



INTRODUCTORY LECTURE

DELIVERED BY

THE HON. JOHN ROLPH,

BEFORE

The Medical Department

OF THE

UNIVERSITY OF VICTORIA COLLEGE,

SEPTEMBER. 1861-'62.

DEDICATED TO HIS PRESENT AND FORMER PUPILS, AND  
TO HIS FRIENDS IN ROCHESTER, BEFORE WHOM  
IT WAS FIRST DELIVERED IN 1839.

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Toronto:

PRINTED AT THE "GUARDIAN" STEAM PRESS,  
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## INTRODUCTORY LECTURE.

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GENTLEMEN,—

In the Introductory Lecture it is my custom to indulge in some subject, not only in its tendencies improving to you, but also more or less of general interest to your friends, who may have accompanied you to the College and introduced you to it.

Last season we took a survey of animated nature, and considered the laws of life as common to all living things.

On the one hand, it is a high intellectual gratification to study the laws of matter as displayed on the earth; and our emotions rise and our wonder increases, as we follow the same laws into the infinite space above and around us; as we measure the orbits and delineate the motions and predict the varying places of the planets, and as we solve the problem (full of threatening issues) of their corrected perturbations.

On the other hand, when we have grasped these physical truths and demonstrations thus displayed in awful grandeur (seemingly barren of results touching the relations of man) and again turn to our own sphere, we are calmed and refreshed and gladdened with the contemplation of the face of animated nature. We find ourselves, as it were, at home, in our own world, with everything fitted up in a style that is unique, and with living supplies that are beautiful and bounteous.

With all this the physical world, so replete with its own wonders, is made to harmonize. The inorganic and the organic departments of nature are found, in the most diversified particulars adapted to each other, and both of them wonderfully so to man. The earth, thus taken as a whole, is seen to comprehend a vast system of independent, yet correlative laws in the material and immaterial kingdoms, all ministering to the present condition and wants of man.

The question arises—are all these local physical laws, all these vital phenomena, all these manifestations of contrivance and wisdom, of adaptation and benevolence, in behalf of an intelligent creation, confined to the earth and to terrestrial man? Or may we stretch our views into the heavens, and there find the same display? May not our world be a miniature of vaster worlds, affording a like theatre for brighter creative displays, and for similar and loftier beings?

Let us spend the evening in the consideration of such facts, respecting the nature and constitution of the heavenly bodies, as will enable us in some degree to judge of the probability that they are worlds fitted for enjoyment like our own, and so constituted as to accommodate an intelligent creation, perhaps, like man.

Such inquiries must not be excluded, though they extend beyond the limits of earthly scenes, and soar towards regions, which philosophy must ever visit and contemplate with humility and awe—Considering matter as the object of creation, often gifted with so much beauty, and subservient to such various usefulness; considering the sublime truth that there will be a resurrection of the body, and a new heavens and a new earth of substantial constituents, we feel, that thus exalted in its present relations and future destinies, it becomes a noble study. Under such circumstances, we may well feel an augmented interest in reflecting, not only upon the phenomena it displays here below, for the present state of man, but in tracing it as far as we can, through the infinite empire of the universe, over which man in the future may be destined to occupy an eternity to wonder and explore.

Let me explain to you the kind of argument about to be pursued; and the following observations are offered as they were given in Rochester in 1839 and in several succeeding years in that and in this city:

We can only reason respecting other spheres from what we know of our own. In the one appropriated to our present existence, we perceive a certain economy suited to the animal and vegetable kingdoms. Indeed all the laws and agencies around are made subservient, in some way or other, to living things. The air and the water, the earth and its treasures, are all specially endowed to be tributary to animated nature. The whole framework, as well in its particular parts, as in its aggregate construction, is intended to meet the condition, supply the wants and minister to the present happiness of man.

It is this harmonious complication, this wise adjustment of everything, which dignifies our sublunary habitation with the title *world*. In its primitive state it was a chaos, from which it was reduced by the diffusion of light, the constitution of the atmosphere and the other revealed exercises of creative power. But take away light and air, and the agents blended with them, and all living things would become extinct, and this globe be wrapt in utter darkness and

universal frost. It was the superaddition of the active elements which has reduced the chaos to order and beauty, and rendered it fit and habitable for man. The elements of nature are the means; the well-being of man is the end. The theatre of their display is the world—thus provided for his present state of transition.

Our minds are so constituted, that with causes we associate the effects known to be connected with them. When we see any means prepared by an intelligent agent, we look for the ends to which they are conducive. Hence the admission in any given case, of an order of things conducive to sentient beings, furnishes a presumption of their present or prospective co-existence. When a world is built and furnished, we presume it is, or is to be inhabited.

From this brief illustration of the argument, you perceive that our chief inquiry must be directed to the following question:—do the heavenly bodies display anything like the same adaptations for an intelligent creation, perhaps for the future of man, as we see in the world about us? The answer to this question requires us to look into these resemblances and adaptations in detail.

Our immeasurable distance from nearly all the stars, precludes the possibility of our acquiring an intimate and very particular knowledge of their physical condition; but some of those in our own system are within the range of a more satisfactory, though still limited inspection. Of the more remote, we can only judge by the analogy of those comparatively within our reach, in the same manner as we judge of all by the world in which we live.

By making a general comparison of the stars together, they claim a striking affinity from the sameness of their aspect, one chiefly differing from another in brilliancy. What might, at first view, suggest an exception, as the milky way, is found to be regions of stars, the remoteness of which wraps them in the obscurity of their own evanescent splendour. A survey with the naked eye presents *some* of the heavenly bodies, and a survey with powerful telescopes presents *all* of them, (not too remote for such comparison) with a seeming diameter or a luminous form; all exhibiting a general analogy and bespeaking a conformity to one vast system of things, indicative of a common origin and purpose.

The countless stars, the general analogy of which we are considering, are connected together by a constant interchange of light,—an interchange which demonstrates the existence of certain material properties common to them all. The rays are of the same nature



from the fixed stars, as those from our sun and his attending planets, and from the scenery about us. They move with the same velocity; as is discovered by comparing the aberration of the fixed stars with the eclipses of Jupiter's satellites. They are refracted and reflected according to the same laws, and they consist of the same colors. No opinion, therefore, can be formed of the solar beams, that is not equally applicable to those from the rest of the heavenly bodies. Light, therefore, forms a connecting medium between the earth and the universe.

This connection is evidence of the materiality of those, especially, which transmit *borrowed* light; for we know from the optical facts about us, that it is reflected according to the strictest laws of mechanical philosophy. When, therefore, we find the planets by their reaction against the impinging ray, throwing it into space through millions of miles, we necessarily regard it as the result of their solidity, hardness, and opacity, as much so as we should (under the same circumstances,) predicate those properties of any terrestrial objects. Hence we see a solar eclipse by the interposition of the moon, just as the moon presents the same phenomenon by the intervention of the earth between it and the sun. It is from this impenetrability to light, that we discover the transit of Venus and Mercury over the solar disc, observe the occultations of Jupiter's satellites, and trace the shadows of the lunar mountains and of Saturn's ring. Hence, the shadows of some of the heavenly bodies are sometimes observed on Jupiter's disc, and his shadow frequently falls on them. Hence portions of the waning moon, screened from the direct solar radiance, are dimly seen by means of the sun's light first thrown upon the earth, and by it reflected upon the moon, and by the moon sent back to us.

Now celestial spheres thus cognizable by our senses, and endowed with opacity to obstruct and solidity to re-act on the light, must have a close affinity to terrestrial matter.

THE ATTRACTION OF GRAVITATION is another link which seems to be co-extensive with the heavenly bodies, and to be a property common to them all. Newton observed, that the same terrestrial force which acted on a stone thrown into the air, acts upon the moon in her orbital motion about the earth. And the moon, faithful to her material identity, acts visibly upon the aqueous masses of the ocean. The action is reciprocal, thereby proving the same material nature. Further observation proved that the same law pervades the

solar system. Indeed, we are led step by step, to reach the stupendous, but simple truth, that the universe is governed by our most familiar laws of matter and motion; laws as unchangeable and universal as their author.

Thus while we measure the influence of terrestrial mountains on the plummet, we observe the like reciprocal influence of planet upon planet, producing those mutual disturbances and seeming anomalies, which are caused by gravitation and also explained by it. But to admit the existence of the same law of gravity in terrestrial and celestial bodies, both great and small, and to admit of their action and reaction on each other, is to admit their material identity. We must, therefore, regard the earth and her kindred spheres as substantially alike, however differing in kind, and as yielding the like foundations for a world.

This universality of gravity, like the ubiquity of the Supreme, presents to the mind one of the vastest and sublimest conceptions within the compass of human thought. Wherever we go, yea, wherever our thoughts can reach, this all pervading power extends its illimitable influence. We acknowledge its presence when we truckle a pebble along the ground, or trace the mariner's lead, descending the abyss. We feel it in the heaving of the ocean, and recognize from it all the various and modified motions which the world affords. If we leave the earth and wander wherever the imagination may choose to roam, through boundless space, we find at every step, as we travel from planet to planet, and from sphere to sphere, this mysterious power so universally diffused as not to leave a point of space or a solitary atom of matter, unconscious, as it were, of its presence and dominion. It is everywhere present and unceasingly active. With this great truth proved to us to demonstration, can we fail to recognize the greater truth (which this glimpse of the glory of creation was partly intended to illustrate,) that He who called all these things into being and upholds them by the word of His power, is alike himself everywhere present and unceasingly active. The ancient psalmist must have had something to supply the place of the illuminations of modern science, when without a knowledge of this all-pervading power, he thus sublimely delineated the corresponding attribute of the great author of nature—"Thou art about my path and about my bed, and spiest out all my ways. Whither, then, can I go from thy presence? If I climb up into the heavens thou art there—if I go down into the bottomless pit, thou art there also. If I take wings

of the morning and remain in the uttermost part of the sea, even there also shalt thy hand lead me and thy right hand shall hold me.' The law and the law-giver are co-extensive.

Bodies thus constantly acted on by gravity cannot possibly continue at rest. Motion, therefore, must be another condition of resemblance. The whole starry canopy above and around us, seems to be necessarily a busy scene. A humble knowledge of physical science is, happily, enough to enable us to comprehend that our solar system is sustained by the conjoint operation of gravity and periodical motion. This system, however, is but an epitome of the other systems occupying the heavenly vault. Were they, indeed, gravitating towards each other without the intervention of projectile forces, they would necessarily consolidate and destroy the whole fabric of creation. Hence the more astronomers become acquainted with the stars, the more does the evidence of their periodical motion accumulate. Changes have been noticed in the relative position of the fixed stars. Dr. Halley found upon comparing the observations of Aristillus and of others with those of his own day, that several of the brighter stars had changed their situation remarkably. Aldebaran has moved to the south about 35'; Sirius, 42', and Arcturus 33'. The eastern shoulder of Orion has moved northward about 6'. Modern observations show that Arcturus has moved in 78 years upwards of 3', and Sirius about 2' in a century. The bright star in Aquila has changed its latitude 36' since the time of Ptolemy and 3' since the time of Tycho. Most of the stars have moved towards the south, those of the northern quarters seem to widen their relative position, while those in the south seem to contract their distances. Herschel suggested that a comparison of all these changes indicates a motion of our sun with his system towards the constellation Hercules.

Remarkable periodical changes of *brilliance* also afford evidence of periodical motion, the full extent of which ages of observation may illustrate, but not exactly define. Thus many stars, ordinarily presenting a certain magnitude, are found to suffer an apparent reduction for a certain time, and then *gradually* resume their ordinary appearance; and these changes take place so regularly and successively as to enable astronomers to determine the periods of their revolution. Some have

a period of 3 or 400 days, others have periods of as many years. There is a double star in the constellation Syra, which is said to exhibit very singular appearances ; the southernmost some times accompanied by more little stars. Gorchikoff, of Berlin gives a positive opinion that it has planets moving around it. Sir John Herschell gives a short list of stars, the times of which have been thus ascertained ; and Mr. Pigot has given a list, which has been, and continues to be, augmented, of above 50, the periodical changes of which are observable, without undertaking, however, to determine their periods with precision. All are in motion. Of myriads of other stars we at present know nothing but the light by which they shine ; but that *very light* is the signal of their being, and the declaration of their kindred.

It is impossible to conceive materials in the heavens possessing these luminous, gravitating and moving properties, unassociated with the attraction of cohesion to keep together and regulate the component parts. It is by this power that the bodies around us acquire and sustain their form ; and wherever matter is, it must carry its essential properties with it. Philosophers define it to be " a substance the object of our senses in which are always united the following properties, viz., extension, figure, solidity, mobility, divisibility, inactivity or vis inertia and gravity." Now when we behold the stars at immense distances, some presenting luminous points and others measurable discs, with spherical forms of a silvery hue, and obviously susceptible of division into parts, and so acting and reacting on each other as to display in their motions obedience to the law of gravitation and vis inertia, they may be said to exhibit the plainest indications of every property comprised in the above definition. It is demonstration of their material analogy to the earth ; a demonstration which could only be challenged by the examination of a portion of them by the senses ; and even this degree of evidence seems to be within our reach.

LIGHT is not a mere fugitive visitor that touches the sphere merely to recoil from it, without leaving an atom or a vestige of itself behind ; but it has its terrestrial habitudes, is incorporated with matter, and has its physical laws and chemical relations. In receiving it, therefore, from other worlds, we receive an ingredient of our own.

It is called radiant, from its disposition, when set free, to extend itself into space. From its possessing this property, it might *a priori* be expected (if other worlds are constituted in any general way like our own) that this radiant, fugitive and excursive matter would visit us. The fixed stars bear their testimony; they reveal to us their rich endowment with this wondrous element, and tell us by every twinkle the story of their ancient birth. Can you expect to receive here a fairer specimen of sidereal matter? You would yield your assent upon being overwhelmed with a flood of planetary water, which the law of gravity alone restrains from inundating space; and why not believe a flood of light, privileged to be a friendly emigrant to us from every sister world, telling, wherever it goes, the unity of the creation and of the Creator?

Some may be disposed to go a step further. The singular metallic masses found in various parts of the world, are supposed by many to be of lunar origin. They have fallen from regions above; and the chemist, detecting cobalt and chromium with iron in them all, declares, that in no part of the world is iron found in such combination. The remarkable similarity among the masses themselves, wheresoever found, and their dissimilarity to any terrestrial masses, point to a foreign origin. Lunar volcanoes projecting such bodies with volcanic force into space, are said to have pelted us with these meteors. A body thrown from the moon with a force that would give it a velocity about three times greater than that of a ball upon first issuing from a cannon, in the direction of a line passing through the moon and the earth, would reach the latter in about two days. "This origin, says Professor Brand (2nd London edition, 1821,) is neither absurd nor impossible."

On the 5th of April, 1825, there fell to the earth from the sky a body of iron 70 cubic feet in dimensions, and weighing several tons. Another instance of stupendous magnitude occurred near the Cape of Good Hope on the 15th October, 1839. Numerous masses fell, and according to one statement, were scattered in one line of direction throughout a space of 150 miles. The explosion was louder and more appalling than the strongest artillery, causing the air to vibrate in every direction for 80 miles. The following is an analysis of the matter:—

Water.....	6.50	Alumina .....	5.22
Sulphur.....	4.24	Lime .....	1.64
Silica .....	28.90	Oxide of Nickel .....	0.84
Protoxide of Iron .....	33.32	Do. of Chromium.....	0.70
Magnesia .....	19.20	Cobalt and Soda.....	Traces of.

The following is given as an analysis of the meteoric iron from Altai, "It falls to pieces in water to an earth, which smells of clay and hay, and contains carbon in an unknown union. Upon analysis it was found to be olivine, containing ferrosulphate of nickel and of tin. The magnet took up the compound oxide of iron in black grains, along with which the microscope detected flitters of metallic iron. Water brought out sulphate of nickel. In a dry distillation were developed carbonic acid gas and water together, with a black gray sublimate, but no burnt oil, no carbureted hydrogen, in a word, the carboniferous substance was not of the same nature as the soil of our earth. There were, besides, a carbonate and black soot. The sublimate, heated in oxygen gas, gave no trace of carbonic acid or water, and changed to a white uncrystallized volatile body, soluble in water, which did not become acid in the process, and was not precipitated by nitrate of silver." What this body is, the analyst professes not to know, and asks, "Is it an elementary body not originally pertaining to our planet?" It appears that this meteoric matter has yielded a third of the elementary bodies we are acquainted with in the earth, viz: oxygen, hydrogen, sulphur, phosphorus, carbon, silica, chrome, potassium, sodium, calcium, magnesium, aluminum, iron, magnesia, nickel, cobalt, tin and copper.

Many of the above substances we find connected with organization and life; and this fact points to the existence of vitality in some form or other in the foreign regions from which we are thus visited. Upon this point, indeed, there is further presumptive evidence. Meteoric paper, so called from its shape, fell from the sky in Courland, in 1686; and upon being subjected to modern examination, it is found to be composed of conferva and infusoria,—the very same animalculous remains, which constitute, according to recent discovery, vast masses of terrestrial rock and slate. Now the source of these meteoric bodies (beyond doubt foreign to our planet) does not affect the inference; for whether they are of lunar, planetary, or stellar origin, their visitation of our sphere indicates the extension beyond it of terrestrial matter, life, and organization.

Consider the almost incalculable energy of such causes in the earth, as a means of measuring their probable efficiency in the moon.

Accredited history records the elevation of Islands from the bottom of the sea. One made its appearance near Unalashka in May 1796, which not only remained, but up to 1806 had in-

creased in circumference as well as the peak in height. It required six hours to row around it, and rather more than five hours to ascend in a direct line from the shore to the summit of the peak.

Similar examples of elevation on land, though much more rare, have occurred in historical times. Monte Nuovo, near Puzzuoli, in 1520, rose to a height of 820 feet in about four weeks. Monte Jovullo rose to a height of 1480 feet above the plain in one day on the 29th September, 1759.

The most remarkable instance of the elevation of great tracts of country of late years, is that which took place in Chili on the 19th of November, 1822. After violent earthquakes, which were felt through an extent of country 1400 English miles in length, and during which it appeared as if the soil was suddenly raised and immediately sunk again, and as if the earth had an undulating motion from north to south, accompanied by a noise like the rushing of steam, the whole coast, for an extent of about 100 English miles, actually rose between three and four feet within 24 hours. Mrs. Graham, the intelligent narrator of these facts, (not unconfirmed by others,) further states that there were evident marks of this coast having been raised in a similar manner by earthquakes in former times, and, indeed, to a height of 50 feet above the level of the sea.

It would be idle to offer a calculation of the projectile force exercised in these, to us, stupendous operations, because they intuitively indicate a power of overwhelming sufficiency for the phenomena under consideration, assuming the correctness of the opinion expressed by Professor Brande.

Besides these terrestrial and celestial conformities, there is occasionally displayed in the heavenly bodies, a subjection to internal physical changes derangement and ruin, so similar to what our earth records, as at once to suggest the thought that we are only a part of a perishable whole. There may be time for a few comparisons.

Our earth has been the frequent theatre of vast and transcendent convulsions. During the deluge it must have been invisible from other spheres; and to this day the catastrophe is indelibly recorded, as well in the Bible as in geological hieroglyphics.

Analogous changes now and then seem to shroud other worlds in a manner and from causes, which, though impenetrable by man, are probably analogous to those around us.

The moon, viewed through adequate telescopes, offers a surface with volcanic craters of prodigious magnitude. Some of them give evidence of several successive eruptions, each destroying in part the crater of a former eruption. The precipitous appearance of the brim of those craters is precisely such as would be produced by the ejection of craggy matter; thus rivaling our *Ætna* and *Vesuvius*.

The star Omicron, in the constellation *Cetus*, first noticed by *Fabricius* in 1596, with a period of 354 days, became invisible during the four years, between October 1672 and December 1676.

And the star *X cygni*, is stated by *Cassena* to have been scarcely visible throughout the years 1699, 1700, and 1701, at those times when it ought to have been most brilliant. In November, 1572, *Tocho Brache*, in crossing some field, suddenly discovered a star surpassing *Venus* in brightness, and so luminous that his staff cast a shadow. After continuing visible for upwards of 15 months, it disappeared, and has not since been seen. A similar phenomenon is said to have caused *Hipparchus* to devote himself to astronomy, and to engage in the vast project of his catalogue of the stars, that posterity might know what changes took place in the heavens. Several stars in the catalogue of *Hipparchus*, of *Ulugh Braigh*, of *Tycho Brache*, and even of *Flamstead*, have become invisible under some unknown changes in them. The occurrence of such manifest alterations, perhaps sometimes transient, at other times permanent, of sidereal condition, plainly intimates the extension of our terrestrial commotions to other spheres near and remote.

FROM GRAVITY we have what is called weight upon the surface of our globe. So there must be weight at the surface of all other gravitating spheres. Thus the space fallen through, and the apparent weight of a piece of matter by a spring stilyard, will be as follows:—

At the surface of the Earth	it will fall in 1 second	—16.09	or weigh	1.0 lbs
“	“ Sun	“	“	28.2
“	“ Jupiter	“	“	2.6
“	“ Saturn	“	“	0.89
“	“ Herschell	“	“	1.16



The observation made respecting weight, may be extended with the same certainty to all other phenomena necessarily, with us, resulting from the same cause. There must be found in these similar worlds the same unerring mathematical truths, the same geometry, the same science of mechanics, the same laws of motion, of projectiles, of vibration and oscillation in solids and fluids. Estimate for a moment the wonders in other spheres, by considering the wide range of gravity in our own, in producing wonders of the minutest, as well as of the vastest kind. By it all the heavenly bodies are maintained in their form and consistence, and kept within their appropriate limits in space. Under its influence we witness the elevation of the ocean to produce the tides, and the fluctation of the least ripple upon the surface of a basin of water; the eruption of a volcano and the effervescence of a mixture; the spherical shape of the earth and of the globules of quicksilver scattered on a tube; the rotation of a planet, and the spinning of a tee-to-tum; the limitation of the equatorial seas, and of the pendulum of a clock; the tremblings of Mount Vesuvius, and the vibrations of the Æolian harp. So you see upon a summer's morning, the verdure of your fields, glittering with dew drops as with Oriental pearls, and in the House of mourning you see drop after drop, distilled by sorrow, rolling, globule after globule, down the cheek. Hence a Poet, without indulging in mere poetical license, has justly and beautifully said,

“That very law that moulds a tear,  
And bids it trickle from its source;  
That law preserves the earth a sphere,  
And guides the planets in their course.”

We find, then, the same forces, the same law, and the same phenomena, alike upon the minutest and grandest scale, in the earth and in the universe. I cannot, therefore, regard you as the only practical and theoretical philosophers throughout the whole range of creation, when I behold other worlds, of similar construction, presenting the same, or far more enlarged fields for all that appertains to physical science.

We find the most definite laws also, in the laboratory of the chemist. All the salts know their appointed forms, however often you may torture them, as it were, with multiplied crystallizations. The combinations of all simple bodies seem to be conducted in a definite invariable ratio of relative weight and measure; so that the different combinations, of which any two substances may be susceptible, will

be found to form an arithmetical or geometrical series. Thus of the oxyds of tin, the lowest has 7 parts of oxygen to one hundred of metal,—the next has 14 parts of oxygen, which is twice 7, to one hundred of metal; and the third has 21 parts, which is three times 7, to one hundred of metal. The same holds universally true. No substances will unite in any other than in the graduated proportions respectively assigned to them. And what would be the resulting phenomena of intermediate proportional combinations, no philosopher can possibly tell or conceive. Such new ratios of chemical combinations would burst upon our view a new order of things, excluded by the present irrefragible law.

But the very existence of this synthetical rule, opens to our contemplation infinite resources for other and more exalted displays of natural wonders in the celestial laboratories. By a Divine touch, as it were, of this single spring, a revolution is accomplished in the display of the whole world of matter—Simply alter the numerical order of the series, or alter perhaps the form of the primitive atoms (susceptible, too, of modification *ad infinitum*) and new objects spring into being to engage the eye, new specimens to challenge chemical analysis, new problems to test the physical philosopher and new laws to declare the wisdom of the Law Giver.

There must be a chemistry, therefore, in these distant realms of natural causes,—not exactly *our* chemistry, but one conformed to what may be the fixed properties of the primitive atoms. Such modifications of affinities and combination, will give rise to new rules for the changes of the solids, for the development of electricity, for the extrication of light and for the evolution of heat. Worlds, therefore, which, estimated by our chemistry, we should deem intensely hot or cold, may be thus subject to such ameliorating causes of temperature, as to render them suitable for the habitation of beings not necessarily very dissimilar from ourselves, as far as this point is concerned.

Let me read you an extract from a leading philosopher of the age:—

“The sun’s rays are the ultimate source of almost every motion which takes place on the surface of the earth. By its heat are produced all winds, and these disturbances in the electric equilibrium of the atmosphere, which give rise to the phenomenon of terrestrial magnetism. By their vivifying action vegetables are elaborated from inorganic matter, and become in their turn a support of animals and

of man, and the source of those vast stores which are laid up for human use in our coal strata. By them the waters of the sea are made to circulate in vapour through the earth, and irrigate the land, producing springs and rivers. By them are produced all disturbances of the chemical equilibrium of the elements of nature, which by a series of compositions and decompositions give rise to new products, and originate a transfer of materials. Even the slow degradation of the solid constituents of the surface, in which its chief geological changes consist, and the diffusion among the waters of the ocean, are entirely due to the abrasion of the wind and rain and the alternate action of the seasons. And when we consider the immense transfer of matter so produced, the increase of pressure over large spaces in the bed of the ocean, and diminution over corresponding portions of the land, we are not at a loss to perceive how the elastic power of subterranean fires, thus repressed on the one hand and relieved on the other, may break forth at points when the visitation is barely adequate for their retention, and thus bring the phenomena of even volcanic activity under the general law of solar influence."

Such is the summary by Herschel of what we owe to solar influence. Now, this prolific source of terrestrial phenomena is co-extensive with the universe, illuminated by countless suns; and to believe in its general diffusion without believing in its like general efficiency and subserviency, would imply the ordination and extension of the most powerful causes, abortive of their appropriate effects. But if we admit this all-pervading agent to be the parent of sidereal as well as of terrestrial wonders, we arrive at presumptive evidence of percipient, if not human beings, for whose existence enjoyment and discipline this analogous course of things is made subservient.

By the prism light is separable into different rays, presenting different hues. It is this prismatic analysis which relieves the earth of its otherwise homogeneous aspect, and diffuses a variegated beauty over terrestrial objects. Hence the setting sun, amidst the majestic furniture of clouds, exhibits to us a kaleidoscope of all that is splendid in optics and magnificent in scenery. Americans, familiar with these displays in their own country, do not for a moment doubt the exhibition of the like phenomena in Europe, though they never visited it. The like causes, it is by all presumed, will, in a similarly constituted continent, produce the like effects. And when we trace the same heterogeneous ray to other material spheres, can

we reasonably doubt its similar analysis to beautify their scenery, adorn their landscape, and illuminate their horizon? The stars declare their possession of this analytical power by the different hues which they present.

The solar beams have been considered as refrangible into three distinct kinds: the calorific, or heating rays; the luminous, producing vision and color; and the chemical, interfering with the internal constitution of bodies. We find that the growth, color, flavor, and even the forms of many vegetables, are much dependent on this solar agent; and in the animal kingdom it is equally efficacious and necessary in the diffusion and maintenance of health.

It appears, therefore, even under our present very imperfect knowledge of the intimate nature and agencies of light, that its universal presence implies an universal analogy in all those respects, which constitute our most wonderful natural phenomena. It is associated with radiant heat, and with the chemical rays. Sir Humphrey Davy traced the analogy between the effects of the solar beam and of electricity. The violet rays of the spectrum have the property of communicating magnetism. With light, therefore, we trace into distant worlds electricity, magnetism, galvanism, caloric, and perhaps other impenetrable agents; thus giving us a glimpse of their united, all-pervading influence. We are thus led to believe in the prevalence of corresponding phenomena. In other words, there must be from the operation of the same subtle agencies, as much a course of Nature, replete with wonders, in the planets as in the earth, and *similar* wonders from *similar* causes acting on *similar* physical conditions. When the genial ray has winged its way through millions upon millions of wiles to other spheres, surely it will there find created beings to welcome its arrival and adore the Giver. One feels an intuitive repugnance to the niggardly propension that light is bountifully supplied to other worlds, yielding all the materials of vision, without any existing perception; diffusing beauty and colors without admirers; carrying warmth, where there is nothing to feel; imparting energies, where there is nothing conscious of the impulse; and displaying all the wonders of optical science, without a Newton to explore their nature; or a living soul to be moved with thankfulness, or to offer up the incense of devotional praise.

But there is another reason for presuming the existence of an intelligent creation, to whose wants and activity light is made to minister as it does to us; and that reason is deduced from the satellites, which we

see subservient to the superior planets. Like our satellite, they receive their light from the same sun, reflecting it according to known laws, and yielding a moonlight to the planet around which they revolve. When we meet with a similar contrivance in the Earth and in Jupiter, in Saturn and in the Georgium Sidus and in still remoter planets, how can we resist the conclusion that these similar means are consecrated to similar ends? Had we no positive evidence of the illumination of the planets, and were presented with a structure brought from the sun corresponding to the eye, we should not hesitate to say, light is assuredly there, to give efficacy to the appropriate organ. And on the other hand, when there is such a careful provision for the diffusion of light, we must presume a corresponding percipient creation. From this careful provision we as fairly presume the existence of perception, as we should presume the existence of an eye upon the discovery of a telescope.

This inference is strengthened by the law observed in the multiplication of moons. We are supplied with one, Jupiter with four, Saturn with seven and Uranus with a number, not, I believe, satisfactorily ascertainable. The farther the planets are removed from the sun, the greater the number of their satellites; or in other words, the greater the want, the greater the means for insuring a supply. But why this enlarged provision against darkness in remote regions? Why these additional reflectors to the more distant worlds? Why these physical contrivances for collecting the light as it becomes scarce, and throwing it on particular spheres, and why this regular revolving of these refulgent bodies round their primaries, so as to diffuse the light progressively over the planetary surface, if there are no ends to be answered by it, no vision, no consciousness, no vegetation or analogous purposes to which it is, or is destined to be tributary?

The earth is an oblate spheroid; a form which may be said to correspond to the physical operation of her diurnal revolution. Jupiter revolves on its axis and presents the same form. The same observation applies to the other planets. Hence we find the same gravity binding them all together, and the same centripital and centrifugal forces moulding them into worlds like our own.

The earth has her axis inclined to the plane of her orbit; and it is to this position in her course round the sun, that we are indebted for these variations of climate and seasons, which are

matters of annual experience. Hence we have winter and summer, and variable lengths of days and nights in different countries, according to their position between the equator and the poles. The same structure is observed in Jupiter, whose axis is inclined  $2\frac{1}{2}$  degrees to the plane of his orbit. His surface is separable, like that of our earth, into zones; and his atmosphere exhibits changes and commotions of an evident terrestrial character, probably excited by the conjoint influence of four moons. Judging from the floating vapour, it is inferred, there is generally a current from east to west, relative to the surface of the planet, similar to our trade winds.

Mars, with an axis inclined upwards of 60 degrees to the plane of his orbit, affords a very striking exhibition of seasons and their changes. He exhibits periodical changes, which can only be explained by the accumulation of snows in his circum-polar regions during winter, and their dissipation during summer. This physical condition is rendered still further probable from his being surrounded by an atmosphere, which extends a very sensible distance from his disc. Our globe would present the same peculiarities to a spectator in Venus.

Saturn also has his axis inclined to the plane of his orbit; and he has his diurnal rotation and his annual revolution. He, therefore, has his seasons.

These corresponding conditions might be very much extended in and perhaps beyond our own system.

Auxiliary to climate and calculated to modify and control it, we have about us an atmosphere extending upwards about 40 miles, and subservient to the mineral and organic kingdoms. A similar provision has been made for many other spheres.

Many terrestrial phenomena, therefore, must be displayed in other atmospheric worlds. A morning and evening twilight, a daily evaporation and a morning dew; the vibrations of sound and the music of the elements, seem co-existent with a transparent aerial envelope. Such effects follow such agents in different latitudes of the earth. Why not in different latitudes in the heavens? We also know that our air contains a vital ingredient, provided for the sustenance of the vegetable and animal kingdoms; and we notice various changes and commotions, probably essential for the preservation of its purity, and for the more general diffusion of those genial showers, which refresh

and gladden the face of living nature. The very same blessing of air, subject to the same vicissitudes, tempered with the same light, and charged, therefore, with the same electricity and imponderable agents, seems to be bestowed upon sister planets; and where there are such magazines of creative beneficence, we surely shall find a living kingdom, and in it creatures more or less exalted in the scale of being, to consume and enjoy with thankful admiration.

We have a day for labor and a night for rest. The planets, by their rotation, have similar successive periods of light and darkness, the latter often mitigated by moons. We have our weeks and months of lunar computation; so the superior planets have a similar, though more complicated computation from their satellites. We have our year and seasons of the year. So the planets have their years of orbital revolution, and seasons varying with the degree of obliquity in their axis to the plane of their orbit. The very existence of time, as resulting from the structure of the heavens, implies the existence of finite beings to measure their duration by it. It only requires to be known, that there are times and seasons, days and nights, in a planet, to believe that finite beings are there, engaged in active duty, and provided with adequate repose. Such worlds, and their inhabitants (by suitable laws adapted to each other) may not present greater differences than we witness in the arctic and equatorial regions; or between the different races of man; or between Newton and his pupils.

Climate and seasons, therefore, as much diversify other worlds as this; nor can it be a matter of objection to any considerate mind, that even long winters characterize some planetary states. In kindred spheres as well as in our own, the changes of the seasons are not without their use. The body that would be enervated by incessant summer is braced and invigorated by a recurring winter; and hence we find that human health and intellect, upon the whole, reach the highest standard in those climates, where a superficial observer might complain of the periodical recurrence of a barren season. Men would imagine less against the appointed order of things, if they would only study how to turn it to most account. And you, who have cultivated a relish for mental occupations and planned them out for the season now before us, can in some degree estimate the value of winter evenings throughout an intelligent universe. You might have an unceasing day and summer, if the sole object of living was to labor in collecting together that species of wealth

called property. But man, like other beings, has a higher destiny; and, therefore, leisure is provided for nobler occupations. It must be confessed that mankind are in their disposition mercenary enough, without being urged by the seasons themselves to be uninterruptedly absorbed in avaricious pursuits. There are diversified seasons for the same end that there are diversified ages. Were man, throughout his pilgrimage, possessed of equal youth, his thoughts would still more tardily ascend to those matters of weightier interest, belonging to an immortal being; but, happily, when age has lessened the capacity for labor, and abated the passion for pleasure, the taste is refined for more serious things. The winter of life, like the winter before you, imperatively calls for more elevated improvement. And when I find that the wisdom which constituted terrestrial nature has provided like seasons for all things in planetary regions, I doubt not they are consecrated there to the pursuit of truth.

Columbus, in approaching our shores in his adventurous voyage, found some floating wood bearing the seeming impress of the hand of an artizan; and he rightly thought, he was therefore, in the vicinity of a peopled continent. In like manner, when our reason, taking, as it were, an exploring excursion into space, discovers in and around other material orbs, unmistakable indications of terrestrial conformation and phenomena, we forget the distance, as our thoughts expand into the universe, and, like Columbus, we feel assured of being on the confines of new and glorious worlds. Who will believe they are empty worlds?

Where intelligent beings exist, we presume there is a suitable system of nature provided for them. And the converse of this proposition is not less evidently true,—that where there is a system of nature, there will be found intelligent beings to live, rejoice and worship amidst it. All these manifestations of Divine wisdom are called “The Book of Nature,” a book written with the finger above, and everywhere stamped with a Divine origin.

Now suppose it, for the sake of illustration, literally true. Suppose that a volume, entitled “The wisdom of God in Creation” was found to exist in the planets. The discovery would exceeding exalt our belief in the existence of Beings to read, study and profit by it. The mind repudiates the opinion that carefully collated libraries in natural religion have been prepared and lodged in numerous worlds; and yet, strange to say, that no students are provided to read, learn, mark, and inwardly digest their truths. In other words, the exist-



once of the books proves the existence of the scholars. Now the case is not altered by substituting the "Works of Nature" for the literal description of them embodied in many folios. It is merely a hieroglyphic method, by which an infinite Being reveals himself, as by a common language, to all His creatures. This comports with the Divine plan, pursued in most of the prophetic and other communications, which are generally conveyed, with the view of benevolent universality, in that terrestrial and celestial imagery, which will, unlike our arbitrary sounds and symbols in languages, awaken instinctively, similar ideas and sentiments in all mankind; perhaps throughout the material universe. It is the only language, says Lord Bacon, "which has survived the confusion of tongues at Babel." Or, as it is better expressed, "there is no speech, nor language, where their voice is not heard." The irresistible inference, therefore, is that *wherever* there is a glorious display of creation, *there* will be found intelligences,

"To look through nature up to nature's God."

We are thus led to contemplate the earth and the universe in one point of view, each, indeed, consisting of its appropriate parts; the islands and continents being separated, in the one case, by an aqueous, and the worlds, in the other case, by an ethereal ocean; but alike exhibiting corresponding traits of general architecture and appropriation, and only revealing to our view, as it stretches further and further into the heavens, new and vaster regions of beauty and fertility in that expanse, which forms but one domain, over which the Almighty reigns.

Where is the individual, whether philosopher or idler, christian or pagan, who, in the certain prospect of leaving this earthly abode, does not cast an anxious eye to the many mansions open to his eternal being? Wherever the Creator has implanted an appetite, he has made provision for the gratification of it. Thus there is food for hunger, and water for thirst; beauty for the eye and music for the ear. And it is argued, that as there is in the human mind, an universal and insatiable aspiration for immortality, there will be a future world to answer to it. But does not the argument gain additional force, when we see the provision itself. When we see systems of worlds, as so many mansions prepared on one glorious outline of creation, and plainly suited for intelligent beings in the

exercise of their most exalted faculties. Matter transferred to Jupiter, would and must, from the very nature of the thing, carry its gravity and solidity and other essential properties with it. And spirit will and must, without an interposing cause, carry with it its endearments, whatever they may be. And in each case, the carving of the artizan and the impression of the school-master, may be alike indelible. What applies to man may apply to the whole material and immaterial universe, viz., that there is an adaptation and suitableness between them, which proclaim a relation as close and corresponding as in the world in which we live. Admitting the existence of man and kindred spirits, the heavens contain their dwelling places.

The contemplation of this vast extent of creation occupied by accountable beings, involves a belief, which is confirmed by the intimations of conscience in a co-extensive and harmonious system of moral government. Hence in his primitive state, undoomed to die, man might, perhaps, like Enoch and Elijah, be translated with impunity to other worlds, carrying his immortality with him. But after the catastrophe of the Fall, his celestial relations were necessarily changed, that he might not immortalize evil and elsewhere diffuse it. It became necessary to interdict the entrance of the missionaries of evil into the principalities of the heavens. Hence after the Fall was the decree,—“And now lest he put forth his hand and take also of the tree of life, and live forever, He placed at the eastern end of the Garden of Eden, cherubims and a flaming sword, which turned every way, to keep the way of the tree of life.” For could man live forever as he is, no consideration of other worlds and of other beings, would afford an adequate motive against it. Mercy, therefore, for a moral universe may be taken as passing the decree, while a Redeeming Provision was at the same time announced.

Now, the incalculable numbers of the heavenly bodies, scattered through an immeasurable expanse of space, and presenting endless varieties of form, constitution, motion, and magnitude, bespeak diversities of purpose, and subserviency to diversified conditions of being. We cannot well consider, as adapted to the same intelligences, worlds of such disparity in size and brilliancy; some shining by their own, others by borrowed light; some being suns and others

planets; some satellites and others comets; some single and others binary; exhibiting the curious and beautiful phenomena of contrasted or complimentary colors; some with brilliant nuclei, others nebulous and of various hues, white, yellow, rose-coloured and other tints. These general differences are perceptible to the eye; and although they leave us ignorant of all the physical disparities connected with them, yet they proclaim the existence of graduated spheres, offering very appropriate asylums to pilgrim spirits; and auguring so plainly chequered fates, as justly to make the thoughtful serious, and the serious sad. Thus decyphering the no doubtful indications of the heavens, even a pagan philosopher at the eve of death, is made to say,—

“Eternity! thou pleasing, dreadful thought!  
Through what *variety* of untri'd being,  
Through what *new scenes* and *changes* must we pass!”

Unable to explore in detail all the infinite modifications of physical and moral conditions, thus in general outline emblazoned in the firmament, we naturally recur to our solar system for what illustrations it will afford. Saturn on the one hand displays a very elaborate and wonderful mechanism, with which the mind irresistibly associates a high degree of creative splendour and magnificence. It presents a sphere 75,000 miles in diameter, nearly a thousand times larger than the earth; and besides 7 satellites, is surrounded by two rings, exquisitely adjusted, shedding under appointed phases the mild radiance of a thousand moons, and undoubtedly giving birth to new physical and philosophical phenomena, of which even a Newton could scarcely catch a glimpse

The comets, on the other hand, overwhelm our imaginations with all the misery and woe of the most dreadful extremes. He who would fastidiously complain of Saturn, would shrink with horror from the habitation of a comet. In numbers they are estimated at many thousands. Moving in orbits of extreme eccentricity, some approach so near the sun, as to receive an elevation of temperature fearfully great; and then receding with immense velocity, they visit regions beyond the planetary limits, passing centuries in darkness and refrigeration; till again revolving within the very verge of the solar atmosphere, they are again melted and partially dissipated into a luminous train; only, perhaps, to reconsolidate, and retrace the same dreary and sunless path for another course of ages.

Between these extremes there are innumerable intermediate diversities; and although all may not team with life or intelligence, yet all, undoubtedly minister in one way or another to the great ends and stability of the universe, and to its moral bearings.

These infinite modifications of siderian states, must, in the economy of an all-wise Being, be ordained for useful practical purposes. In His terrestrial dispensations we witness the pervasion of the same law of diversity; various soils and climates; various conditions of life; various allotments, adjusted to courses of wisdom and folly, industry and idleness, virtue and vice. It is the appointed discipline for free and responsible agents. Civil society borrows the principle, and acts upon it. A nation of sceptics would, without it, be reduced to anarchy. In civilized countries we see laws for securing the fruits of literary labor, mechanical ingenuity, and commercial and general enterprise. We see colleges for the wise, and asylums for the insane; rewards for the meritorious, penalties for the offending. We see various prisons suited to all the gradations of human transgression, from the indulgent limits of the debtor, and the apartments for the accused, to the cells of the convict, the chains to secure him, and even the implements for punishment or death.

A traveller, in the view of these marked distinctions, these opposite provisions, these various adaptations to moral contrarities, *would not, could not* believe, that the executive power made no distinctions between good and bad citizens, always rewarded virtue and never punished vice, never allowed a cell to have an inmate, the chains to hold a felon, or the gallows to offer up its guilty victim. He would judge of the course of conduct pursued by the government, by the indications he observed in every city, and state. And he would judge correctly.

Let us transfer our contemplation to the azure vault, and behold again the awful scale of magnitude and diversity, which the universal governor has stamped upon it. *There* is carried out in full and visible array worlds seemingly of rewards and punishments. We there find indicated the very same principle of moral government, as man himself (unconsciously borrowing it) has applied to the government of man; and who, that witnesses the Divine dispensation of these principles on the earth, does not fear them, emblazoned as they are, in the heavens? Political sceptics have, in earlier times, emigrated from Europe to the United States under the presumption that their liberty was licentiousness, that it was a free country in which a man

was free to *do* as he pleased. But a taste of their state prisons soon corrected the delusion. And he who under a like unhappy infatuation presents himself at the courts of heaven to go where he pleases, and be saved as he pleases, will soon be awakened from his dream by corrective eternal realities.

As transitory beings, moving onwards in the moral scale to other destinations, we are thus forbidden by the language of nature to hope, as a necessary or probable state of things, for an universal indiscriminate concentration in one changeless blissful world. The extremes of diversity in the universe, present to the mind opposite states, well enough defined, with intermediate gradations unsearchable by man. Can we rationally learn from these diffused contrarities, that accountable beings in their translation amongst them, have nothing to apprehend from finding themselves (not, remember, undeservedly) in regions not of the blissful kind? Let the infidel reject the Bible; but would it not be a matter of wisdom and sound philosophy, rather to take a warning lesson from these plain intimations in creation, than with rash and indiscriminating expectations, plunge into an eternity in which is so impressively deciphered innumerable states, seemingly both of happiness and woe.

It is not necessary or becoming to affirm (what is not explicitly revealed) that some particular classes of the heavenly host are specially assigned to a known scale of moral dispensations. But it may be affirmed within the limits of the most unexceptionable philosophy, that when a scale of moral dispensations, already experienced on the earth, is alleged to be extended into futurity, we are properly fortified in our belief of it, by a corresponding structure in the heavens; just as it would be correct to say, that a system of punishment existed in any European country where was seen an assortment of gallows, stocks, prisons and the like instruments, obviously adapted to the infliction of judicial sentences upon criminals; although without further information, one could not tell the extent and rules of their application.

An uniform moral dispensation, probably pervades the material universe. And some think that the christian scheme extends beyond our needy earth, to keep in moral subjection and invest with redeeming privileges, myriads in other worlds, "Other sheep I have, not of this fold, them also must I bring, that there may be one fold and one shepherd." While even philosophers speak of our solar system

as a speck in the universe, it is not strange that the earth and the starry courts, should be designated as "Folds," and the needy inhabitants as "sheep," by Him who, with infinite condescension, called himself the "Shepherd." Nor is this the only Scriptural allusion to a truth so congenial to the future expectations of immortal man. It is said in terms well suited, indeed, to the exigencies of our nature, and the grandeur of His—"In my father's house are many mansions; I go to prepare a place for you." Is not SPACE His *House*? Are not HIS MANSIONS the *Worlds* we see refulgent in the Heavens?

"This day shalt thou be with me in *Paradise*." This is the more significant, when we are told, "He calleth the stars by name."

The infinite extension of the *physical* bears up the mind in the contemplation of the co-existing *moral* universe. Gravitation and light, with all its ethereal elements, maintain an intercourse between all material things. And corresponding appropriate laws and agencies, may exist between spiritual beings and realize their intercommunion, with the same exactness and the same harmony. And light, that subtle compound of all the energetic elements of, perhaps, the universe, touching, elsewhere in the heavens, an organ of exquisite sensibility, may convey far distant realities with a fidelity, and to an extent unspeakably transcending the wonders of the telescope and the revelations of the microscope, and the exquisite delineations of the photograph.

The radiant matter in the prismatic spectrum, called the "invisible ray;" or the violet magnetic ray, felt and acknowledged by planets, so luxuriant under its vivifying influence; or some other active element, co-extensive with a Newtonian Ether; may, one or all, in traversing the abodes of distant hosts, be the medium for their maintaining a peculiar intercourse, of which we can form no better idea than a man born blind can form of color and vision.

In the human frame, matter acts on the mind; and the mind makes matter minister to its external relations, and to its internal economy. But while the two can thus sustain and interchange these mutual relations, can we reasonably assume that there are no spiritual laws of intercommunion? That spirit is more inert than matter, and is a stranger to spirit and to the energies of its kindred nature?

What is Thought? What is the spiritual energy which accompanies its birth and development? Thought may not begin and end in the thinker's brain, or in the sensorium of loftier beings. There

may be a suitable reality about it, as the offspring of the immortal part, and with unerring speed, light-like, it may bear itself above, and kindle the attention and touch the sympathies of another world. Thus mind may, like matter, have its recondite modes of impulse; impulses that may, above, transcend all our subtle imponderables; may distance your electric current; may traverse the vast expanse, and, under appointed laws and limits, bear tidings from realm to realm. There may be more literal truth than explainers away of Scripture may be willing to admit in the declaration, "We are a spectacle to the world and to angels and to men."

Prayer is no sooner breathed in the silent chambers of the soul, than it is known in heaven; perhaps recorded by angels there. And equally mysterious is the instant response that reaches and touches the heart in an unknown way.

Hence it is said that when the foundations of the earth were laid, "all the morning stars sang together, and all the sons of God shouted for joy." And *now* "there is joy in heaven over one sinner that repenteth." And the very departed saints, with anxious anticipations of the millenium, like ourselves, are enquiring, "How long! how long!" And even one of our race, charged with a revelation to St. John, and clothed with the glory of his high commission, allayed the undue transport of John's emotions, with the memorable and personal announcement, "See thou do it not: I am thy fellow servant, and of thy brethren that have the testimony of Jesus." A "FELLOW SERVANT," engaged in fellow service. A BROTHER, however glorified beyond his kindred. Of BRETHREN, who HAVE AS WE HAVE, the testimony of Jesus.

Such, in rapid and imperfect outline, is the incomprehensible range of the material and immaterial universe. Such is the glimpse we may catch of their external and internal economy. Such are the terrestrial aspects of celestial abodes. Such are their adaptations to, perhaps, the wide-spread ramifications of the human race. Such the indications that a befitting for this world may be a befitting for another. Such the varied states and siderial conditions, perhaps intended for man, as he fixes his future destiny, accepting or spurning an all-sufficient guide as a pilgrim of the universe, as a traveller in the milky way. Such is the seeming unity of all things under a Great First Cause.

It was the contemplation of the heavens, which drew from Newton the suggestion (it has at least sublimity) that space, the theatre of

these mighty operations, is the sensorium of the Supreme. St. Paul has a similar thought, "In him we live and move and have our being."

Behold the infatuated atheist—from the seat of his enthroned spirit, he issues his fiat for his pen and for his paper—and he transmits his volition to the extremities of his fingers—and he directs them in recording his infatuated scepticism. Surely, then, loftier beings can achieve similar, vaster ends. Surely he who made the atheist, who made the flax to grow from which he formed his paper—and who created the bird from which he plucked his quill, can transmit His fiat over all the families of the earth and of the heavens.

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