green, which constitutes a very beautiful harmony, and ought, perhaps, to possess the second rank in beauty, among colours, as it possesses the second in their generation. Nay, green appears to many, if not the

most beautiful tint, at least the most lovely, because it is less dazzling than red, and more congenial to the eye.

Colours may also have a powerful influence on the passions; and, as well as their harmonies, may be referred to the moral affections. For example, making red the point of departure, which is the harmonic colour supereminently, and proceeding towards white in an ascending progression, the nearer you approach to this first term, the more lively and gay are the colours. You will have in succession the poppy, orange, yellow, lemon, sulphur, and white. On the contrary, the farther you proceed from red towards black, the sadder and more lugubrious are the colours; for this is the progression; purple, violet, blue, indigo, and black.

In the harmonies to be formed, on both sides, by the union of opposite colours, the more that the tints of the ascending progression predominate, the more lively will be the harmonies produced; and the contrary will take place as the colours of the descending harmony shall prevail. From this harmonic effect, green, compounded of yellow and blue, is so much more gay, as the yellow has the ascendant, and sad in proportion as the blue predominates.

From this harmonic influence, white transfuses most gayety into all other tints, because it is light itself. Nay, it produces, from opposition, a most delightful effect in the harmonies, which I call melancholy; for blended with violet, it gives the delicious hue of the lilac flower; mixed with blue, it makes azure; and with black, produces pearl-gray; but melted away into red, it exhibits the rose-colour, that enchanting tint, the flower of life. But according to the predominance of black in gay colours, the effect produced is more mournful than that of unmixed black. This becomes perceptible on blending it with yellow, orange, and red, thereby rendered dull and gloomy colours. Red gives life wherever it is infused, as white communicates gayety, and black sadness.

It would be ridiculous to affect ignorance of the objections which may be started against the universality of these principles. We have represented white as a gay, and black as a sad colour. Nevertheless, certain negro nations represent the devil as white; the inhabitants of the peninsula of India, in token of mourning, rub their forehead and temples with the powder of sandal-wood, the colour of which is a yellowish white. The navigator La Barbinois says, that white is the colour of mourning among the Chinese. From these instances it might be concluded, that the feeling of colour must be arbitrary, as it is not the same in all nations.

I venture to offer the following reply to these objections. The black nations of Africa and Asia prefer white women to those of every other tint. If there be negro nations who paint the devil white, it is from the strong feeling they have of the tyranny the whites exercise over them. White, accordingly, having become with them a political colour, ceases to be a natural one. Besides, the white of the devil is not a white beautifully harmonious, like that of the human figure, but a dead chalk white, such as that with which our painters illuminate the figures of phantoms and ghosts in their magical and infernal scenes.

If this dazzling colour is the expression of mourning among the Indians and Chinese, the reason is, it contrasts harshly with the black skin of those nations. The Indians are black. The skin of the southern Chinese is much sun-burnt. They derive their religion and leading customs from India, the inhabitants of which are black. Their outward garments are of a gloomy colour; and the ornamental furniture of their houses consists of beautiful black varnished ware. White must, therefore, produce a harsh dissonance with their furniture, dress, and above all, with the dusky colour of their skin.

If those nations wore a black habit, in mourning, as we do, be their colour ever so deep, it would not form a clashing opposition in their dress. The expression of grief, accordingly, is precisely the same with them as with us. For if we in mourning oppose the black colour of our clothes to the white of our skin, thence to produce a funereal dissonance, the southern nations oppose the white colour of their garments to the dusky colour of their skin, to produce the same effect.

This variety of taste confirms the universality of the principles we have laid down respecting the causes of harmony and dissonance. It farther demonstrates, that the agreeableness or disagreeableness of a colour resides not in one single shade, but in the harmony, or in the clashing contrast, of two opposite colours.



**OF FORMS.**

If I am not mistaken, the principles of these, as of colours, are reducible to five, the line, triangle, circle, ellipse, and parabola.

The line generates all forms, as the ray of light does all colours. It goes on like the other, in its generations, step by step, producing first, by three fractions, the triangle, which of all others contains the smallest surfaces under the greatest of circuits. The triangle afterward, composed itself of three triangles at the centre, produces the square, which consists of four triangles from the central point; the pentagon, which consists of five; the hexagon, which consists of six; and so of the rest of the polygons, up to the circle, composed of a multitude of triangles, whose summits are at its centre, and the bases at its circumference: and which, contrary to the triangle, contains the greatest of surfaces under the smallest of peripheries. The form which has, hitherto, always been going on progressively, commencing with the line, relatively to a centre, up to the circle, afterwards deviates from it, and produces the ellipse, then the parabola, and finally all the other widened curves, the equations of which may all be referred to this last. So that, under this aspect, the indefinite line has no common centre: the triangle has three points in its bounding lines, which have a common centre; the square has four; the pentagon five; the hexagon six; and the circle has all the points of its circumference regulated conformably to one common and only centre. The ellipse begins to deviate from this regulation, and has two centres; and the parabola, as well as the other curves, which are analogous to it, have centres innumerable contained in their several axes, from which they remove farther and farther, forming something like funnels.

On the supposition of this ascending generation of forms, from the line, through the triangle, up to the circle; and their descending generation, from the circle, through the ellipse, to the parabola, I deduce, from these five elementary forms, all the forms of Nature; as, with five primordial colours, I compose all the possible shades of colour.

The line presents the slenderest form, the circle the fullest, and the parabola the most obliquely fluted. In this progression, the circle, which occupies the middle between these two extremes, is the most beautiful of all elementary forms, as red in the most beautiful primordial colour. I presume not to say, that this form must be the most beautiful, because it is the figure of the stars, which, however, would be no contemptible reason; but, to employ only the testimony of our senses, it is the most grateful of both eye and touch; and the most susceptible of motion; finally, it is considered as most conformable to the taste of all nations, who employ it in their ornaments and architecture; and it is particularly conformable to the taste of children, who prefer it to every other, in the instruments of their amusement.

It is remarkable, that these five elementary forms have the same analogies to each other which the five primordial colours have among themselves; so that if you proceed to their ascending generation, from the sphere toward the line, you will have forms angular, lively, and gay, which shall terminate in the straight line. If, on the contrary, you descend from the sphere to the excavations of the parabola, you will be presented with a gradation of cavernous forms, so frightful in abysses and precipices.

Farther, if you join the elementary forms to the primordial colours, term for term, you will observe their principal character mutually strengthen each other, at least in the two extremes, and in the harmonic expression of the centre: for the first two terms will give the white ray, that of light itself; the circular form, united to the red colour, will produce a figure analogous to the rose, composed of spherical portions, with carmine tints, and, from the effect of this double harmony, deemed the most beautiful of flowers. Finally, black, added to the vacuity of the parabola, increases the gloom of retreating and cavernous forms.

With these fine elementary forms may be composed figures as agreeable as the shades produced from the harmonies of the five primordial colours. So that the more there shall enter, into those mixed figures, of the two ascending terms of the progression, the more light and gay such figures will be; and the more the two descending terms shall predominate, the more heavy and dull will be the forms. Thus, the form will be more elegant, as the first term, the straight line shall have the predominance. For example, the column gives us pleasure, because it is a long cylinder, with the circle for its basis, and two straight lines, or a long quadrilateral figure, for its elevation. But the palm-tree, of which it is an imitation, pleases still more, because the stellated and radiating forms of its

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palms, likewise taken from the straight line, constitute a very agreeable opposition with the roundness of its stem; and if to this you unite the harmonic form by way of excellence, namely, the circular, you will add inexpressibly to the grace of this beautiful tree. This, likewise, Nature, who knows much more of the matter than we, has taken care to do, by suspending, at the basis of its divergent boughs, sometimes the oval date, and sometimes the rounded cocoa-nut.

In general, as often as you employ the circular form, you will greatly enhance the agreeableness of it, by uniting it with the two contraries of which it is composed; for you will then have a complete elementary progression. The circular form alone presents but one expression, the most beautiful of all, in truth; but united to its two extremes, it forms, if I may so express myself, an entire thought.

It is, farther, from these harmonies, that long ridges of mountains, overtopped by lofty peaks of a pyramidal form, separated by deep valleys, delight us by their gracefulness and majesty. If to these you add rivers meandering below, radiating poplars waving on their banks, flocks of cattle and shepherds, you will have vales similar to that of Tempe. The circular forms of the mountains, in such a landscape, are placed between their extremes, namely, the prominency of the rocks, and the cavity of the valleys. But if you separate from it the harmonic expressions, that is, the circular wavings of those mountains, together with their peaceful inhabitants, and allow the extremes only to remain, you will then have the dreary prospect of Cape Horn; angular, perpendicular rocks, hanging over fathomless abysses.

If to these you add oppositions of colour, as that of snow on the summits of the dusky rocks, the foam of the billows breaking on the lurid shore, a pale sun in a gloomy sky, torrents of rain in the midst of summer, tremendous squalls of wind succeeded by sullen calms, a European vessel, on her way to spread desolation over the islands of the South Sea, Note: Would not the effect of this dreadful picture have been considerably strengthened, had our Author represented his European vessel as attempting to double Cape Horn *on her return* from spreading devastation over the South Seas, and making shipwreck on that coast, *after* the scene of blood was acted? In this case we should have had the striking and instructive representation of the connexion between Human Guilt and Divine Justice; of the clashing collision of criminality and vengeance. — H. H. running upon a rock when it is beginning to grow dark, firing from time to time guns, the signal of distress, the noise of which the echoes of those horrid deserts reverberate, the terrified Patagonian running in amazement to his cave; and you will have a complete view of that land of desolation, covered over with the shades of death.

## OF MOVEMENTS.

It remains that I suggest a few reflections on the subject of motions. Of these we shall also distinguish five which are fundamental: self-motion, or the rotation of a body round itself, which supposes no change of place, and is the principle of all motion; such is, perhaps, that of the sun; after that, the perpendicular, circular, horizontal, and state of rest. All movements may be referred to these five. Nay, geometers, who represent them likewise by figures, suppose the circular motion to be generated of the perpendicular and horizontal, and, to use their language, produced by the diagonal of their squares.

I shall not insist on the analogies which actually exist between the white colour, the straight line, and self-motion, or rotation; the red colour, the spherical form, and circular motion; between darkness, vacuity, and rest. I leave to the reader the pleasure of following up this idea, and forming to himself, with these elements of Nature, harmonies the most enchanting, with the additional charm of novelty. I shall confine myself, at present, to a few hasty observations respecting motion.

Of all movements, the harmonic or circular motion is the most agreeable. Nature has diffused it over most of her works, and rendered even the vegetables in the earth susceptible of it. Our plains represent this, when the winds form, on the meadow or corn-field, a series of undulations, resembling the waves of the sea; or when they gently agitate, on the sides of the lofty mountains, the towering tops of the trees, waving them about in segments of a circle. Most birds form portions of great circles as they play through the airy expanse, and seem to take pleasure in tracing, as they fly, curves and spiral motions. Nature has bestowed this agreeable style of flying on many species of the feathered race, not otherwise to be prized for their song or plumage. Such is the flight of the swallow.

The case differs with respect to the movements of ferocious or noxious animals. They advance leaping, springing, and join to slow movements others violently rapid; as in the motion of the cat watching a mouse: those of the tiger are exactly similar. The same discordancy is observable in the flight of carnivorous birds. The species of owl called the grand-duke floats through a tranquil sky, as if the wind carried him this way and that. Tempests present, in the heavens, the same characters of destruction. You sometimes perceive stormy clouds moving in opposite directions; now they fly like lightning, while others remain immovable as the rock. In the tremendous hurricanes of the West Indies, the explosion is always preceded and followed by a dead calm.

The more a body possesses of self-motion, or rotation, the more agreeable it appears, especially when united to the harmonic or circular motion. From the effect of self-motion, every moral idea out of the question, animals interest us more than vegetables, because they have the principle of motion within themselves.

Motion is the expression of life. In this you see why Nature has multiplied the causes of it in all her works. One of the great charms of a landscape is objects in motion; but this the pictures of most of our great masters frequently fail to express. If you except those representing tempests, everywhere else their forests and meadows are motionless, and the water of their lakes congealed. Yet the inversion of the leaves of trees presenting a gray or white underside; the undulations of the grass in valleys, and on the ridges of mountains; those which ruffle the surface of the waters, and the foam which whitens the shores, recall, with inexpressible pleasure, in a burning summer scene, the breath so gentle and cooling of the zephyrs. To these might be added, with infinite grace and powerful effect, the movements peculiar to the animals which inhabit them; it might be possible even to represent the motion and weight of a loaded carriage toiling up a hill, by expressing the dust of the crushed pebbles rising up behind its wheels. Nay, I think the effects of the singing of birds, and of the echoes, might be rendered perceptible, by the expression of certain characters not necessary here to unfold.

So far are our painters, those even whose talents are conspicuous, from paying attention to accessories so agreeable, that they omit them in subjects of which those accessories form the principal character. For example, if they represent a chariot at full speed, they exhibit every spoke of the wheels. The horses, indeed, are galloping, but the chariot is immovable. The wheels of a carriage, however, running with a rapid motion, present but one single surface; all their spokes are confounded to the eye. I have seen, in modern pictures, machines in motion, wrestlers and warriors in action, but in no one of them did I ever find attention paid to these effects so simple, yet so expressive of the truth of Nature. Our painters consider them as petty details, beneath the notice of a man of

genius. Nevertheless, they are traits of character.

Details, frequently traits of character, are not to be despised. If our painters and sculptors withhold the expression of motion to landscapes, wrestlers, and chariots in the course, they bestow it on the portraits and statues of our great men. They represent them as angels sounding the alarm to judgment, with flowing hair, wild wandering eyes, the muscles of the face convulsed, and garments fluttering in the wind. These, they tell us, are the expressions of genius. But persons of genius, and great men, are not bedlamites. I have seen some of their portraits, on antiques, which represent them with a serene and tranquil air. It is the property of inanimate matter, vegetables, and animals, to obey the movements of Nature; but a great man should have his emotions under command, and only as he exercises this empire does he merit the name of Great.

I have just hinted the necessity of *conformity* to artists, who will find it much more difficult to execute, than it is easy for me to criticise. God forbid that I should give a moment's pain to men whose works have given me exquisite pleasure. It was simply my wish to stimulate the ingenious to tread in the steps of Nature, and pursue that track as far as genius can carry them.

This would be the place to speak of music, for sounds are movements merely: but persons of much ability have treated this noble art with consummate skill. If any foreign testimony could farther confirm me in the principles I have hitherto laid down, it is that of musicians, who have restricted harmonic expression to three sounds. I might, like them, reduce to three terms the elementary generations of colours, forms, and motions; but they have omitted, in their fundamental basis, the generative principle, *sound*, properly so called, and the negative term, silence; especially as this last produces powerful effects in the movements of music.

These proportions might be extended to the progressions of tasting; the most agreeable of them have similar generations, as we know by experience to be the case with regard to most fruits, whose different stages of maturity successively present five savours, namely, the acid, sweet, sugary, vinous, and bitter. They are acid while growing, sweet as they ripen, sugary in a state of perfect maturity, vinous in their fermentation, and bitter in a state of dryness. Farther, we should find the most agreeable of these savours, namely, the sugary, is that which occupies the middle place in this progression, of which it is the harmonic term; that, from its nature, it forms new harmonies, by a combination with its extremes; for the beverages most grateful to the palate consist of acid and sugar, as the refreshing liquors prepared with citron-juice; or of sugar and bitter, such as coffee.

Though I have a thorough conviction of the truth of these elementary generations, it would not, however, surprise me, should many of my readers dissent from what I have advanced. Our natural tastes are perverted by prejudices which determine our physical sensations, much more powerfully than these last give direction to our moral affections. I shall endeavour, in another place, to unfold the causes of these moral affections. They stand in connexion with laws more sublime than any physical laws: while these last amuse our senses, the others speak to the heart, and calmly admonish us, that man is ordained to a much higher destination. All I have hitherto said on this subject, or hereafter may say, is reducible to this great law: Every thing in Nature is formed of contraries: from their harmonies the sentiment of pleasure results, and out of their oppositions issues the sentiment of pain.

This law extends also to morals. Every truth, those of fact excepted, is the result of two contrary ideas. It follows, that as often as we decompound a truth, by dialectics, we divide it into the two ideas of which it is constituted; and if we confine ourselves to one of its elementary ideas, as to a detached principle, and deduce consequences from it, we shall convert it into a source of endless disputation; for the other elementary idea, if pursued, will supply consequences diametrically opposite, themselves susceptible of contradictory decompositions without end. The schools are admirably adapted to instruct us how to manage this process, and thither are we sent to form our judgement.

All disorders, both physical and moral, are but the clashing opposition of two contraries. If man would pay attention to this law, wranglings and mistakes would speedily cease; for every thing being composed of contraries, whoever affirms a simple proposition is only half right, as the contrary proposition has equally an existence in nature.

There is perhaps in the world but one intellectual truth, pure, simple, and without contradiction. Those who have denied it only support their negation on the apparent disorders of Nature, the extreme principles of which alone they contemplated; so that they have not demonstrated that God did not exist, but that He was not intelligent or good. Their error proceeds from their ignorance of natural laws. Besides, their arguments have been mostly founded on the disorders of men, who exist in an order different from that of Nature, and who alone of all beings

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endowed with perception have been committed to their own direction.

As to the nature of GOD, I know that faith itself presents Him to us as the harmonic principle, not only with relation to all that surrounds Him, of which he is the Creator and Mover, but even in his essence divided into three persons. A single act of his will called us into being; the slightest communication of his works is sufficient to illuminate our reason; but I have a thorough persuasion that if the smallest ray of his divine essence were to communicate itself directly to us, in a human body, we must be annihilated.

## OF CONSONANCES.

Consonances are repetitions of the same harmonies. They increase our pleasures by multiplying and transferring the enjoyment of them to new scenes. They farther communicate pleasure by convincing us that the same Intelligence has presided over the different plans of Nature, presenting throughout similar harmonies. Consonances accordingly confer more pleasure than simple harmonies, as they convey the sentiments of extension and divinity, so congenial to the human soul. Natural objects excite satisfaction only as they awaken intellectual feeling.

The most beautiful harmonies are those which have the most consequences. Nothing is more beautiful than the sun, nothing in nature so frequently repeated as his form and light. He is variously reflected by refractions of the air, which exhibit him above the horizon before he is actually risen, and after he has set; by the parhelia, which reflect his disk sometimes twice or thrice in the misty clouds of the north; by the rainy clouds, in which his refracted rays trace an arch shaded with a thousand various colours; and by the waters, whose reflexes exhibit him where is not, in the bosom of meadows, amidst flowers besprinkled with dew, and in the shade of green forests. The dull and inert earth, too, reflects him in the specular particles of gravels, micæ, crystals, and rocks. It presents to us the form of his disk and rays in the disks and petals of the myriads of radiated flowers with which it is covered. In a word, this beautiful star has multiplied himself into infinity with unknown varieties, in the innumerable stars of the firmament, which he discovers to us when he quits our horizon; as if he had withdrawn himself from the consonances of the earth only to display to the delighted eye those of heaven.

From this law of consonance it follows that what is best and beautiful in Nature, is also common and most frequently repeated. To it we must ascribe the varieties of species in each genus, the more numerous as they are useful. There is no family in the vegetable kingdom so necessary as the gramineous, on which subsist not only quadrupeds but birds and insects, and there is no one whose species are so varied. The millet of Africa, the maize of Brazil, the rice of Asia, the palm-sago of the Moluccas, the trunks of which are filled with alimentary flour, are in consonance with the corns of Europe. We shall find consonances of another kind in the same places, as if it had been the intention of Nature to multiply her benefits by varying only the form of them, without changing almost anything of their qualities. Thus in our gardens, what a delightful and beneficial consonancy there is between the orange and citron trees, the apple and the pear, the walnut and the filbert; and in our farm-yards between the horse and the ass, the goose and the duck, the cow and the she-goat.

Although each genus is in consonancy with itself from difference of sex, there are between the sexes contrasts giving energy to their loves from the very opposition of contraries, from which all harmony takes its birth; but without the general consonancy of form between them, sensible beings of the same genus never would have approached each other. Without this, one sex would have remained a stranger to the other. Before each could have observed what the other possessed that corresponded to its necessities, the time of reflection would have absorbed that of love, and perhaps extinguished desire. It is consonancy which attracts, and contrast which unites them. There is not in any one genus an animal of one sex entirely different from one of the other in exterior forms; and if such differences are actually found, as certain naturalists pretend, in several species of fishes and insects, I am persuaded Nature placed the habitation of male and female very close to each other, and planted their nuptial couch near their cradle.

There is a consonancy of forms more intimate still than every that of the two sexes, I mean the duplicity of the organs of each individual. Every animal is double. If you consider his two eyes, his two nostrils, his two ears, the number of his legs and arms disposed by pairs, you would be tempted to say, here are two animals glued the one to the other, and united under the same skin. Nay, the single parts of his body, as the head, tail, and tongue, appear to be formed of two halves, compacted together by seams. It is not so with the members properly so called: for example, one hand, one ear, one eye, cannot be divided into two similar halves; but the duplicity of form on the parts of the body distinguishes them essentially from the members; for the part of the body is double, and the member is single; the former is always single and alone, and the latter always repeated. Thus the head and tail of an animal are parts of its body, and the legs and ears are members.

This most wonderful law of Nature destroys all the hypotheses which introduce chance into the organization of

beings; for independently of its harmonies, it doubles the proofs of a Providence, who did not deem it sufficient to give one principal organ to animals adapted to each element in particular, such as the eye for the light, the ear for sound, the foot for the ground, but determined that they should have each of those organs by pairs.

Certain sages have considered this admirable duplication as a predisposition of Providence, that the animal might always be able to supply the loss of one of the double organs, exposed as they are to so many accidents; but the interior parts of the body, which at first sight appear to be single, present on closer examination a similar duplicity of forms, even in the human body, where they are more confounded than in other animals. Thus the five lobes of the lungs, one of which has a kind of division; the fissure of the liver; the supernal separation of the brain by the duplication of the *dura-mater*; the *septum lucidum*, similar to a leaf of talc, which separates the two anterior ventricles of it; the two ventricles of the heart; and the divisions of the other *viscera* announce this double union, and seem to indicate, that *the very principle of life is the consonance of two similar harmonies*.

From this duplicity of organs there results more utility than if they had been single. Man with two eyes can take in at once more than half the horizon, with one only he could scarcely have embraced a third part. Provided with two arms he can perform many actions he never could have accomplished with but one, such as raising upon his head a load of considerable size and weight, and clambering up a tree. Had he been placed upon one leg, not only would his position be much more unsteady than on two, but he would be unable to walk; his progressive motion would be reduced to crawling or hopping, producing discord to the other parts of his body, and the variety of soils over which he is destined to move.

If Nature has given a single exterior organ to animals, as the tail, it is because its use extends but to a single action, to which it is fully equivalent. Besides, the tail from its situation is secured against danger, and hardly any but very powerful animals have a long tail, as bulls, horses, and lions. Rabbits and hares have it very short. In feeble animals which have one of considerable length, as the thornback, it is armed with prickles, or else it grows again, if it happens to be torn off by an accident, as in the case of a lizard. Finally, whatever may be the simplicity of its use, it is formed of two similar halves, as the other parts of the body.

There are other interior consonances, which collect diagonally the different organs of the body, to form but one only and single animal of its two halves. I leave to anatomists the investigation of this incomprehensible connexion; but the cruel experiments every day made on brutes, to discover these secret correspondencies of Nature, serve only to spread a thick veil over them; and the barbarous means employed by our modern physics, have an influence still more fatal on the morals of those who practise them; for, together with false information, they inspire them with the most atrocious of all vices, cruelty.

If man may presume to put questions to Nature respecting the operations she is pleased to conceal, I should prefer the road of pleasure to that of pain. Of the propriety of this sentiment I witnessed an instance at a country-seat in Normandy. Walking in an adjoining field with a young gentleman, we perceived bulls fighting. He ran to them with his staff brandished, and the poor animals instantly gave up their contention. He went up to the most ferocious, and began to tickle him at the root of the tail. The animal, whose eyes were still inflamed with rage, became motionless, with outstretched neck, expanded nostrils, transpiring the air with a satisfaction which most amusingly demonstrated the intimate correspondence between this extremity of his body and his head.

The duplicity of organs is farther observable in the essential parts of vegetables, as the *anther*' of the flowers, which are double bodies: in their petals, one half corresponding exactly to the other; in the lobes of their seed, &c. A single one of these parts, however, appears sufficient for the expansion and generation of the plant. This observation applies to the very leaves, the halves of which are mostly correspondent; and if any one recedes from this order, undoubtedly the reason is worthy of investigation.

These facts confirm the distinction between the parts and members of a body; for in leaves where this duplicity occurs the vegetative faculty is usually to be found, which is diffused over the body of the vegetable itself; so that if you carefully replant those leaves at the proper season, the complete vegetable will thence be reproduced. Perhaps it is because the interior organs of the tree are double that the principle of vegetative life is diffused even over its slips, which sprout again from one branch. Nay, some have the power of perpetuating themselves by cuttings simply. Of this we have a noted instance in the Memoirs of the Academy of Sciences. Two sisters became heiresses of an orange-tree; each insisted on having it thrown into her allotment. At length, after much wrangling, and neither being disposed to resign her claim, it was settled that the tree should be cleft in two, and each take her half. The orange-tree underwent the judgment pronounced by Solomon on the child — it was cleft

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asunder: each sister replanted her own half, and, wonderful to be told! the tree which had been separated by unsisterly animosity, received a new clothing of bark from the benignant hand of Nature.

This universal consonance of forms suggested to man the idea of symmetry. He has introduced it into most of the works of art, particularly architecture, as an essential part of order. To such a degree is it the work of intelligence and combination, that I consider it as the principal character by which we distinguish organized bodies from such as are not so, however regular their assemblage may appear.

In conformity to these reflections, on considering the globe of the earth, I observed that it too presented a duplicity of form. From the beginning it had been my idea that this globe, being the production of an Intelligence, order must pervade it. I had discerned the utility of islands, and even of banks, and of rocks, to protect the parts of continents most exposed to the currents of the ocean, at the extremities of which they are always situated. I had also seen the utility of bays, removed from the currents of the ocean, and hollowed into deep retreats to shelter the discharge of rivers, and serve, by the tranquillity of their waters, as an asylum to the fishes, which retire thither to collect the spoils of vegetation there disgorged by the rivers. I had admired them in detail, but had formed no conception of their combination. My mind was bewildered, and I should without hesitation have ascribed the whole to chance, had not the order I perceived in each of the parts suggested to me the possibility that it might exist also in the totality of the work.

I shall now display the globe under a new aspect. The reader will pardon a digression which exhibits to him one little fragment of the materials I had laid up for a geographical structure, but which tends to prove the universality of the laws I am endeavouring to establish.

I first endeavoured to find out consonances between the northern and southern halves of the globe, but perceived only oppositions; the northern being, if I may so express myself, a terrestrial hemisphere, and the southern a maritime, and so different from each other, that the winter of one is the summer of the other; and the seas of the first hemisphere seem to be opposed to the lands and islands scattered over the second. This contrast presented another analogy with an organized body, for every organized body has two halves in contrast, as there are two in consonance.

I found in it then something like analogy with an animal, whose head should have been to the north, from the attraction of the magnet peculiar to our pole, which seems there to fix a *sensorium*, as in the head of an animal: the heart under the line, from the constant heat of the torrid zone, which seems to determine this as the region of the heart: finally, the excretory organs in the southern part, in which the greatest seas, the vast receptacles of the alluvions of continents, are situated; and where we likewise find the greatest number of volcanoes, which may be considered as the excretory organs of the seas, whose bitumens and sulphurs they consume. Besides, the sun, who sojourns five or six days longer in the northern hemisphere, seemed to present to me a more marked resemblance to the body of an animal, in which the heart, the centre of heat, is somewhat nearer to the head than to the lower extremities.

Though these contrasts appeared sufficiently determinate to manifest order on the globe, and though I perceived something similar in vegetables distinguished into two parts, opposite in functions and forms, as the leaves and roots; I was afraid of giving scope to my imagination, and attempting to generalize the laws of Nature peculiar to each existence, by extending them to kingdoms not susceptible of the application. But I ceased to doubt of the general order of the globe, when with two halves in contrast I found two others in consonance. I was astonished, I confess, when I observed in its duplicity of forms members exactly repeated on that side and on this.

The globe, considered from east to west, is divided, as all organized bodies are, into two similar halves, the Old and New World. Each part mutually corresponds in the eastern and western hemispheres. The lakes of Finland and the gulf of Archangel correspond to the lakes of Canada and Baffin's Bay; Nova Zembla to Greenland; the Baltic to Hudson's Bay; the islands of Great Britain and Ireland, which cover the first of these mediterraneans, to the islands of Good Fortune and Welcome, which protect the second; the Mediterranean, properly so called, to the Gulf of Mexico, which is a kind of mediterranean formed in part by islands. At the extremity of the Mediterranean we find the isthmus of Suez in consonance with the isthmus of Panama, placed at the bottom of the gulf of Mexico. Conjoined by those isthmuses the peninsula of Africa presents itself in the Old World, and the peninsula of South America in the New. The principal rivers of these divisions of the globe front each other in like manner; for the Senegal discharges itself into the Atlantic directly opposite to the rive of the Amazons. Finally, each of these peninsulas, advancing toward the south pole, terminates in a cape equally noted



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for violent tempests, the Cape of Good Hope and Cape Horn.

There are between these two hemispheres many other points of consonance on which I shall no longer insist. These different particulars, it is admitted, do not correspond exactly in the same latitudes; but they are disposed in the direction of a spiral line winding from east to west, and extending from north to south, so that these corresponding points proceed in a regular progression. They are nearly of the same height, setting out from the north, as the Baltic and Hudson's Bay; and they lengthen in America, in proportion as it advances toward the south. This progression is perceptible along the Old Continent, as may be seen from the form of its capes, which, taking the point of departure east, lengthen so much more south as they advance toward the west; such as the Cape of Kamtschatka in Asia, Cape Comorin in Arabia, the Cape of Good Hope in Africa, and finally, Cape Horn in America.

These differences of proportion are to be accounted for from this, that the two terrestrial hemispheres are not projected in the same manner; for the Old Continent has its greatest breadth from east to west, and the New its greater extent from north to south; and it is manifest this difference of projection has been regulated by the AUTHOR of Nature for the same reasons which induced him to bestow double parts on animals, in order that, if necessity required, the one might supply what was deficient in the other, but principally that they might be of mutual assistance.

If, for example, there existed only the ancient continent with the South Sea alone, the motion of that sea being much accelerated under the line by the regular winds from the east, would, after having surrounded the torrid zone, advance with incredible fury, and attack tremendously the land of Japan: for the size of the billows of the sea is always in proportion to its extent. But from the disposition of the two continents the billows of the great eastern current of the Indian Ocean are partly retarded by the archipelagoes of the Moluccas and Philippine Islands; they are still farther broken by other islands, such as the Maldivia, by the capes of Arabia, and by that of Good Hope, which throws them back toward the south. Before they reach Cape Horn they have to encounter new obstacles from the current of the south pole, which then crosses their course, and the change of the monsoon, which totally destroys the cause of the commotion at the end of six months. Thus there is not a single current, easterly or northerly, which pervades so much as a quarter of the globe in the same direction. Besides, the division of the parts of the globe into two, is so necessary to its general harmony, that if the channel of the Atlantic Ocean, which separates them, had no existence, all the oriental rivers of America and the occidental of Europe would be dried up; for those rivers owe their supplies only to the clouds which emanate from the sea. Besides, the sun enlightening on our side only one terrestrial hemisphere, the mediterraneans of which would disappear, must burn it up with his rays; and at the same time, as he warmed on the other side a hemisphere of water only, most of the islands of which would sink of course, because the quantity of that sea must be increased by the subtraction of ours, an immensity of vapour would arise and go merely to waste.

It would appear that, from these considerations, Nature has not placed in the torrid zone the greatest length of the continents, but only the mean breadth of America and Africa, because the action of the sun would there have been too vehement. She has placed there, on the contrary, the longest diameter of the South Sea, and the greatest breadth of the Atlantic Ocean, and there she has collected the greatest quantity of islands in existence. Farther, she has placed in the breadth of the continents, there lengthened out, the greatest bodies of running water in the world, all issuing from mountains of ice. Again, for this reason, she has multiplied in the torrid zone and its vicinity, lofty chains of mountains covered with snow, and she directs thither the winds of the north and south pole, of which the trade-winds always partake. Several of the great rivers which flow there are not situated precisely under the line, but in regions of the torrid zone, hotter than the line itself.

From all this we have a glimpse of the necessity of two continents, mutually to check the movements of the ocean. Nature could not have disposed them otherwise, than by extending one lengthwise and the other in breadth, that the opposed currents of their ocean might balance each other, and that there might thence result a harmony adapted to their shores, and to the islands contained in their basins.

Were we to suppose these two continents projected circularly, from east to west, under the two temperate zones, the circulation of the sea contained between them would be too violently accelerated by the east wind. There could be no longer any communication by sea from the line toward the poles; consequently no icy effusions in that ocean, no tides, no cooling, and no renovation of its waters. If we suppose, on the contrary, both continents extended from north to south, as America is, there would be no longer any oriental current in the ocean; the two

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halves of each sea would meet in the midst of their channel, and their polar effusions would there encounter each other with an impetuosity of commotion, of which the icy effusions precipitated from the Alps convey but a faint idea. But by the alternate and opposite currents of the seas the icy effusions of our pole proceed, in summer, to cool Africa, Brazil, and the southern parts of Asia, forcing its way beyond the Cape of Good Hope, by the monsoon, which then carries the current of the ocean towards the east; and during our winter the effusions of the south pole proceed towards the west, to moderate on the same shores the action of the sun, which is there unremitting. By means of these two spiral motions of the seas, similar to those of the sun in the heavens, there is not a single drop of water but what may make the tour of the globe by evaporation under the line, dissolution into rain in the continent, and congelation under the pole. These universal correspondences are so much the more worthy of being remarked, that they enter into all the plans of Nature, and present themselves in the rest of her works.

From any other imaginable order would result other inconveniences, which I leave the reader to find out. Hypotheses *ex absurdo* are at once amusing and useful; they change, it is true, natural proportions into caricatures; but they have this advantage, that by convincing us of the weakness of our understanding, they impress us with a deep sense of the wisdom of Nature.

## OF PROGRESSION.

Progression is a series of consonances ascending or descending. Wherever we meet progression it produces exquisite pleasure, because it excites in the soul a sentiment of infinity.

When the leaves of a vegetable are arranged round its branches, as the branches themselves are round the stem, there is consonancy, as in pines; but if the branches are farther disposed among themselves on similar plans, diminishing in magnitude, as in the pyramidal form of firs, there is progression; and if these trees are disposed in long avenues decreasing in height and colouring, like their particular mass, our pleasure is heightened, because the progression becomes infinite.

From this instinct of infinity we take pleasure in viewing every object which presents a progression; as nursery-grounds, containing plans of different ages, hills flying off to the horizon in successive elevations, perspectives without a termination.

Nature has not formed, after our limited manner, perspectives with one or two consonances; but she composes them of a multitude of different progressions to be found in the minutest of her works, of which they constitute the principal charm. They are not the effect of any mechanical law, but have been apportioned to each vegetable, to prolong the enjoyment of its fruit, conformably to the wants of man. Some appear only during the season of heat, others can be preserved; but those designed to supply the accidental demands of mankind remain on the earth at all times. Not only are these last enclosed in shells for their preservation, but they appear upon the tree at all seasons, and in every degree of maturity. In tropical countries, on the uninhabited shores of the islands, Note: See Francis Pyrard's Voyage to the Maldives. the cocoa-tree bears at once 12 or 15 clusters of cocoa-nuts, some in the bud, others in flower, others knit, others full of milk, and finally, some in a state of perfect maturity. The cocoa is the seaman's tree.

The productions of our corn-fields and vineyards present dispositions still more wonderful; for though the ear of corn has several faces, its grains come to maturity at the same time, from the mobility of its straw, which presents them to all the aspects of the sun. The vine does not grow in form of a bush nor of a tree, but in hedge-rows; and though its berries be arranged in form of clusters, their transparency renders them throughout penetrable by the rays of the sun. Nature thus lays men under the necessity, from the spontaneous maturity of these fruits, destined to the general support of human life, to unite their labours, and mutually assist each other in the pleasant toils of the harvest and the vintage. The corn-field and the vineyard may be considered as the most powerful cements of society; for although nature has refused to the corn-plant and the vine the power of yielding their fruits at all seasons of the year, she has bestowed on the flour of the one and the wine of the other, the quality of being preservable for ages.

**OF CONTRASTS.**

Contrasts differ from contraries in this, that contraries act but in one single point, and contrasts in their general combination. An object has but one contrary, but may have many contrasts. White is the contrary of black; but it contrasts with blue, green, red, and various other colours.

Nature, to distinguish the harmonies, consonances, and progressions of bodies, makes them exhibit contrasts. This law is the less observed, being common. Naturalists consider the colour of bodies as simple accidents; and look on their very forms as the effect of some attraction, incubation, crystalization, &c. Books are composed to extend by analogies the mechanical effects of those laws to the different productions of Nature; but if they really possess so much power, how comes it that the sun has not long ere now filled the waters, the dry land, the forests, the heavens, the plains, and all the creatures over which he exercises so much influence with the uniform and monotonous effects of his light? All these objects ought to assume his appearance, and present only white or yellow to our eyes, and be distinguished from each other only by their shades. A landscape ought to exhibit no other effects but those of a cameo or of a print. Latitudes, we are told, diversify the colour of them. But if latitudes have this power, how comes it to pass that the productions of the same climate and of the same field have not all the same tints? Whence is it that quadrupeds, which are born and die in the meadow, do not produce young ones green as the grass on which they feed?

Nature has not satisfied herself with establishing particular harmonies in every species of beings to characterize them, but, that they might not be confounded among themselves, she exhibits them in contrasts. In general, she has made herbs green, to detach them from the earth, and has given the colour of earth to animals which live on herbage, to distinguish them from the ground on which they stray. This general contrast may be remarked in domestic animals, the yellow beasts of the forests, and all the granivorous birds which live among herbage or the foliage of trees, as the hen, partridge, quail, lark, sparrow, and many others of earthy colours, because they live among verdure. But those who live on dingy grounds are clad in brilliant colours, as the bluish tomtit and the woodpecker, which scramble along the rind of trees in pursuit of insects, and many others.

Nature universally opposes the colour of the animal to that of the ground on which it is destined to live; and this most admirable law admits not a single exception. Flat fishes, but indifferent swimmers, and destined to live at the bottom of the sea, have the colour of the sands where they find their nourishment, being spotted, like the beach, with gray, yellow, black, red, and brown. They are thus speckled, I admit, only on one side; but they are so sensible of this resemblance, that when enclosed within the parks formed on the strand to entrap them, and observing the tide gradually retiring, they bury their fins in the sand, expecting its return, and present to the eye only their deceitful side. It so perfectly resembles the ground on which they squat to conceal themselves, that it would be impossible for the fishermen to distinguish them from it without the help of sickles, which they draw in every direction along the surface of the sand, to detect by the touch what the eye could not discern. This I have witnessed, more highly amused at the dexterity of the fishes than at that of the fishermen.

Nature has bestowed at once, in the colours of innoxious animals, contrasts with the ground on which they live, and consonances with that which is adjacent, and has superadded the instinct of employing these alternately, as good or bad fortune prompts. These wonderful accommodations may be remarked in most of our small birds, whose flight is feeble and of short duration. The gray lark subsists among the grass of the plains: if terrified, she glides away, and takes her station between two little clods of earth, where she becomes invisible, and remains in perfect tranquillity.

The same thing is true of the partridge. I have no doubt that these defenceless birds have a sense of those contrasts and correspondences of colour, for I have remarked it even in insects; it is also conspicuous even in theameleon, endowed with the incomprehensible faculty of assuming at pleasure the colour of the ground over which he moves.

But in the age of weakness and inexperience Nature confounds the colour of harmless animals with that of the ground on which they inhabit, without committing to them the power of choice. The young of pigeons, and of most granivorous fowls, are clothed with a greenish shaggy coat, resembling the mosses of their nests. Caterpillars are blind, and have the complexion of the foliage and of the barks which they devour. Nay, young

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fruits, before they are armed with prickles, or enclosed in cases, in bitter pulps, in hard shells, to protect their seeds, are, during the season of their expansion, green as the leaves which surround them. Some embryos, it is true, as those of certain pears, are ruddy and brown, but they are then of the colour of the bark of the tree to which they belong. When those fruits have enclosed their seeds in kernels, or nuts, so as to be in no farther danger, they then change colour, and give their respective trees their natural contrasts. It is strikingly remarkable, that every fruit which has changed colour has seed in a state of maturity.

The insects, in like manner, having deposited their robes of infancy, and now committed to their own experience, spread about over the world, to multiply the harmonies of it with the attire and instincts which Nature has conferred upon them. Clouds of butterflies, which in their caterpillar state were confounded with the verdure of plants, now oppose the colours and forms of their wings to those of flowers.

Nature does not employ those agreeable correspondences and contrasts in the decoration of noxious animals, nor even of dangerous vegetables. Carnivorous or venomous animals form, at every age, and wherever they are, oppositions harsh and disgusting; but the useful bee is of the complexion of the *stamina* and *calices* of the flowers, where she reaps her innocent harvests.

Poisonous plants also present disgusting contrasts, from the livid colours of their flowers, which are in harsh oppositions with the tender shades; from their nauseous and virulent smells; from their prickly foliage, of a dark-green hue, and clashing with white on the under side, as the aconite tribes.

Such of the brute creation as are intended to live on two different grounds, are impressed with a double contrast in their colours. Thus, for example, the kingfisher, which skims along rivers, is at once musk-coloured and glazed over with azure; so as to be detached from the dusky shores by his azure colour, and from the azure of the waters by his musk colour. The duck, which dabbles on the same shores, has the body tinged of an ash colour, while the head and neck are of an emerald-green, so that he is perfectly distinguishable by the gray colour of his body, from the verdure of the aquatic plants among which he waddles, and by the verdure of his head and neck, from the dark-coloured mud where he finds part of his food, and in which, by another most astonishing contrast, he never soils his plumage.

Nature opposes, then, the colours of every animal to those of the respective ground on which it is to be placed; and what confirms the truth of this law is, that the greatest part of birds which live on one ground only have but a single colour, and that one strongly contrasted with the colour of the ground. Accordingly, the birds which live aloft in the air, on the azure ground of the heavens, or in the bosom of the waters, in the midst of lakes, are mostly white, which of all colours forms the most striking contrast with blue, and is consequently most adapted to render them perceptible at a distance.

There are others, which, to form a contrast with those last mentioned, detach themselves from the skies and waters by their black or dusky colours: as the crow, which is perceptible at so great a distance in the heavens, on the white ground of the clouds. Hence it may be inferred, that when an animal is invested with but one single tint, he is intended but for one situation; and when he combines in himself the contrast of two opposite tints, that he lives on two grounds, the colours themselves of which are determined by that of the plumage, or hair, of the animal. We must, however, guard against an unlimited generalization of this law, and consider it as harmonizing with the exceptions which wise Nature has established, for the preservation of animals; such as the whitening of them, to the north, in winter, as a remedy against cold, and imbrowning them to the south, during the ardours of summer, to shelter them from the effects of burning. What evidently demonstrates that these great effects of harmony are not mechanical results, is, that among the infinite number of birds which live in the higher regions of the air, or on the surface of the azure seas, there are none of the colour of blue; and that many birds which live between the tropics, in the bosom of black rocks, or under the shade of sullen forests, are azure-coloured.

These harmonies are contrived for the use of man; and as a farther consequence of these correspondences with him, Nature has given to the birds which live remote from him, cries shrill, hoarse, and piercing, which render them perceptible at a distance, amidst their wild retreats. She has bestowed sweet notes and melodious voices on the little birds of our groves, domesticated in our habitations, to heighten our delight, as well by their warbling as by the beauty of their colours.

All the kingdoms of Nature present themselves to man with the same correspondences, the abysses of the ocean not excepted. The fishes which live on animal substances, as the whole class of the cartilaginous do, have disgusting forms and colours. Fishes which live in the open sea, have colours marbled with white, black, brown,

which distinguish them in the bosom of the azure billows. But among those which frequent the dusky shores, and particularly such as are denominated *saxatile*, because they live among rocks, are found fishes, the lustre of whose skin and scales surpasses all the efforts of the pencil, especially when alive. The legions of mackarel and herrings diffuse the radiance of silver and azure over the northern strands of Europe.

Among the black rocks of the seas of the Tropics, the fish known by the name of *captain* is caught, whose colours vary with the latitude. This beautiful fish, says Francis Cauche, which takes pleasure in the rocks, is streaked in form of lozenges; his scales are of a pale gold colour, and his back coloured and glazed over with laca, inclining toward vermillion. His dorsal fin and tail are waved with azure, fading away into green toward the extremities. Here likewise is found the magnificent fish called the *sardin*, which is adorned with scales of at once a gold and silver hue, crossed from head to tail by black lines, which admirably heighten their lustre.

Wherever you see a brilliant fish, be assured his habitation is near the shore, and that he lives in the open ocean if he is of a dark colour. This truth we may ascertain in the channels and on the banks of our own rivers. The silver smelt and the bray, whose scales are employed in the formation of mock pearls, play on the strand of the Seine; whereas the eel, of the gloomy colour of slate, takes pleasure to dabble at the bottom of the stream. We must not, however, pretend to generalize these laws, to the exclusion of exceptions. Nature subjects all to the mutual adaptation of beings, and to the enjoyment of man; for though the fishes on the shores have, in general, shining colours, there are several species of them invariably of a dark colour.

The saxatile fishes, which can easily ensure their safety among the rocks, by agility in swimming, or by the facility of finding a retreat in their cavernous receptacles, or of there defending themselves against their enemies, by the armour which Nature has bestowed, have all of them lively and shining colours, the cartilaginous excepted. All shell-fish which walk and migrate, and, consequently, have the power of choosing their asylum, are those, in their kind, which have the richest colours and form, with the different grounds of the sea, secondary harmonies totally unknown: but those which do not change their situation, as most oysters, which frequently adhere to the rocks, or those which are perpetually at anchor in straits, as muscles, or those, in a word, which I believe are blind, like our land-snails, are of the colour of the ground they inhabit, to be less perceptible to their enemies.

It is impossible to ascribe, as in the shell-fish of India, colours so charming to the action of the sun on those shells, covered as they are with tartars and rough coats; we may venture to affirm, that Nature has veiled their beauty, only to preserve it for the enjoyment of man, and placed them only on the verge of the shores, where the sea purifies, by tossing them about, to put them within his reach. Thus she places the most brilliant shells in regions the most exposed to the ravages of the elements; and presents to the poor Patagonians spoons and cups, the lustre of which far surpasses the richest plate of polished nations.

Hence it may be inferred, that fishes in general, and shell-fish in particular, which have two opposite colours, live on two different grounds, as we have observed in the case of birds, and that those which have only one colour frequently only one grounds.

It must not be concluded, on the other hand, that such shell-fish are indebted for their colours to the rocks on which they adhere by suction; for it would thence follow, that the rocks of Magellan's strait, which produce muscles and limpets so rich in colouring, should be themselves inlaid with mother-of-pearl, opal, and amethyst; besides, every rock maintains shell-fish of very different colours. Many of those marine harmonies have escaped me, for I then considered them as merely the effect of chance. I looked at and admired them, but I observed them not: I suspected, however, even then, that the pleasure which their harmonic combination inspired, must be referable to some with which I am unacquainted.

Enough has been said to demonstrate how much naturalists have mutilated the finest portion of natural history, by retailing isolated descriptions of animals and plants, without noticing the season when, and the place where, they are to be found. By this negligence they strip them of all their beauty, for there is not an animal or plant existing, whose harmonic point is not fixed to a certain situation, to a certain hour of the day or night, to the rising or setting sun, to the phases of the moon, nay, to the very tempests; to say nothing of the other contrasts and correspondences resulting from these.

I am so thoroughly persuaded of the existence of all those harmonies, that I doubt not, on seeing the colour of an animal, one might determine nearly that of the ground it inhabits; and by following up those indications, a road might be paved to curious discoveries.

We meet with those contrasts even in the brute soils of the earth. If a uniform and mechanical cause had

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produced the globe of the earth, it must have been universally of the same matter and colour: the hills, mountains, rocks, and sands, must have been amalgams, or the rubbish, of each other; but this is not found to be the case in any one district, however small. In the same canton may be found red mountains, black rocks, white plains, and yellow sands; with substances as much varied as their colour. I shall for the present only recommend to naturalists to study Nature, as the great painters do, by uniting the harmonies of the three kingdoms. Every one who observes in this manner, will find a new light diffused over the perusal of voyages and of natural history, though their authors scarcely ever speak of those contrasts. But every man will be himself in a condition to discover their delightful effects, in what is called brute Nature, I mean that with which man has not intermeddled. As often as a natural object presents to you a sentiment of pleasure, you may rest assured it exhibits some harmonic concert.

Beyond doubt, animals and plants of the same climate have not received from the sun, nor the elements, liveries so varied, and so characteristic. Many new observations may be made upon their contrasts. He who has not seen them in their natural place, has not yet become acquainted with their beauty or deformity. Not only are they in opposition to the grounds of their respective habitations, but also between themselves, as to genus and genus; and it is worthy of remark, that when these contrasts are established, they exist in all the parts of the two individuals. We shall speak of those plants in the following Study, by simply glancing at that delightful and inexhaustible subject.

Those of animals are still farther extended; they are opposed in forms, gestures, and instincts; and with differences so decidedly marked, they love to associate with each other, in the same places. This consonance of tastes distinguishes beings in contrast, from those which are contrary, or enemies. Thus the bee and the butterfly extract the nectar of the same flowers; and the single-hoofed horse, snuffing up the wind, with his mane flowing over his graceful neck, delights to amble about airily over the same meadows on which the ponderous bull impresses his cloven foot; the dull and steady ass takes pleasure in scrambling over the rocks where the capricious goat frisks and bounds; the cat and dog live peaceably by the same fireside, unless where the tyranny of man has vitiated their dispositions, by a treatment calculated to excite hatreds and jealousies between them.

Finally, contrasts exist not only in the works of Nature in general, but in each individual in particular, and constitute, as well as consonances, the organization of bodies. If you examine one of those bodies, of whatever species, you will remark in it forms absolutely opposite, and, nevertheless, consonant. It is thus that, in animals, the excretory organs contrast with those of nutrition. the long tails of horses and bulls are opposed to the large side of their heads and necks, and come in as a supplement to the motions of these anterior parts, too unwieldy to drive away the insects that infest them. On the contrary, the broad tail of the peacock forms a contrast with the length of the neck, and smallness of the head, of that magnificent bird. The proportions of other animals present oppositions no less harmonic, nor less happily adapted to the necessities of each species.

Harmonies, consonances, progressions, and contrasts, must, therefore, be reckoned among the first elements of Nature. To those we are indebted for the sentiments of order, beauty, pleasure, which spring up in the mind at sight of her works; and from her absence arise the uneasy feelings of disorder, ugliness, languor, and disgust. They extend equally to all the kingdoms; and though I have limited myself to an examination of their effects in the vegetable kingdom only, it is impossible to deny myself the pleasure of indicating them, at least, in the human figure. Here Nature has combined all the harmonic expressions in their highest degree of excellency. All I can do is to trace a feeble sketch of it. Neither have I leisure to arrange more than a part of my observations on this vast and interesting subject. But the little which I am going to advance will be sufficient to overturn the position maintained by men of celebrity in the world of science, namely, That human beauty is arbitrary.

## OF THE HUMAN FIGURE.

All the harmonic expressions are combined in the human figure. Observe the form of the head of man, which approaches to the spherical, *the* form, by way of excellence. I do not believe this configuration is common to it with that of any animal whatever. On its anterior part is traced the oval of the face, terminated by the triangle of the nose, and encompassed by the radiations of the hair. The head is supported by a neck of considerably less diameter than itself, which detaches it from the body by a concave part.

This slight sketch presents, at the first glance, the five harmonic terms of the elementary generation of forms. The hair exhibits lines; the nose the triangle; the head the sphere; the face the oval; and the void under the chin the parabola. The neck, which, like a column, sustains the head, exhibits, likewise, the very agreeable harmonic form of the cylinder, composed of the circular and quadrilateral.

These forms, however, are not traced in a stiff and geometrical manner, but imperceptibly run into each other, and mutually blend, as parts of the same whole. The hair does not fall in straight lines, but flowing ringlets, and harmonizes with the oval of the face; the triangle of the nose is neither acute, nor a right angle; but, by the undulatory swelling of the nostrils, presents a harmony with the heart form of the mouth, and, sloping towards the forehead, melts away into the cavities of the eyes. The spheroid of the head also amalgamates with the oval of the face. The same thing holds with respect to the other parts, as Nature employs, in their general combination, the roundings of the forehead, cheeks, chin, and neck, that is, portions of the most beautiful of the harmonic expressions, namely, the sphere.

There are, farther, proportions which form, with each other, pleasing harmonies and contrasts: as that of the forehead, which presents a quadrilateral form, in opposition to the triangle, composed of the eyes and mouth; and that of the ears, formed of very ingenious acoustic curves, not to be met with in the auditory organ of animals, because, in mere animals, the ear collects not, like that of man, all the modulations of speech.

But I must expatiate more at large on the charming forms assigned by Nature to the eyes and mouth, placed in the full blaze of evidence, as the two active organs of the soul. The mouth consists of two lips, the upper moulded into the shape of a heart, that form so lovely as to have become proverbial for its beauty; and the under rounded into a demi-cylindric segment. In the opening between the lips, we have a glimpse of the quadrilateral figure of the teeth, whose perpendicular and parallel lines contrast most agreeably with the round forms adjoining, and so much the more, as we have seen, that the first generative term being brought into union with the supremely excellent harmonic term, that is, the straight lines with the spherical form, the most harmonic of all contrasts results from it.

The same relations are to be found in the eyes, the forms of which combine still more the harmonic elementary expressions; as it was fit the chief of all the organs should do. They are two globes, fringed on the lids with eyelashes, radiating with divergent pencil strokes, which form with them a most delightful contrast, and present a striking consonance with the sun, after which they seem to have been modelled, having, like that orb, a spherical figure, encircled with divergent rays in the eyelashes; having a movement of self-rotation, and possessing the power, like him, of unveiling themselves in clouds by means of their lids.

The same elementary harmonies may be traced in the colours of the head, and in its forms; in the face we have the pure white exhibited in the teeth and eyes; then the shades of yellow, which dissolve into its carnation, as painters well know; after that the red, the eminently excellent colour, which glows on the lips and cheeks. You farther remark the blue of the veins, and sometimes that of the eyeballs; and finally, the black of the hair, which, by its opposition, gives relief to the colours of the face, as the vacuum of the neck detaches the forms of the head.

Observe, that Nature employs not, in decorating the human face, colours harshly opposed; but blends them, as she does the forms, softly and insensibly into each other. Thus, the white melts here into yellow, there into red. The blue of the veins has a greenish cast. The hair is rarely of a jet black; but brown, chestnut, flaxen, and in general of a colour into which a slight tint of the carnation enters, to prevent a violently harsh opposition. She also employs spherical segments in forming the muscles which unite the organs, and particularly to distinguish these organs she makes use of red. She has accordingly extended a slight shade of it to the forehead, which is strengthened upon the cheeks, and applied pure and unmixed to the mouth, that organ of the heart, where it forms



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a most agreeable contrast with the whiteness of the teeth. The union of this colour with that harmonic form, is the most powerful consonance of beauty; and it is worthy of remark, that wherever the spherical forms swell, there the colour strengthens, except in the eyes.

As the eyes are the principal organs of the soul, they are destined to express all its emotions, which could not have been done with the harmonic red tint, for this would have given but one single expression. Nature, in order there to express the contrary passions, has united in the eye the most opposite of colours, the white of the orbit and the black of the iris, and sometimes of the ball, which form a very harsh opposition, when the globes of the eye are displayed in the full extent of their diameter; but by means of the eyelids, which man can contract or dilate at pleasure, he is enabled to give them the expression of all the passions, from love to fury.

Those eyes whose balls are blue are naturally the softest, because the opposition is then less harsh with the adjacent white; but they are terrible when animated with rage, from a moral contrast, which constrains us to consider those as the most formidable of all objects, that menace evil, after having encouraged us to expect good. Persons, therefore, thus distinguished, ought to be carefully on their guard against treachery to that character of benevolence bestowed on them by Nature; for blue eyes express, by their colour, something enchantingly celestial.

The movements of the muscles of the face would be difficult to describe, though it might be possible to explain their laws. They must of necessity be referred to the moral affections. Those of joy are horizontal, as if the soul, in the enjoyment of felicity, had a disposition to extend itself. Those of chagrin are perpendicular, as if, under the pressure of calamity, the mind was looking toward Heaven for refuge, or seeking it in the bosom of the earth. In the alterations of colours, and contractions of forms, we shall discover the truth of the principle we have laid down, that the expression of pleasure is in the harmony of contraries, blending with each other in colours, forms, and motions; and that the expression of pain consists in the violence of their oppositions. The eyes alone have motions ineffable; under the influence of strong emotions, they are suffused with tears, and thus seem to have a farther analogy with the orb of day, who, in the season of tempests, shrouds himself in rainy distillations.

The principal organs of sense, four of which are placed in the head, have particular contrasts, which detach their spherical by means of radiated forms, and their shining colours by dusky tints. Thus the bright organ of vision is contrasted by the eyebrows; those of smell and taste by the mustaches; the organ of hearing, by that part of the hair called the *favourite* lock, which separates the ear from the face; and the face itself is distinguished from the rest of the head by the beard and hair.

The human body alone unites in itself the modulations and concerts, inexpressibly agreeable, of the five elementary forms, and the five primordial colours, without exhibiting anything of the harsh and rude oppositions perceptible in the brute creation; of it alone the first touch is perceptible, and may be seen completely; other animals being disguised under hair, feathers, or scales, which conceal their limbs, shape, and skin. Farther, it is the only form which, in its perpendicular attitude, displays all its positions and directions at once; for you can hardly perceive more of a quadruped, bird, or fish, than one half, in the horizontal position proper to them, because the upper part of their body conceals the under.

Man's progressive motion is subject to neither the shocks nor the tardiness of movements of most quadrupeds, nor to the rapidity of that of birds; but is the result of movements the most harmonic, as his figure is of forms and colours the most delightful.

The more that the consonances of the human figure are agreeable, the more disgusting are its dissonances. Hence, on the face of the earth, nothing is so beautiful as a handsome man, nothing so shocking as a very ugly one.

This farther suggests a reason why it will be for ever impossible for art to produce a perfect imitation of the human figure, from the difficulty of uniting in it all the harmonies; and from the still greater difficulty of effecting a complete combination of those of a different nature. The exertions of painters and sculptors in general do them much honour; but they demonstrate the weakness of Art, which falls below Nature just in proportion as it aims at uniting more of her harmonies. Instead of blending them, as Nature herself does, Art can only place them in opposition. This proves that harmony results from the union of two contraries, and discord from their collision: and the more agreeable the harmonies of an object are, the more disgusting are its discordances. Hence the real origin of pleasure and dislike, in physics as in morals, and the reason why the same object so frequently excites affection and aversion.

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Many interesting reflections remain to be made on the human figure, especially by connecting with it the moral sensations, which alone give expression to the features. The physical beauty of man is so striking, in the eyes even of the animal creation, that to it principally must be ascribed the empire he everywhere exercises over them. The feeble seek refuge under his protection; the most powerful tremble at sight of him. The lark will save herself amidst troops of men, when she perceives the bird of prey hovering over her; the stag, when run down by the hounds, appeals with sobs for relief, to the compassion of persons accidentally passing that way; the India-hens, under the impulse of love, throw themselves chuckling at the feet of the country people; and it is well known with what familiarity monkeys and fowls of all kinds approach travellers in the forests of India. But dangerous animals are seized with terror at the sight of man, unless driven from their natural bias by some pressing necessity. An elephant is led about in Asia by a little child; the African lion retires growling from the cabin of the Hottentot, and seeks for himself a kingdom untrodden by the foot of man; and the immense whale, amidst his native element, trembles and flees away before the puny bark of the Laplander. Thus is executed that all-potent law, which secured empire to man, though sunk in guilt and wretchedness: 'And the fear of you, and the dread of you, shall be upon every beast of the earth, and upon every fowl of the air; upon all that moveth upon the earth, and upon all the fishes of the sea; into your hand are they delivered.' Gen. ix. 2.

It is remarkable, that through all Nature, there is no animal, plant, fossil, nor even globe, but what has its consonance and contrast out of itself, man alone excepted. No one visible being enters into society with him but as his servant or slave.

We must, undoubtedly, reckon among the human proportions, that law so universal, so wonderful, which produces males and females in equal numbers. Did chance preside over the generations of the human race, as over our alliances, we should one year have an unmixed crop of male children, and another, a race entirely female. Some nations would consist wholly of men, others of women; but all over the globe, the two sexes are born, within the same space of time, equal in number. A consonance so regular demonstrates that a Providence watches over the affairs of mankind, notwithstanding the absurdity and disorder of human institutions. This is a standing testimony to the truth of our religion, which limits man to one woman in marriage, and by this conformity to natural laws, peculiar to itself, seems alone to have emanated from the AUTHOR of Nature. A religion therefore which permits or connives at a plurality of wives, must be erroneous.

Ah! how little acquainted are they with the laws of Nature, who, in the union of the two sexes, look for nothing farther than the pleasures of sense! They are only culling the flowers of life, without once tasting its fruit. The fair sex! this is the phrase of our men of pleasure; women are known to them under no other idea. But the sex is fair only to persons who have no other faculty but eyesight. It is, besides, to those who have a heart, the creative sex, which, at the peril of life, carries man for nine months in the womb; the cherishing sex, which suckles and tends him in infancy. It is the pious sex, which conducts him to the altar while yet a child, and teaches him to draw in, with the milk of the maternal breast, the love of a religion which the cruel policy of men would frequently render odious to him. It is the pacific sex, which sheds not the blood of a fellow creature; the sympathizing sex, which ministers to the sick, and handles without hurting them.

To no purpose does man pretend to boast of his power and strength; if his robust hands are able to subdue iron and brass, those of the woman, more dexterous and usefully employed, can spin into threads the flax and the fleeces of the sheep. The one encounters gloomy care with the maxims of philosophy, the other banishes it by sportiveness and gayety. The one opposes to external evils the force of his reason; the other, far happier, eludes them by the mobility of hers. If the man sometimes considers it as his glory to bid defiance to danger in the field of battle, the woman triumphs, in calmly meeting dangers more inevitable, and frequently more cruel, on her bed, and under the banners of pleasure. Thus they have been created to support together the ills of life, and to form by their union the most powerful of consonances, and the sweetest of contrasts.

I am obliged by the plan of my work to refrain from pursuing my reflections on subjects so interesting as the marriage and beauty of man and woman. I must, however, hazard some farther observations, to induce others to dive into this rich mine.

All philosophers who have studied man are agreed, and with good reason, that he is the most wretched of all animals. Most of them have been sensible that an associate was necessary to him to relieve his burdens, and they have made his happiness in part to consist in friendship. This is an evident demonstration of human weakness and misery; for were man naturally strong, he would stand in no need of either associate or assistance.

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When the ancients represented perfect friendship, it was always restricted to two; for man is frequently reduced to the necessity of deriving his felicity from the concurring interposition of many beings similar to himself. The principal reason for this restriction is deducible from the nature of the human heart, which from its very weakness is capable of attaching itself only to one object at once; and being compounded of opposite passions that maintain a perpetual counterpoise, is, in some sense, active and passive, and stands in need of loving and being beloved, of comforting and being comforted, of honouring and being honoured, and so on. These singular affections have ever been associated with virtuous and heroic actions; but when the union comprehended more persons than two, it was speedily dissolved by discord, or if permitted to subsist for any length of time, became famous only for the mischief which it brought on mankind.

If the heart of man admits of but a single object, what judgment shall we form of our modern friendships, embracing as they do, a multiplicity? Undoubtedly if a man has thirty friends, he can bestow on each of them only the thirtieth part of his affection, and can receive in return no greater proportion of theirs. He must of necessity, therefore, deceive them, for no one is disposed to be a friend by fractions. But, if the truth may be told, such friendships are merely confederacies of ambition; relations interested and purely political, employed in practising mutual illusion, in the view of aggrandizing themselves at the expense of society, which would be productive of unspeakable mischief, were they more closely united and not counterbalanced by opposite confederacies. Almost all our general associations accordingly issue in intestine wars.

The AUTHOR of Nature has given to each of us, in our species, a natural friend, completely adapted to all the demands of human life, capable of supplying all the affections of the heart, and all the restlessness of temperament. He says, from the beginning of the world: 'It is not good that man should be alone: I will make him a help meet for him; — and the LORD GOD made woman, and brought her unto the man.' Note: Genesis, chap. ii. ver. 18, 22. Woman pleases all our senses by her form and graces. She has in her Character every thing than can interest the heart of man at every stage of life. She merits, by the long and painful solitudes she exercises over our infancy, our respect as a mother, and our gratitude as a nurse; afterward, as man advances to youth, she attracts all his love as a mistress; and in the maturity of manhood, all his tenderness as a wife, his confidence as a faithful steward, his protection, as being feeble; and even in old age she merits our highest consideration, as the source of posterity, and our intimacy, as a friend who has been our companion through life. Her gayety, nay, her very caprices, balance at all seasons the gravity and over-reflective constancy of man, and acquire reciprocally a preponderancy over him.

Thus the defects of one sex, and the excess of the other, are an exact mutual compensation. They are formed, if I may use the expression, to be grooved into each other, like the corresponding pieces of carpenter's-work, the prominent and retreating parts of which constitute a vessel fit to launch on the stormy ocean of life, and to attain additional strength from the very buffetings of the tempest. Had we not been informed by a sacred tradition, that woman was extracted from the side of man; and though this great truth were not every day manifested, in the wonderful birth of the children of the two sexes in equal numbers, we should be speedily instructed in it by our wants. Man without the woman, and woman without the man, are imperfect beings in the order of Nature. But the greater the contrast in their characters, the more complete union there is in their harmonies. It is from their opposition in talents, tastes, and fortunes, that the most intense, the most durable affection is produced. Marriage is therefore the friendship of Nature, and the only real union which is not exposed, like those among men, to estrangement, rivalry, jealousies, and the changes time is effecting in our inclinations.

But wherefore are there so few happy marriages among us? I answer, because with us the sexes have divested themselves each of its proper nature, and assumed the other; because the women with us adopt the manners of men from education, and men the manners of women from habit. The women have been despoiled of the graces and talents peculiar to their sex, by the masters, sciences, customs, and occupations of men. There is no way left to bring both back to Nature, but to inspire them with a taste for religion. By religion I do not mean attachment to ceremonies of systems of theology, but the religion of the heart, pure, simple, unostentatious; such as it is so beautifully depicted in the Gospel.

Religion will restore to the two sexes not only their moral character, but physical beauty. It is not climate, aliment, bodily exercise, nor all these together, which form human beauty; it is the moral sentiment of virtue, which cannot subsist independently of religion. Aliment and exercise, no doubt, contribute greatly to the magnitude and the expansion of the body, but they have no influence on the beauty of the face, the true

physiognomy of the soul. It is not uncommon to see persons tall and robust disgustingly ugly; with the stature of a giant, and the face of a monkey.

Beauty of face is to such a degree the expression of the harmonies of the soul, that, in every country, those classes of citizens who are obliged to live with others in a state of constraint, are sensibly the homeliest of society. The truth of this observation may be ascertained, particularly among the noblesse of many of our provinces, who live with each other in the perpetual jealousy of rank, and with their neighbours of an inferior order in a state of unremitting hostility, for the maintenance of their prerogatives. The same thing does not hold good respecting the noblesse of some other of our provincial districts, and the nobility of other parts of Europe. These, living in good understanding among themselves and with their compatriots, are in general the handsomest men of their nation, because their social and benevolent spirit is not in a state of incessant constraint and anxiety.

To the same moral causes may be referred the beauty of the features of the Greek and Roman physiognomies, where we generally meet with models so exquisite in their statues and medallions. They were beautiful, because happy; they lived in cordial union with their equals, and in favour with the citizens at large. The descendants of those nations are far from exhibiting a resemblance to their ancestors, though the climate of their country is not in the smallest degree changed.

To render children beautiful, they must be made physically, but, above all, morally happy. You must prevent every possible occasion of vexation, not by kindling in their breasts dangerous and headstrong passions, but by teaching them to curb such as they have from Nature; and especially, by guarding against the communication of every thing unnatural, such as useless and irksome tasks, emulations, rivalships, and the like.

The ugliness of a child may be imputed to his nurse or preceptor. I have sometimes observed families singularly beautiful. On inquiring into the cause of this, I have found that they were happy; that the mothers had suckled their own children; that these had learned their occupations under the paternal roof, and been treated with tenderness; that their parents were fondly attached to each other; that they all lived together in a state of liberty and cordiality, which rendered them good, happy, and satisfied.

I have thence deduced, that we frequently make a false estimate of the happiness of human life. On seeing here a gardener with the port of a Roman emperor, and there a great lord with the mask of a slave, I imagined at first Nature had committed a mistake. But experience demonstrates, that the great lord in question, from his birth to his death, is placed in a series of positions, which permit him not to gratify his own inclinations three times a year. He must do the will, first of his preceptors and masters; in more advanced life, that of his prince, of ministers of state, of his rivals, nay, frequently that of his enemies: thus he finds fetters innumerable in his very dignities. Our gardener passes his life without the slightest contradiction. Like the centurion in the gospel, he says to his servant, Come, and he cometh; and to another, Do this, and he doeth it. This demonstrates that Providence has assigned to our very passions a part widely different from that which society presents to them; for, in cases innumerable, the most unrelenting slavery is imposed with an accumulation of honours; and in the meanest of human conditions we frequently find the possession of the most unbounded empire.

Besides, persons disfigured by the corruptive impression of vicious education and habits, have it in their power to reform their looks; and to acquire a beauty altogether irresistible, by being internally good, gentle, compassionate, sensible, beneficent, and devout. These affections of a virtuous soul will impress on their features celestial characters, beautiful even in old age.

But to no purpose will a man attempt to decorate his countenance with the indications of good qualities to which his heart is a stranger. This false beauty produces an effect still more disgusting than the most decided ugliness: for when, attracted by an apparent goodness, we actually find dishonesty and perfidy, we are seized with horror, as when we find a serpent lurking on a bed of flowers. We are bound to aspire then after moral beauty, that its divine irradiations may be diffused over our features and actions. Though a prince himself may boast of birth, riches, credit, wit, the people to know him must look him in the face. They form their judgment entirely from the physiognomy: it is in every country the first, and frequently the last letter of recommendation.

## OF CONCERTS.

Concert is an order formed of several harmonies of various kinds. It differs from simple order in this, that the last is frequently nothing but a series of harmonies of the same species.

Every particular work of Nature presents, in different kinds, harmonies, consonances, contrasts; and forms a real concert. It may be remarked, on the subject of those harmonies and contrasts, that vegetables whose flowers have the least lustre are frequented by animals of the most brilliant colours, and that the most highly coloured vegetables serve as an asylum to the duskiest animals. This is particularly evident in countries between the tropics, where the trees and herbage without flowers lodge and support birds, insects, nay, monkeys of the most lively colours.

In our temperate regions most of the birds are dull-coloured, because our vegetables have flowers and fruits with shining colours: our lively coloured birds and insects usually choose for their habitation vegetables that have no apparent flowers. Thus the heath-cock glitters on the gray verdure of the pine, whose apples serve him for food; and the goldfinch builds his nest in the rough fuller's-thistle. On the contrary, birds of dusky hue inhabit shrubbery with gay-coloured flowers. The black-headed bullfinch builds his nest in the white thorn, and that lovely bird exhibits a farther consonance and contrast with the prickly shrub where he resides, by his blood-stained breast and sweet song. The nightingale with brown plumage delights to nestle in the rose-bush, according to the traditions of the oriental poets, who have sung the loves of that melancholy bird for the rose.

If to each plant are added its elementary harmonies, as those of the season when it appears, of the soil in which it vegetates, the effects of the dews, and the reflexes of the light on its foliage, the movements it undergoes from the action of the winds, its contrasts and consonances with other plants, and with quadrupeds, birds, and insects peculiar to it, and a delightful concert will be formed, the harmonies of which are still unknown to us. By pursuing this track alone we can obtain a glimpse of the magnificent edifice of Nature. I would entreat naturalists, persons fond of gardening, painters, nay poets, thus to prosecute their studies, and to take frequent draughts from this perennial spring of taste and delight.

I know not at present what name I ought to give to the conformities those particular concerts have with man. Certain it is, that every work of Nature strengthens its particular concert by the habitation of man, and communicates to it some expression of grandeur, gayety, terror, or majesty. She raises the physical character of her works to a sublime moral character, by collecting them around mankind. She not only employs particular concerts to express them, but when she means to expose them on the great scale, she combines a multitude of similar harmonies and contrasts to form one great general concert, which has only a single expression, let the field of representation be ever so extensive.

To express, for example, the maleficent character of a venomous plant, she combines in it clashing oppositions of forms and colours, the indications of that maleficence; as retreating and bristly forms, livid colours, dark greens with white and black spots, virulent smells....But when a whole district is to be characterized as unwholesome, she collects a multitude of similar dissonances. The air is loaded with thick fogs, the turbid waters exhale only nauseous smells, no vegetable thrives on the putrid soil but such as are disgusting, the dracunculus, for instance, the flower of which exhibits the form, the colour, and the smell of an ulcer. The yew-tree only arises in the cloudy atmosphere, whose red trunk and gloomy foliage serves as an asylum to owls. If any animal seeks a retreat under its lurid shade, it is the blood-coloured centipede, or the toad crawling over the humid and rotten ground. By these, or similar signs, Nature scares man away from noxious situations.

If she intends to give him at sea the signal of an impending tempest, as she has opposed in ferocious animals the fiery glare of the eye to the thickness of the eyebrows; their stripes and spots to the yellow colour of their skin, and the stillness of their movements to the thundering noise of their voices; she collects also in the sky and on the deep many clashing oppositions, which in concert announce approaching devastation. Dark clouds sweep through the air in the most horrible forms; here and there the pale fire of lightning bursts from the gloom; the noise of thunder from their dark womb resounds like the roaring of the celestial lion. The orb of day, scarcely visible through their rainy and multiplied veils, emits long radiations of a wan and sickly light. The leaden surface of the ocean sinks and swells into broad and white foaming surges. A hollow murmuring noise seems to issue from

those threatening billows. The black shallows whiten at a distance, with horrid sounds, from time to time interrupted by ominous silence. The sea, which alternately covers and reveals them, displays to the light of day their cavernous foundations. The Norwegian lom perches on one of their craggy points, uttering lamentable cries, like those of a drowning man. The sea ospray rises aloft in the air, and not daring to commit herself to the impetuosity of the winds, struggles with a plaintive screaming voice against the tempest, which bends back her stubborn wings. The black procellaria flutters about, grazing the foam of the waves, and seeks, in the cavity of their moving valleys, a shelter from the fury of the winds. If this small and feeble bird happens to perceive a ship in the midst of the sea, he flees for refuge along her side, and as a reward for the protection which he solicits, announces the tempest to the mariner before it overtakes him.

Nature uniformly proportions the signs of destruction to the magnitude of the danger. Every storm has its peculiar character in particular latitudes; those of summer are unlike those of winter; and widely different is the spectacle of an enraged sea, shining at noonday under the rays of the sun, and that of the same sea illuminated, at the midnight hour, by a single flash of lightning. Nature frequently accompanies the signs of the disorder which agitates the ocean, with agreeable expressions of harmony, that serve only to redouble the horror of the scene. Tempests, off the Capes of Good Hope and Horn, in the full blaze of light, are inexpressibly tremendous. The soul stands aghast at sight of the indications of tranquillity converted into those of storm; the unclouded azure in the heavens, and the rainbow playing upon the waves. The principles of harmony appear to be completely inverted. Nature seems to have put on a character of perfidiousness, and to conceal fury under the mask of benevolence.

If Nature, by introducing certain agreeable harmonies into scenes of discord, redoubles their confusion, she frequently throws in a discordance in concerts the most delightful, for the purpose of heightening the pleasurable effect. She employs offensive contrasts only to chase man from some perilous situation. In all the rest of her works she employs only harmonic mediums.

In our harvest fields we find that charming shade of green, produced by the alliance of the two primordial opposite colours, the yellow and the blue. This harmonic colour decomposes itself by another metamorphosis, toward the harvest time, into the three primordial colours, namely, the yellow of the ripening corn, the red of the wild poppy, and the azure of the bluebottle. These two plants are intermingled with the standing corn, all over Europe, let the farmer take what pains he may in sifting the grain and weeding his field. They form, by their harmony, a rich purple tint, which rises admirably on the yellow ground of the corn-field.

The corn-plant itself has relations innumerable with the wants of man and domestic animals. It is neither too high nor too low for his stature, but is easily handled and reaped. It furnishes grain to his poultry, bran to his pigs, forage and litter to his black cattle and horses. Every plant in his corn-field possesses virtues particularly adapted to the maladies incident to the condition of the labouring man. The poppy cures the pleurisy, procures sleep, stops hemorrhages and spitting of blood. The bluebottle is diuretic, vulnerary, cordial, and cooling, an antidote to the stings of venomous insects, and a remedy for inflammation of the eyes. Thus the husbandman finds all needful pharmacy in the field which he cultivates.

The culture of this staff of life discloses to man many other agreeable concerts with his fleeting existence. The direction of its shadow informs him of the hour of the day; from its growth he learns the rapid flight of the seasons; he reckons the flux of his own fugitive years, by the succession of the guiltless harvests he has reaped. He is haunted with no apprehension, like the inhabitants of great cities, of conjugal infidelity, or a too numerous posterity. His labours are always surpassed by the benefits of Nature. When the sun gets to the sign of Virgo, he summons his kindred, invites his neighbours, and leads them, at dawn of day, with sickle in hand, to the ripened field. His heart exults with joy as he binds up the swelling sheaves, while his children dance around him, crowned with garlands of bluebottles and wild poppies. The harmless play recalls to his memory the amusements of his own early days, and of his virtuous ancestors, whom he hopes at length to rejoin in a better and happier world. The sight of his copious harvest demonstrates that there is a GOD; and every return of that joyous season, bringing to his recollection the delicious eras of his past existence, inspires him with gratitude to the Great Being who has united the transient society of men by an eternal chain of blessings.

Ye flowery meadows, ye majestic, murmuring forests, ye mossy fountains, ye desert rocks, frequented by the dove alone, ye enchanting solitudes, which charm by your ineffable concerts; happy is the man who shall be permitted to unveil your hidden beauties! but happier far is he who shall have it in his power calmly to enjoy them in the inheritance of his forefathers!

## OF SOME OTHER LAWS OF NATURE, HITHERTO IMPERFECTLY KNOWN

There are, besides those which have been mentioned, some physical laws not hitherto profoundly investigated, though we have had a glimmering of them, and made them the frequent subject of conversation. Such is the law of attraction. It has been acknowledged in the planets, and in some metals, as in iron and the loadstone, in gold and mercury. I believe attraction to be common to all metals, and even fossils; but that it acts in each in particular circumstances, not yet ascertained. Each of the metals, perhaps, may incline toward different points of the earth, as magnetic iron does to the north. It would probably be necessary to ascertain this by experiment, that each metal should be armed with its proper attraction; which takes place when united to its contrary.

How do we know whether a needle of gold, rubbed with mercury, might not have attractive poles, as a needle of steel has when rubbed with the magnet? Thus prepared, it might possibly indicate the places which contain mines of that rich metal. Perhaps it might determine the general points of direction to the east or west, which might indicate the longitudes more steadily than the variations of the magnetic needle.

If there be a point at the pole, on which the globe revolves, there may possibly be one under the equator, from which commenced, and which may have determined, its motion of rotation. It is, however, certain there exist many of those particular points of attraction, scattered over the earth, such as the matrices which renovate the mines of metals, by attracting to themselves the metallic parts dispersed in the elements. Metals have besides other attractions; and I consider these as the principal matrices of all fossil bodies, and as the ever active means employed by Nature for repairing the mountains and rocks, which the action of the other elements, but especially the injudicious labours of men, have an incessant tendency to impair.

I shall here remark, on the subject of mines of gold, that they are placed, as well as those of all metals, not only on the most elevated part of continents, but in icy mountains. The gold mines of Peru and Chili are situated in the Cordilleras; those of Mexico in the vicinity of Mount St. Martha, covered with snow all the year round. It may be said that all rivers which wash down particles of gold along their shores, issue from icy mountains.

To this it may be objected, that gold was formerly found in Europe, in places where there were no icy mountains; nay, that some has been picked up on the surface of the ground, as in Brazil. But, if I might venture to hazard a conjecture respecting the origin of this gold, I believe it to have proceeded from the total effusion of the ices of the mountains at the time of the deluge, when vegetable earths and minerals were forced along other countries, where their fragments were found, in the earlier ages, in grains, and even in larger masses.

It would appear as if Nature, by burying the foci of this rich metal under the snows, had intended to fence it with ramparts still more inaccessible than the flinty bosom of the rock, lest the undismayed ardour of human avarice should at length destroy them entirely. It has become the most powerful bond of society, the perpetual object of a life so rapidly hurrying to a close. Alas! were Nature to inflict condign punishment on this insatiable thirst in the nations of Europe, for a metal so useless as a real necessary of human life, she has only to change the territory of some one of them into gold. Every other nation would instantly flock thither, and soon exterminate its wretched inhabitants. The Peruvians and Mexicans have had the dreadful experience of this.

There are metals not so highly prized, but much more useful. The peaks and crests of the mountains are filled with iron or copper, intermingled with a vitreous body of granite or of natural crystal, which attracts the rains and stormy clouds. Seamen have seen, a thousand times, those peaks and crests covered with a cloudy cap concealing them from view, without once suspecting the cause of this appearance; and philosophers, deducing their conclusions from charts, have taken those rocky protuberances for wrecks of a primitive earth, without troubling themselves about their effects. They ought to have observed that those metallic pyramids and crests, as well as most mines of iron and copper, are to be found in elevated situations, and at the source of rivers, of which they are the primitive causes by their attractions. Their general inattention to this subject is thus only to be accounted for; seamen observe, and do not reason; and the learned reason, but do not observe. Undoubtedly, had the experience of the one been united to the sagacity of the other, prodigies of discovery might have been expected.

I am persuaded we might acquire the art of forming, by electric stones, artificial fountains, which should attract the rainy clouds in dry situations, as chains and rods of iron attract thunder-clouds. It is true princes must be at the expense of such costly and useful experiments; but they would immortalize their memory. The Pharaohs, who

built the pyramids of Egypt, would not have drawn upon themselves the curses of their subjects, as Pliny assures us they did, for their enormous and useless labours, had they reared, amidst the sands of Upper Egypt, an electrical pyramid, which might there have formed an artificial fountain. The Arab who should resort thither at this day to quench his thirst, would still pronounce benedictions on names which, if we may believe the great Natural Historian, had already sunk into oblivion, and ceased to be mentioned in his time.

For my own part, I think that several metals might be proper for producing similar effects. A Prussian officer of rank informed me that having remarked vapours to be attracted by lead, he had employed it for drying the atmosphere of a powder-magazine, constructed under ground, in the throat of a bastion, but useless from its humidity. He ordered the concave ceiling of the arch to be lined with lead, where the gunpowder was deposited in barrels; the vapours of the vault collected in great drops, on the leaden roof, run off in streamlets along the sides, and left the gunpowder barrels perfectly dry.

There are many other harmonic laws as yet undiscovered; as the proportions of magnitudes, and durations of existence, of beings vegetative and sensible, which differ exceedingly, though their nutriment and climates may be the same. Man, while yet a youth, sees his dog die of old age; and also the sheep he fondled when a lamb. Though the former lived at his own table, and the latter on the herbage of his meadow, neither the fidelity of the one, nor the temperance of the other, could prolong their days; whereas animals which live only on carrion and garbage live for ages, as the crow. In such researches we must follow the spirit of conformity, the basis of our own, and of the reason of Nature.

By consulting this we shall find, that if such a carnivorous animal, the crow for instance, is long-lived, it is because his services and experience are long necessary for purifying the earth. If an innocent animal lives but a little while, it is because his flesh and skin are necessary to man. If the domestic dog, by his death, diffuses sorrow over the children of the family, Nature undoubtedly intended to give them, in the loss of an animal so worthy the affections and regret of man, the first experience of the privations with which human life is to be exercised.

The duration of an animal's life is sometimes proportioned to that of the vegetable on which it feeds. A multitude of caterpillars are born and die with the leaves by which their transitory existence is supported. There are insects whose being is limited to five hours; such is the ephemera. But as Nature has made nothing in vain, it is not credible that she should have created momentary lives, and beings infinitely minute, to fill up imaginary chains of existence.

The aversions and instincts of animals emanate from laws of a superior order, into which we shall never be able to penetrate; but supposing those intimate conformities to elude our researches, they must be referred to the general conformity of beings, and especially to that of man. There is nothing so luminous in the study of Nature, as to refer every thing that exists to the goodness of GOD, and to the demands of humanity. This method of viewing objects not only discovers to us a multitude of unknown laws, but it sets bounds to those we do know, and believe to be universal.

If Nature were governed by the laws of attraction only, every thing would be in a state of rest. Bodies, tending toward one common centre, would there accumulate, and arrange themselves round it in the ratio of their gravity. The substances which compose the globe would be so much heavier as they approached the centre, and those at the surface would all be reduced to a level. The bason of the seas would be choked with the wrecks of the land; and this magnificent architecture, formed of harmonies so various, would soon become an aquatic globe entirely. All bodies, hurled downward by one common precipitation, would be condemned to an everlasting immobility.

On the other hand, if the law of projection employed for explaining the motions of the heavenly bodies, on the supposition of their tendency to fly off in the tangent of a curve; if, I say, this law predominated, all bodies not actually adherent to the earth would be hurled from it, like stones from a sling: our globe itself, subjected to this law, would fly off from the sun never to return. It would sometimes traverse the spaces of immensity, where no star would be perceptible for many ages; sometimes, swinging through regions where chance might have collected the matrices of creation, it might pass along amidst the elementary parts of suns, aggregated by the central laws of attraction, or scattered about in sparks and rays, by those of projection.

But supposing these two contrary forces combined happily enough in favour of the globe, to fix it, with its vortex, in a corner of the firmament, where they should act without destroying themselves, it would present its equator to the sun as regularly as it describes its annual course round him. From those two constant motions never could be produced that other motion so varied, by which it daily inclines one of its poles toward the sun, till its



axis has formed, on the plane of its annual circle, an angle of twenty–three degrees and a half; then that other retrograde motion, by which it presents to him, with equal regularity, the opposite pole. Far from presenting to him alternately its poles, in order that his fertilizing heat may by turns melt their ices, it would regain them buried in eternal night and winter, with a part of the temperate zones, whereas the rest of its circumference would be burned up by the too constant fires of the tropics.

But if we suppose a third variable law, which gives to the earth the movement that produces the seasons, and a fourth, which gives it the diurnal motion of rotation round itself; and that no one of these laws, so opposite, should ever surpass the others, and, at least, determine it to obey but one single impulsion; it would be impossible to affirm they had determined the forms and movements of the bodies on its surface. First, the force of projection, or centrifugal, would not have left upon it any one detached body. On the other hand, the force of attraction, or gravity, would not have permitted the mountains to rise, and still less the metals, the heaviest part of them, to be placed at their summits, where they are usually found.

Vegetables themselves, entirely subjected to the action of the elements, have configurations diversified without end. But how comes it that animals have the principles of so many motions, so entirely different? Wherefore has not gravity nailed them down to the surface of the earth? They ought to crawl along it at most. How comes it to pass, that the laws which regulate the course of the stars, those laws whose influence has, in modern times, been made to extend even to the operations of the human soul, should permit the birds to rise into the air and fly as they please, notwithstanding the united powers of the attraction and projection of the globe?

It is conformity, adaptation to use, which has regulated those laws, and generalized or suspended their effects subordinate to the necessities of sensible beings. Though Nature employs an infinity of means, she permits man to know only the end she has in view. Her works are subjected to rapid dissolutions; but she always suffers him to perceive the immortal consistency of her plans. It is on this she wishes to fix his heart and mind. She aims not at rendering man ingenious and proud, but good and happy. She universally mitigates necessary evils; and multiplies blessings often superfluous. In her harmonies, formed of contraries, she has opposed the empire of death to life; but life endures for an age, death only an instant. She allows man to enjoy the expansions of beings, so delightful to behold; but conceals from him, with a precaution truly maternal, their transient state of dissolution.

If an animal dies, if plants are decomposed in a morass, putrid emanations, and reptiles of a disgusting form, chase us away from them. An infinite number of secondary beings are created for the purpose of hastening forward the decompositions. If cavernous mountains and rocks present appearances of ruin; owls, birds of prey, and ferocious animals, keep us at a distance. Nature drives far from us the spectacles and the ministers of destruction, and allures us to her harmonies.

From a profusion of this unbounded benevolence of Nature, the action of the sun is multiplied wherever it was most necessary, and mitigated where it might have been hurtful. When the orb of day has left us, the moon appears to reflect his light, with varieties in her phases which have relations, hitherto unknown, to a great number of species of animals, and especially of fishes, which travel only in the night–time, at the epochas which she indicates to them. The farther the sun withdraws from one pole, the more are his rays refracted there; but when he has entirely abandoned it, then his light is supplied in a most wonderful manner. First, the moon, by a movement altogether incomprehensible, replaces him there, and appears perpetually above the horizon, as was observed in 1596, at Nova Zembla, by the unfortunate Dutchmen who wintered there, in the 76th degree of north latitude.

In those dreadful climates Nature multiplies her resources, to bestow on sensible beings, and even on animals, the benefits of light and heat. When the season returns, the sun reappears there before his natural term, as the Dutch mariners saw him to their astonishment above the horizon of Nova Zembla, on the 24th of January, fifteen days sooner than they expected him. This return, so much earlier than their hopes, filled them with joy, and disconcerted the calculations of their intelligent pilot, the unfortunate Barents.

Naturalists consider colours as accidents. But if we attend to the general uses for which Nature employs them, we shall be persuaded there is not, even on rocks, a single shade impressed without a meaning and a purpose. Let us observe the principal effects of the two extreme colours, white and black, with relation to the light. Of all colours, white best reflects the rays of the sun, because it sends them back without any tint, as pure as it receives them; black, on the contrary, is the least adapted to their reflection, because it absorbs them. Hence gardeners whiten the walls against which their espaliers are planted, to accelerate the maturity of their fruits, by the reverberation of the sun's rays; and opticians blacken the walls of the *camera–obscura*, that their reflexes may not

## Studies of Nature

disturb the luminous picture on the tablet.

Nature frequently employs contrary means for producing the same effect. She makes glass with fire; she makes it too with water, crystal for instance: farther, she produces it from animal organization, such as certain transparent shell—fish. She forms the diamond by a process to us utterly unknown. Conclude now, because a body has been vitrified, it must certainly be by the effect of fire, and rear on this perception the system of the universe! The utmost that we can do is to catch some harmonic instants in the existence of beings. That which is vitrifiable becomes calcareous, and what is calcareous changes into glass, by the action of the same fire. Deduce, then, from these simple modifications of the fossil kingdom, invariable characters for determining the general classes of it!

On the other hand, Nature frequently employs the same means for producing effects directly contrary. For example, to increase the heat over the lands of the north, and to mitigate it over those of the south, she makes use of opposite colours; she produces in both the same effects, by covering the face of both with rocks. These rocks are essentially necessary to vegetation.

Nature proposes to herself, universally, only the accommodation of beings possessed of sensibility. This remark is all—important in the study of her works; otherwise, from the similitude which she employs, or the exceptions from them, we might be tempted to doubt of the consistency of her laws, instead of ascribing the majestic obscurity which pervades them to the multiplicity of her resources, and to the profundity of our own ignorance.

This law of adaptation and conformity has been the source of all our discoveries. It was this which wafted Columbus to America; because, as Herrera tells us, *Note: Herrera's History of the West—Indies, book i. chap. 2.* he thought, contrary to the opinion of the ancients, that the whole five zones must be inhabited, as GOD had not formed the earth to be a desert. This law regulates our ideas respecting objects absolutely beyond the reach of our examination. By means of it, though ignorant whether there may be men in the planets, we are assured there must be eyes, because there is light. It has awakened a sense of justice in the heart of every man, informing him there is another order of things after this life. This law, in a word, is the most irresistible proof of the existence of GOD; for amidst such a multitude of adaptations, so ingenious and so numerous, that every day is presenting some with all the merit of novelty, the first of all, which is the DEITY, must undoubtedly exist, as he is the general conformity of all particular conformities.

How often, on coming out of the King's magnificent Cabinet of Natural History, do we stop mechanically to look at a gardener digging a hole in the field, or a carpenter hewing a piece of timber! It looks as if we expected some new harmony to start out of the bosom of the earth, or burst from the side of a lump of oak. We set no value on those we have just been enjoying, unless they lead us forward to others we do not know as yet. But were the complete history given us of the stars of the firmament, and the invisible planets which encircle them, we should perceive a multitude of ineffable plans of intelligence and goodness, after which the heart would continue fondly to sigh: its last and only end is the DIVINITY himself.

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