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IOWA ACADEMY

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NATURAL SCIENCES.

CONSTITUTION AND BY-LAWS.

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“SCRIPTURE AND SCIENCE.”

INAUGURAL LECTURE BY THE PRESIDENT OF “THE ACADEMY OF
NATURAL SCIENCES FOR IOWA.”

It is pleasing to notice the intense interest which has of late sprung into existence on the subject of science. In 1832, Robert Brown received his honorary degree from the University of Oxford. It is reported that the assembled graduates were unacquainted with the most profound of English Naturalists; with the man who had for years borne Humboldt's title “*Botanicorum facile Princeps.*” Since then, how great the change! No class of men are so widely known as the students of natural science; the least eminent enjoying a respect a few years ago denied to the most accomplished. Even the ability to retail in attractive language the original discoveries of others is not unrewarded. Few of the myriad books now being published, enjoy so large a circulation as those devoted to this subject. They occupy a conspicuous place on every drawing-room table. Our city libraries must cater to the large demand. In every town, with any pretensions to taste and culture, Academies of Natural Science are being instituted. Not only in our Universities, but in our Elementary Schools, the study has been introduced. Our boys and girls with no fear of the dentist before their eyes, are risking the demolishing of their teeth or the dislocation of their jaws, by attempting to pronounce the technicalities of its sesquipedalia nomenclature.

Having regard to this aspect of modern thought, it seems that the subject of an Inaugural Lecture in the present circumstances, must be more a matter of *necessity* than of *choice*.

Intelligent christians and skeptics are most earnestly asking what are the actual relations between the Bible and Nature; the inspired Word and the material Works of God? A supposed antagonism has led the former to tremble like Uzzah, lest the Ark of God should be

overturned as the cart shakes in its pathway over some newly discovered truths of science, and multitudes from the ranks of the latter have danced on the graves of holy martyrs, crying out "No God!" because D'Alembert, Diderot and Baron Holbach had written an Encyclopedia. Such apprehensions on the part of believers are alike a dishonor to God, and a reproach to themselves. They amount to virtual infidelity. There can be no permanent conflict between what God has *said* and what God has *done*. As the author at once of revelation and creation, the letters written in each volume spell out the same eternal autograph. The ascertained facts of science with their fair deductions must ever correspond with the sound interpretations of scripture, as did the hieroglyphics graven on the celebrated Rosetta stone agree with the Greek inscriptions found alongside, and to which we are indebted for their translation. If science has always proved the "handmaid" of Scripture, why should a follower of Christ quail before her charge, and deny "that he knows the man?" In the obscurity which necessarily rests upon many a holy text, as the moonlight lay on Gethsemane, revealing but dimly the personal Redeemer, to doubt His word, or to fear its triumph in the presence of any band of robbers is to take the lamp from the hand of Judas, and betray the Master whom we love. Have we not been warned by that most keen sighted of scientific seers, Hugh Miller, as with geological hammer in hand, he roamed around the hill Cavalry "that the battle of the evidences will have to be fought on the field of the *Physical Sciences*, as it was contested in the last age on that of the *Metaphysics*?"

Let us define the terms used as the subject of this paper:

I. WHAT IS SCRIPTURE.

By this I do not mean the creed, confession or catechism of any church, nor the systems of theology elaborated for subscription by any existing denomination. But, excluding the Apocrypha, I mean the books of the Old and New Testament; the former consisting of 39, written in Hebrew; and the latter of 27 in Greek, composed by 40 different penmen, and extending over a period of about 1600 years. These constitute what are recognized as the "Canonical Scriptures."

That they were *needed*, I argue from the character of God, who bestows no superfluous gift; and from the character of man, as always and everywhere, in their absence, both unholy and unhappy. That the Bible *could* be given omnipotence forbids me to doubt, and the love of the Divine Father to His erring children assures me it *would* be provided. That the Old and New Testament were the only Bible

possessed by our Lord Jesus answers all questions as to its *authenticity and genuineness*; and that He preferred quotations from its pages to uttering truth from His own infinite mind compels me to recognize its *authority*, and with Him to term it the "Word of God." My theory of its plenary *inspiration* is not modified in the least by the fact that so many hands held the pen in its composition. In this orchestra of heavenly musicians it is the same breath of the Divine Spirit that fills the accordant instruments. I need no testimonies from profane history where it is contemporaneous. I ask no monumental inscriptions from Egypt or Petræa. I turn away from the excavations of Ninevah and Babylon. I bow not in adoration to the God of miracle or prophecy. I content myself as I look upon the Jew, an exile to all lands, yet with a home in none. A whole volume of unanswerable apologetics may be read in that man, as all down the ages you watch him, observing the civil ceremonies and religious ritual of the Old Testament, accepting its narratives, singing its Psalms, and feeding his hopes upon its prophecies. And as to the *New Testament*, though its evidences are infinitely stronger than those of the ancient classics, concerning which there is no dispute, I have only to summon the most intelligent and rancorous of its foes; men who all but witnessed its events, and all but heard the unspent echoes of its voices. With a testimony, only the more convincing because wrung from most unwilling lips, I am satisfied as I hear them say "for that a notable miracle has been done by them is manifest to all them that dwell in Jerusalem, and we cannot deny it." But I ask for none of these testimonies, for I need them not. To believe that "the mighty God, even Jehovah has spoken, and called the earth from the rising of the sun to the going down thereof," I have only to obey the voice heard by Augustine, "*Tolle, Lege,*"—Take, Read. It is its own best witness and interpreter. From Genesis to Revelation, it is all ablaze with celestial light. The Spirit of God in the soul bears unanswerable testimony to the Spirit of God in the Bible, and every devout reader will sooner or later say "Thy Word, O God, is truth."

II. WHAT IS SCIENCE?

It literally means knowledge, and is, strictly speaking, a knowledge of laws, principles and relations. Defined by Sir Wm. Hamilton, "Science is a complement of cognitions, having in point of *form* the character of logical perfection, and in point of *matter*, the character of real truth."

It is a systematic and orderly arrangement of knowledge, embracing distinctly those branches of which the subject matter is either

ultimate principles, or facts explained by principles, and arranged in natural order. Science and Art are both investigations of truth, but the one is occupied with the higher truths and enquiries, *ut sciamus*, for the sake of truth; the other is concerned with the lower studies, *ut producamus*, for the sake of production. As an illustration we remark that *music* in its theory is a *science*, but that in its practice it is an *art*.

It is easy to distinguish the sciences as: 1. *Theoretical*. In this class a distinct department of nature is embraced, and so arranged as to give in the most compact form the entire body of ascertained knowledge in that department. It includes Mathematics, Physics, Chemistry, Psychology, Sociology and Biology, with its branches Vegetable and Animal Physiology, 2. *Practical*. In this class there is an application of scientifically obtained facts and laws in one or more departments to some practical end. It covers the Natural History group, viz: Mineralogy, Botany, Zoology, Geology, Geography and Astronomy.

As mistakes frequently occur in the understanding of the separate provinces occupied respectively by Natural Science, Natural Philosophy and Natural History, it may be desirable here distinctly to indicate them. Natural *Science* is derived from experiment and observation. It aims to account for or explain the phenomena which the mineral, vegetable and animal worlds exhibit. Natural *Philosophy* is the science of material bodies, and of their proper powers and motions. It comprehends Mechanics, Hydrostatics, Optics, Astronomy, Chemistry, Magnetism, Electricity and Galvanism. The seven sciences of the ancient authors were Grammar, Logic, Rhetoric, Arithmetic, Geometry, Astronomy and Music. Natural *History* formerly meant the knowledge of the objects as well as the phenomena of nature, and hence in addition to Mineralogy, Zoology and Botany, embraced Chemistry, Physiology and Astronomy. It is now limited to the history of natural objects known under the names of minerals, plants, and animals in their normal conditions. The tendency to restrict it still farther to Zoology, for which it is frequently used as an interchangeable term, is not sanctioned by good authority, or by the necessities of the case.

To sum up, science is the knowledge of God's works, and is opposed to mere speculation. The *quality* of the knowledge is of more consequence than the *quantity*. A simple truth well ascertained is greater than the most ingenious theory founded upon a limited observation and induction of facts. Thus, leaping over no chasm to establish a favorite dogma, and having regard to the merest trifles, we learn

to read nature correctly, and our discoveries shall bear the searching test of time. Her atoms will be letters, her blades of grass words, her stars sentences, her complete volume a grand poem, and reading nature we shall find "nature is a friend of truth." We shall "read creation, read the mighty plan, in the bare bosom of the Deity," and "Find tongues in trees, books in the running brooks, sermons in stones, and good in everything."

Of Scripture, let it be remembered that its design was not to communicate scientific truth, but to unfold the mystery of the Kingdom of Grace. Written for the unlearned, and in ages when science was all but unknown, it was of necessity expressed in the universal language of appearances, and is no more on that account to be accused of scientific inaccuracy, than the almanacs of the 19th century, which speak of rising and setting suns. Most remarkable, however, is it that in its pregnant statements there lie concealed truths which are invariably found to be in advance of the most surprising discoveries of the highest minds in every department of science. Illustrations might be supplied *ad libitum*. In strange contrast, scientific errors abound in all other writings, such as the Shasters, the Talmud, the Avesta, and the Koran, claiming to be of divine inspiration. History, Chronology, Astronomy, Geology, indeed all the sciences in succession, have been marshalled against the Bible. Egyptian hieroglyphics, Chinese and Hindoo tables, antiquarian monuments, books, essays, lectures and reviews have all been persistently employed to convict it of scientific error. If such existed, surely men like Newton, Locke, Cuvier, Miller, Sir W. Jones, Grotius, Buckland, Hitchcock, Silliman, Henry, Brewster, Tholuck, Faraday, and a thousand others of equal learning must have detected and exposed it. Nay! so confident in the divine character of the Bible are the christian people of America and England, that at vast expense they have equipped a "Palestine Exploration Society," and in response to their interrogations, mount and vale, and lake and stream, ruined fane and busy mart, extinct city and arab tent are contributing un-numbered confirmations to the veracity of the gospel narrative, and by consequence, to the inspiration of the entire Scriptures. To expect from it an exhaustive treatise in every department of science is simply absurd. A new revelation would have been needed to explain the old one. With its size and price it would have been no gift to the world.

And so of science, with a province peculiar to herself, similar limitations exist. *History* tells us of the rise and fall of dynasties; but it is silent on the introduction of sin, and the provision of a Savior. *Geography* describes continents and islands and rivers and seas, but

is has no map of primeval Eden, and no chart of Paradise regained. *Astronomy* reveals systems and suns and stars, but it can point to no "Star of Bethlehem," and knows nothing of the "Sun of Righteousness," *Geology* discloses strange petrifications and rocks and fossils, but you search its stony strata in vain for the Rock of Ages. *Mineralogy* dazzles you with its clear cut crystals and precious stones, but it produces no life of transparent holiness, and excavates not the "Pearl of great price." *Botany* arranges the hyssop that springeth out of the wall, and the cedar that crowns Mount Lebanon, but it classifies not the "Plant of renown," and never reposed beneath the "Tree of Life."

In every one of its departments, physical science displays countless evidences of the manifold wisdom, goodness and power of the *Creator*, but not one unfolds the unsearchable riches of the *Redeemer*. As it is not its province or aim, let there henceforth be no misconception as to the respective orbits in which Scripture and Science shall revolve. Without any jealous assertion of superior character or worth, let these two pillars, the one as Jachin, the other as Boaz, stand side by side to form the vestibule of the great temple in whose adytum dwells the ineffable shekinah, into whose presence is welcomed every devout worshipper as he seeks with loving heart to present his consecrated gift. Let the scientist be cautious in announcing theories where so much remains unexplored. The corpuscular theory of light, though supported by the highest name in Astronomy, is superseded by the undulatory. Since the publication of his Palæontology, Professor Owen has openly shifted his ground upon the doctrine of special creation by the intervention of miraculous power. Disagreeing with Darwin in his mode of accounting for these facts; they both disagree with other naturalists, not only as to facts, but as to the conclusions to be derived therefrom. And Sir Charles Lyell was constrained to retract his views on Geology, on account of which the peremptory demand had been made to sacrifice immediately and forever the Mosaic Cosmogony. If ransacking nature, their labors have resulted in amassed treasures of "gold, frankincense and myrrh," like the wise men of the East, laying all down before King Jesus, let them say "we have seen His star, and are come to worship Him." Avoiding the "oppositions of science, falsely so-called," that sees only a law, but no Law-giver; that recognizes an eternal and omnipotent force, but no personal Creator, let them "look through nature up to nature's God," and learn that "Nature is but a name for an effect whose cause is God." Assuming the attitude and spirit of Mary at the feet of the Great Teacher, and wise thereby unto salvation, they

shall in the great conflagration, which Science and Scripture both declare, awaits our planet, obtain the possession of that "better part which shall not be taken from them."

On the other hand, let the theologian learn of the student of nature, and give him the honor which is most justly due. Cheerfully permitting the chosen masters of science in their respective fields to disclose to his view a new world of wonders, let him frankly acknowledge the truth, whenever, however and by whomsoever discovered, and strive to appreciate the bold, patient and laborious research, by which, from deep and hidden mines, the pure ore of truth has been brought up to the light of day. If, as he believes, the water in the well of Bethlehem can alone quench the thirst and refresh the spirit of a David, as he faints under the privations of the wilderness, and is weary in the conflict with his foes, let him not forget that science, like the "three mighty men," has often, life in hand, to break through the serried ranks of armed prejudices, ere the fountain can be reached. Rejoicing in the fact that there is pure and self-sustaining water in abundance in the well which Jacob has dug, let him not however forget that science has often opportunely to say with the woman of Samaria to the way-farer who sits weary on its brink, "Thou hast nothing to draw with, and the well is deep."

It is a matter of unfeigned thankfulness that on the part of almost all their greatest men respectively the spirit is not now polemical. Advancing science meets everywhere a revived and tolerant christianity, both profiting by the communion. Science takes christianity by the hand and leads her into regions everywhere radiant with evidences of the Living Lord, Christianity stands by science at those innumerable points where she meets phenomena which she cannot explain, and teaches her the lesson of simple faith when she cannot understand. On the threshold of the temple of truth, no longer to thrust away intruders, but to take gainsayers kindly by the hand, christianity, disarms the bitterest enemy, and turns deadly hatred into love, as she lifts the veil, and reveals to our astonished gaze the humbling sight, that those works with which science deals were all made by Him who laid down His life for us on Calvary. In refusing any longer to construct schemes of reconciliation we are but putting off the rags of human wisdom to assume the seamless robe of pure truth, and leaving the open sea where all is unrest for the tranquil waters of a quiet haven. The story God has described on His works must agree with the story recorded in His word. It is simply impossible that christianity can suffer from the progress of Natural Science. It has often happened that "A little learning is a dangerous thing,"

but the cure is "Drink deep or taste not the Pierian spring." The student of nature and the student of revelation are equally liable to err, as each undertakes to interpret the record which he examines. If the scientist has often lived to see his most brilliant theories dissipated by the progress of discovery, the theologian has been obliged to retract his views of Scripture as the science of Hermeneutics gathers light, sometimes from the sciences of nature and rescues the Bible from his exegesis. The study of God's works is not incompatible with a belief in God's word, and it is quite possible to investigate the the material wonders of this world without imperilling our happiness in the next.

WE SHALL NOW ASK, WHAT HAS SCRIPTURE DONE FOR SCIENCE?

In the absence of its inspiring influence, we look in vain for a true philosophy of nature among the ancient civilizations of China, India, Chaldea and Persia. Though Egypt was resorted to by such students as Thales and Pythagoras, Herodotus and Plato, as their only university, yet they returned very little wiser except in Astronomy and Abstract Mathematics.

Of *Grecian* culture, it may be said that with all its worship of beauty, its incarnations of grace and strength in painting and sculpture, and its transcendent poetry and eloquence, it entirely overlooked the means by which a conquest might be extended over nature as we can suppose the architect of her Parthenon might be so absorbed in its matchless proportions as to be unconscious of the fragrance and beauty of the flowers that smiled in supernal loveliness around him. *Roaming* over the "City of the seven hills," we are entranced by the Mæonian strains of Virgil, or charmed with the gorgeous eloquence of Cicero, yet as we gaze on the amphitheatre where tens of thousands of brave men were "butchered to make a Roman holiday," we turn away in disgust saying the love of truth was sacrificed on the altars of cruelty and ambition, and we readily believe the old legend that her founder was nourished when a child from the breast of a wolf.

But now a new era has dawned, and during its first five centuries when the empire of the West finally succumbed to the incursions of the Northern hordes, do we witness the presence of a civilizing power, which with all his hate and ingenuity, Gibbon is obliged to acknowledge as emanating from christianity. Guizot declares "that but for the christian church at this time, the whole world must have fallen a prey to mere brute force. Though abuses crept in; though acts of folly and tyranny were perpetrated by her in the name of the All-wise and All-righteous, still the divine truth which she held illuminated

and moulded the world with unrivaled power. Her influence upon the progress and culture of the human intellect was beneficial, and she assisted in its development rather than its depression, in its extension rather than its confinement." And while granting to the Arabian, all the honor of having introduced into the West the old Eastern Numerals and Mathematics, it must in truth be admitted that the most potent element in their incomplete civilization, viz: Monotheism, was derived from the christian Scriptures. History now reveals on her pages the names of two men who are to accomplish a two-fold regeneration of society. Luther, the inspired prophet of the church, and Bacon, the anointed high priest of philosophy. The one headed the revolt against Rome, the other against Aristotle; the one emancipated the Church, the other originated the *Novum Organum*. And thus, on the nations fell the united radiance of an unsealed Bible and an unveiled Universe. Born respectively in 1483 and 1561 it is interesting to note the chronological relation, and how hard to escape the conviction that it was one of cause and effect. The interest of the subject constrains us to supply a few additional dates. In 1384 Wycliffe dies, the "Morning Star of the Reformation," having translated the Bible into English. In 1517 Luther nails his Theses to the door of the old church of Wirtemberg. Roused by the blows Copernicus starts up in 1473, having extinguished Ptolemy, and poured the light of truth upon the majestic movements of the solar system. In 1564 the clang of the hammer in the hand of that monk who wields it like another Odin, awakens Galileo who calls on the slumbering race to look through his telescope and say with him "The earth moves." In 1571 its echoes ring out, and Kepler keeps time to its strokes as he announces the laws of the celestial luminaries. And finally in 1620 Bacon bequeaths his legacy of the "Instauratio Magna," and by this treasure of true philosophy leaves humanity forever his debtor. Acknowledging gratefully what France has done in the region of the pure and mixed Mathematics, and Italy in the discoveries of Volta and Galvani, it is undeniable that in Physical Science little has been accomplished elsewhere than to verify and extend the researches of those lands most thoroughly imbued with the lessons of the Bible.

To the British Isles we owe two of the greatest discoveries made in Physiology. Harvey detected the circulation of the blood, and Sir Charles Bell distinguished between the nerves of sensation and those of motion. Sydenham laid the foundation of the medical sciences, and John Hunter that of Comparative Anatomy. Jenner evoked the simple but wondrous secret of vaccination, and generations arise and call him blessed. In Chemistry Dr. Black followed the discovery of car-

bonic acid gas, by announcing the mysterious but important doctrine of latent heat. Dalton, author of the atomic theory, explained the admirably adjusted law of chemical equivalents. Priestly, with other honors, discovered oxygen gas. Watt and Cavendish ascertained the composition of water. Davy, the unrivalled analyst, founded organic chemistry; and Gray first generalized electrical phenomena. Here finally arose the enthroned prince of Physical Philosophy, to whose patient hand the bright sunbeam yielded the secret of the painted bow, and all the beautiful colorings of heaven and earth, and to whose attentive eye were revealed the invisible cords which bind together the innumerable bodies of the material universe.

"Nature and nature's laws lay hid in night,
God said 'Let Newton be,' and all was light."

And so, under similar auspices of Bible christianity on this side of the Atlantic, we behold like results in attestation of the position we have assumed. With a boy's plaything as his only weapon, our Franklin disarmed the clouds. Our Fulton with his steamboats has bridged the seas and freighted every ocean and river. Our Maury has fenced the highways of Neptune's territory, and written finger boards upon the fitful atmosphere. The great deep has been fathomed and the monuments of its buried dead uncovered by our Brooke. And, omitting the later marvels of Edison in the phonograph and telephone, our Morse skillfully applying the electro-magnetic discoveries of our late accomplished Henry, has taught the earth with lightning speed to whisper messages from cities and continents though removed from each other by a whole hemisphere.

Thus hurriedly glancing at all lands we can understand what obligations science is under to christianity, as we hear typical John Knox, who gave the Bible to Scotland, demand that there shall be a school in every parish, a grammar school in every borough, and a college in every city, and from the Atlantic to the Pacific, from the Lakes to the Gulf, the testimony is irrefragible that our America would not be as learned, as prosperous and happy, if a community of ultra scientists had been landed on our shores instead of the Bible loving emigrants of the May-flower. Born in that sacred land where God spake face to face with men, science has been nurtured all through the ages on the bosom of christianity.

WHAT HAS SCIENCE DONE FOR SCRIPTURE?

One of its earliest benefits undoubtedly was *to foster the exercise of free thought*. Too long had the human mind been enslaved by men claiming to be vicegerents of the Most High, and who, as infal-

lible, were entitled to have their declarations on doctrine and duty received in meek and unquestioning submission. A glance through a telescope emancipated Galileo, and now a race of free-thinking men brave the perils of anathema, and believe in the true theory of the stellar universe.

Again, the *kingdom of men found in science is like the kingdom of God*. It can be entered only in the character of little children. Mystery is everywhere. While access to the outer courts is freely accorded to all worshippers, the Levites alone may walk the sacred precincts. Between them and the penetralia hangs the veil which bears the warning words which the High Priest alone may disregard "Thus far and no farther." This limitation of the human faculties has been so universal that only one, Buffon, has dared in dying to say inscribe on my tombstone "a genius equal to the majesty of nature," when a blade of grass was sufficient to confound his pretensions. On the other hand multitudes have said with Newton, "I seem to myself like a child gathering here and there on the shore a beautiful pebble or shell, while the great ocean of truth lay unexplored before me."

Again, *this feeling indulged proves a stimulus to research*.

The true scientist possesses the spirit of him who said "I will either find a way, or make one." Nature has to be conquered ere she will tell her secrets or yield up her treasures. Her supplies of knowledge never drop like the ancient manna, without labor out of heaven. Unlike the Venus of Mythology, the coy Planet may refuse to withdraw the veil from her queenly features, but the mystery of her Transit will at last be disclosed by the ardor and address of her scientific suitors. The question whether the traditional Scotsman sits astride the North Pole, or our planet is a monstrous tube will ultimately be answered by the intrepid followers of Sir John Franklin and Dr. Elisha Kane. Transforming his hat into a flower-pot, the survivor of a shipwreck denies himself the daily ration of a glass of water, worth in his circumstances untold millions, and as the rare exotic drinks in the daily nectar, it is preserved alive till the land is reached, the enthusiastic Naturalist being sustained in his daily self-sacrifice by its peerless beauty, and revived from time to time as he inhales its fragrance, more grateful to him than the sweetest scented incense that ever burned on the altar of a god.

Nor must the *influence of science on all the arts be overlooked*.

It can be no longer cultivated as it was in times gone by. In *Astronomy*, desirable results can only be expected by the largest and finest telescopes adequately mounted in well furnished observatories.

In *Optics* it throws aside the prism of Newton, and demands the powerful spectroscope. In *Chemistry* the tea tray of Black and Wollaston, with its watch and wine glasses is superseded by well equipped laboratories. In *Meteorology* and every investigation of continuous phenomena we are satisfied with nothing less than self-recording instruments. In *Electricity* and *Microscopy*, and other branches our appliances are every day more and more amplified. The age of great discoveries made, and extensive series of facts accumulated with limited means, is passing away, and we are constantly obliged to employ more perfect agencies in unravelling the secrets of nature. Apart altogether from the bearings of Physical Science on the wants of daily life, simply to furnish these, will tax the artistic knowledge and mechanical skill of multitudes of men in their respective departments. For such a holy service, science calls upon christianity to provide the Bezaleels and the Aholiabs, and christianity replies here they are, and "I have filled them with the Spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship."

Through these improved appliances, *science unfolds to us the most instructive illustrations of Natural Theology*. "By the *telescope* I see a system in every star. By the *microscope* I see a world in every atom. The one teaches me that this mighty globe with the whole burden of its people and its countries, is but a grain of sand on the high field of immensity. The other teaches me that every grain of sand may harbor within it the tribes and the families of a busy population. The one tells me of the insignificance of the world I tread upon. The other redeems it from all its insignificance; for it tells me that in the leaves of every forest, and in the flowers of every garden, and in the waters of every rivulet, there are worlds teeming with life, and numberless as are the glories of the firmament. By the telescope we have discovered that no magnitude, however vast, is beyond the grasp of the Divinity. By the microscope we have also discovered that no minuteness, however shrunk from the notice of the human eye, is beneath the condescension of His regard. Every addition to the powers of the one instrument, extends the limit of His visible dominions. But by every addition to the powers of the other instrument, we see each part of them more crowded than before, with the wonders of His unwearying hand. The one is constantly widening the circle of His territory. The other is as constantly filling up its separate portions with all that is rich and various and exquisite. By the one I am told that the Almighty is now at work in regions more distant than geometry has ever measured, and among worlds more

manifold than numbers have ever reached. But by the other I am also told that, with a mind to comprehend the whole in the vast compass of its generality, He has also a mind to concentrate a close and a separate attention on each and all of its particulars; and that the same God who sends forth an upholding influence among the orbs and the movements of Astronomy, can fill the recesses of every single atom with the intimacy of his presence, and travel in all the greatness of His unimpaired attributes, upon every spot and corner of the Universe He has formed."

Thus gratefully acknowledging the benefits conferred by science on christianity, it would have been a most interesting exercise to follow her as she places many of the Bible truths before us in new, peculiarly fresh, and often startling aspects. The reciprocal benefits which Scripture and science thus confer upon each other, are very great. The one is the mighty moral; the other the vast material element of human progress. The one is primary and essential; the other subordinate but greatly subsidiary. The one though mainly designed as man's guide to a higher and more blessed existence, has, by direct suggestion, and by a regulating influence over disordered faculties, placed science in a position to grapple with the problems of the world. The other, in solving those problems, has not only evoked from Nature's treasure-house, and placed in human hands vastest appliances for efficiency and enjoyment. but has brought from every corner of creation, lights to illuminate the sacred pages, voices to swell the chorus of praise to their divine Author, and hands to bear to the remotest habitation of our planet, the venerable records of revelation.

Man is placed in the midst of concentric circles of divine attributes, which become charged with deeper interest as they press in closer towards Him. The most distant is *power*, girdling the Universe with its rings of stars and constellations. Within it, comes the sphere of harmonious *wisdom* in the orbits of the planets and the revolutions of the sun and moon, with signs and seasons. When we touch our own world, we can discover *goodness* in the varied tribes of being in the earth and air and sea. *Justice* enters in the field of human history, inspiring confidence, and yet exciting awe, when it shows us the rise or the ruin of nations, as they abide by, or depart from, the principles of rectitude. But the inmost circle of fatherly *love* and forgiving *mercy* remains in the approval of God to the individual soul, and feeling its clasp on our hearts we can say "The world is made for each of us." The Universe gathers round each single eye like a broad rainbow arch, to let us see, not the world only, but God's power

the utmost color—mercy the nearest, that every one may look up to Him without dismay. Ready to be crushed by the overwhelming greatness of that starry diadem, there must be some assurance given of God's compassion that shall open for us the door of filial confidence to His heart. Were it not for this, how cold and stern would every night come, with its awful lights looking down distant and silent on a world of sin and graves. Its thousand eyes would glitter pitilessly on our misery; and its fixed cycles would be coiled round us, like the chains of despair. The arms of omnipotence would be dreadful, if there were no throb of mercy in the breast.

"Thou art the mighty God!
This gleaming wilderness of suns and worlds,
Is an eternal and triumphant hymn
Chanted by Thee unto Thine Own Great Self,
Wrapt in Thy skies, what were my prayers to Thee."

When we fall as dead at the feet of Him who has "in His right hand the seven stars," and whose countenance is "as the sun shining in his strength," He lays his hand on us and says "Fear not," and when we look up, we meet the face of Jesus Christ.

It is a noble thing to study God's Universe. It is a nobler thing to be acquainted with Himself. It is the noblest of all to unite these two—to feel the mercy of God's heart, and see the majesty of His handiwork, and to accept them both as God-like and both as ours. Embracing this by faith, "the stars in all their courses will fight" for such a gospel. Both revelations are worthy of God, and each, rightly considered, contributes to the feelings of the other. But of the two, the gospel is more needful to us. The "bright and morning star" is more to our soul's firmament than all the constellations of the sky. It is needed even the more for that vastness of creation which, without its guiding light, would bewilder and blind us, for, truly viewed, the Bible, instead of requiring a defence against the sciences, stands justified by them as a grand moral and spiritual necessity. Let not Scripture and Science be reckoned as opposing citadels, frowning defiance upon each other, and their troops brandishing their armor in hostile attitude. Let them unite their foundations and the basis will be broader, and they will be compartments of one grand fabric reared to the glory of God. Let the one be the outer, and the other the inner court. In the one let all look, and admire and adore; and in the other, let those who have faith kneel, and pray and praise. Let the one be the sanctuary where human learning may present its richest incense to God; and the other the holiest of all, separated from it by a veil now rent in twain, and in which, on a blood sprinkled mercy-seat, we pour out the love of a reconciled heart, and hear the oracles

of the living God. Philosophy! linger not in thy onward progress, develope thy facts, and establish thy laws; thou knowest of no law contrary to the law of God, for thou hast thy origin in the WILL of the Eternal. Science! hasten thy discoveries, and pour thy treasures at our feet. Thou hast nothing in thy vast store-house that belies its origin; and thou lendest countenance to no argument that would rob man of his faith in this world and his hope in the next. He who gave us the volume of revelation, provided thy inexhaustible supplies, and it is thy highest honor and constant effort to show forth His exceeding glory. Religion! fulfill thy high commission. Proclaim thy message in every land; tell the news thou bearest to every creature; hold not thy hand till all from "the least even to the greatest," know that "with the Lord there is mercy, and with Him is plenteous redemption." On thy efforts, thy sisters will not frown, but bestow their approving smile. Philosophy, Science, Religion, your *source* is one—the ETERNAL MIND; your *work* is one—the MANIFESTATION OF THE GLORY OF GOD.

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