

**THE PREACHER AND BIOLOGY. <sup>1</sup>**  
**III. THE SAYER.****BY PROFESSOR J. L. KESSLER, WACO, TEXAS.**

"The strongest part of our religion today is its unconscious poetry". This is the verdict of Matthew Arnold and I am not prepared to deny it. The Bible is full of poetry. The highest expression of the biblical prophets is always poetic. As the crises of their nation swept the choice spirits of the Hebrew race, they were moved to the noblest utterance. Their messages live today and breathe unmistakably of the divine fire from Heaven, and the prophet songs of life they sang shall stir afresh every nation and every possible age of the world. The highest finds and can find no other way of getting itself said at all except through the medium of poetry; and the highest has and can have no other way of getting itself understood. The mood of the hearer and the mood of the sayer must be one mood—the mood of revelation, the poetic mood, the mood of the highest. Poetry in the highest degree is the language of emotion, and no religion, on the emotional side, is completely communicable without it. Emotion always and inevitably falls into rhythm. Worship itself is interpenetrated with feeling and high seriousness, breathes itself out and is communicated in poetic language, and song everywhere soars with the divine fellowships. The prayer of Jesus is a perfect poem. Take away the biblical books of song and the idyls of Jesus and the fragments of poetry that bloom on the plains and here and there in the commonplaces of the Bible and our religious literature and revelation, and the most notable thing left would be its lost power.

The particular genius of the ancient Greek is located in the æsthetic sense, the sense of the beautiful; but in Greece the ethical was latent in the æsthetic. Music stood at the center of Greek life and Greek culture; but music included

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(1) The Gay Lectures for 1909-10.

the fine art of poetic expression. The manners and institutions of the people were dissolved in these ethical æsthetics. To the Greek truth justified itself in a rational universe by the harmony of its parts, philosophy itself being accessory and religion a chief contributor. The disharmonies of the moral and intellectual nature, body and soul, matter and spirit, earth and Heaven, were not so much as formulated among them. All the disintegrating factors of modern life were lost in their one ideal, the ideal of the *beautiful and good* καλοκαγαθὰ inseparably joined in the very saying of it. "Virtue was not prior to beauty, nor beauty to virtue; they were two aspects of the same reality, two ways of regarding a single fact; and if æsthetic effects were supposed to be amenable to ethical judgment, it was only because ethical judgments at bottom were æsthetic."<sup>2</sup> In Greece ethics broke forth from the charm and luscious springs of art, and art was invested with ethical emotion. The religion of the Greeks was inseparably inwoven into their poetry, and their poetry contained their highest expression of religion. Poetry is the language of prophecy and prayer, and in it, in all ages and tongues, worship has found its proper approach to God.

In this lecture we have the Sayer, the third of Emerson's children, otherwise described as the love of beauty. This reveals the highest ideal in visible and audible forms of sweet loveliness, including music and art, but more particularly poetry. More than this, and better than I can say it, it invests the whole in garments of worship while the disharmonies of the world and the superficial insistencies of life drop away. Here the great emotional tides eddy a moment in the wells of truth, then sweep out into the ethical seas and up to God.

Does Biology destroy or tend to destroy the sense of poesy in which life originally rejoiced, and with it the sense of wonder and worship; or, putting it differently, does Biology destroy or tend to destroy the native and reverent response of life to ultimate æsthetic and emotional appeals?

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(2) Dickinson: "The Greek View of Life." p. 205.

Poesy, the commerce of the kingdom of the seer, brings us chief value in choice vessels from rare rich countries. If this kingdom of the seer be invaded and destroyed, there can be no compensation imaginable, to my mind, to match the loss. If this commerce be taken from us, however much the multiplication of commodities be advanced; however much the ravages of pestilences and famine can be checked; however completely the modern means of travel annihilate space; however thick the wireless waves throb about the world and fill the whole heavens with messages,—even with all this, if the commerce of poesy fail, life is bereft of its chief possession.

As sure as I am that the preacher cannot speak out his message to this generation without some biological knowledge, vital and general and practical; that he cannot understand the needs of the people without the knowledge and discipline which comes from biological study; that he needs such knowledge to give him balance, poise and sanity; needs it to widen his experience and to give him a deeper hold on reality; needs it to broaden the pyramid at the base that its growing height may not be perilous to its stability; needs it to solve wisely the problems of the poor, the sick, the misguided, the degenerate, the sorely tempted, the criminal, the industrial, and the sociological maladjustments; that his discipline, his moral and ethical judgments, his social and civic duties demand it; that as an illuminating basis for religious interpretation, for insight into the best of modern literature, for an understanding and a just valuation of modern philosophy and theology itself, biology is altogether indispensable; that the preacher cannot do without it at all without irreparable loss; that there is no substitute, can be no substitute, for it whatsoever,—as sure as I am of all this and much more to the preacher's advantage, still if biology can be proved in any way necessarily to prejudice the poetic faculty, to limit or lower the dream power or its luminous stretches of vision, or in any way impair the subtle spring and rebound of the creative imagination, I should hesitate a good deal before recommending it to you.

I can conceive of no greater calamity to a preacher than

to be lacking in a responsive or constructive imagination. Without it no poetic lift or reach makes him one with literature. The great periods of Isaiah, the pæans and cadences of the Psalms, the impetuous outbursts of Job and the dramatic situations of the mystery of pain, all fall upon his ears with a curious misunderstanding. He can match texts; he can run a chain of references; he can literalize and make dry and meaningless and insipid the most luscious and delicious morsel, 'mid the flowers where it grew, that ever gave up its flavors to poetic appetite or fed the spiritual life. He can dismember and reduce to rabbinical fumbling a biblical poem that sweeps the stars in their courses, and hitch each separate verse to his pre- or post-millennium chariot, or make it do service in his prophetic chain-gang which he thinks needs some biblical backing. The fragmentation of Scripture and the building of textual mosaics, this I call biblical vandalism, and of this also he is a past master. The unpoetic mind is wholly unsuited to interpret Eastern expression. The imagery in biblical literature is bold and bursts like a passion upon the guileless heart—not spoken to schoolmen and not spoken in the schoolman's mood. The analytical and logical attitude is the last attitude in the world to understand it. The impassioned, the poetic, the impressional, the heart laid bare like a sensitized plate with emotional surrender to significance—this is the mood and the only mood to which the greatest literature in the world yields the finest of its fruit and satisfies our hungers with its most delicate flavors and aromas.

The preacher as a Sayer, as one "who knows God otherwise than by hearsay" and can speak with authority, as one whose business it is to communicate this knowledge to others, needs exceedingly to cultivate the fellowships of the poets. The Sayer must make and mould his audience for his message; and his message must be so borne in suitable language as to convey the meaning without destroying its flavors, so borne that the truth shall be strictly accurate in its expression while it is deliciously appetizing. He must seek out and put in order fit words, choose and marshal metaphor and simile and

trope so that they shall be without spot or blemish, and so that none shall limp among them. The preacher, and this is the point of emphasis, is a Sayer and must never forget his calling. I do not release him from his social contract; I do not forget that first of all he must be a man, an all-round man; and yet I lay chief emphasis upon his ability to communicate his life to others through human speech. Still this caution: woe betide the glib of tongue. Aaron, the speaker, left us nothing, Moses, the slow of speech, left us the four greatest orations ever delivered by mortal man. The preacher by occupation is a Sayer, not a multiplier of words; and to be a Sayer, he must keep company with great literature, nor neglect the baptism of poetry, nor allow anything to steal away his heart from life's ageless songs.

Turning now to Sir Oliver Lodge's statement that the atmosphere of science has a blighting influence on religious ardor and is adverse to the highest religious emotion, two things may be said: First, all culture tends to tone down excessive physical demonstration, whether it make its appearance in the tonic or the clonic type, that is, as hypnotic trance or the noisy and uncontrolled form which disregards all proprieties. That is to say, scientific culture, or any other, which gives the mental powers ascendancy over the physical, tends not to less emotion and ardor, nor to a lower quality, but to a greater depth and permanence which manifests itself in a more persistent rhythmical flow. The shallow gusher mixed with salt-marsh is replaced by a steady flow from inexhaustible supplies. Again, instead of the cultivated mind exhausting itself in an aimless physical overflow, it finds natural channels of escape in definite service for the relief and uplift of humanity. The uninstructed person may be prostrated before a mangled form; the surgeon, with deeper emotion, turned into the channels of service, with every fibre of his nature alert and resourceful, is entirely self-possessed. No visible emotional overflow occurs, as with skillful knife and needle he looks beyond the pain to the healing—through his scientific training his emotion ceases to appear as egotistic over-

flow in altruistic action. The loss in appearance is more than compensated for in achievement. This illustration may, without violence, be transferred to the two grades of society, the lower characterized by aimless and uncontrolled emotional overflow, the higher characterized by a steady outlet in definite channels of beneficent activity.

Secondly, science itself has two moods. In making out the facts it is cool, definite, calculating, suspicious of error; in the assembling of these facts and in forming hypotheses, the imagination soars to I know not what heights; in testing these hypotheses, the judicial faculty again assumes the throne, and when all the seats are full with appropriate witnesses and all the testimony is in and no dissenting voice is heard among the facts of the universe, the glow from the central fires with annealing heat permeates the mass and the integral parts disappear in a unity of truth. Here the emotional mass may gleam like the stars as a central permanence in a flux of change.

It must be admitted, however, that in biology, as in every other study, narrowing specialization without an adequate basis in general culture may, often does, put to rout the finer emotions. But this comes under another category, namely, educational pathology.

Since, in method, biology is one with all science, and since it is the method which is in question, I shall by preference use the word "science", in this lecture, instead of "biology" wherever it suits my convenience.

Neither the preacher nor biology is directly related to poetry, but the preacher's relation, though indirect, I have assumed to be a necessary one. The biological relation is more remote, and the only point at issue is its ultimate antagonism or destructive effects on the poetic faculty and the imagination. Still I shall maintain that science is not without its influence on poetry and that its imagination is not coerced. Witness the following from Miss Scudder's excellent book, *The Life of the Spirit in Modern English Poets*: "Deeper than scientific ideas is the scientific temper. And the notes of this

temper are two: reverence for law, passion for fact. . . . These are the principles which working inwardly and silently have renewed our poetry. For literary history clearly shows that their union could alone bring new life to the imagination of the nineteenth century." "If reverence for law deeper than that of the Augustan shapes our poetry, a passion for fact wider than that of the Elizabethan expands it." "For this passion, dangerous to art if for one moment divorced from profound reverence for law, grants, when thus purified and controlled, the very freedom of the earth to the imagination." "And the scientific belief in an ever active, determining, energy working through every form of life, and sweeping all things forward, has touched with renovating power the very soul of modern, imaginative thought. The formative ideas of science have exerted over our modern poetry an influence as widespread as it is profound."

And this from Mr. Mabie's *Essays in Literary Interpretations*: "The structural element is discovered, appropriated or furnished by the imagination,—the one creative faculty we possess, and the 'master light of all our seeing'. The more closely we study human knowledge and thought, the more clearly do we perceive that this word 'imagination, has more compass and depth of meaning than any other word which we apply to our faculties. It includes all that we possess of constructive power,—the power of holding masses of facts so firmly and continuously in the field of vision as to enable us to discover their unity and the laws which govern them; in other words, science,—the power of seeing the permanent in the transitory, the universal in the particular; in other words, philosophy,—the power of perceiving and realizing the soul of things visible, and out of the real constructing the ideal; in other words, art,—the power of discerning the spiritual behind the material, the creator behind the creation; in other words, religion. Whatever and whenever life becomes great and the world real to us, the imagination holds aloft its quenchless torch."

Indeed, I may say in all our knowledge which is not

wholly elementary in its nature, imagination plays a leading role. By means of the imagination we enter star depths, measure nebulae, see worlds and systems of worlds forming out of fire-mist according to the laws of matter and motion. The whole of higher mathematics rests upon realized finites projected into unrealized infinities. From the measured units in the laboratory of sense-perception the imagination rises to the measureless spiritual Heaven of heavens. Experience of uniformity in the small limited sphere gives wings to our faith from which the very seats of the angels themselves cannot escape us.

I must be allowed to assert a strong denial to Walter Pater, when he says, "In science. . . we have a literary domain where the imagination may be thought to be always an intruder. And as, in all science, the functions of literature reduce themselves eventually to the transcribing of fact, so also the excellencies of literary form in regard to science are reducible to various kinds of painstaking." He reduces scientific expression to a mere cataloguing process; whereas it rises all the way from lowly ditch-water to the luminous wastes beyond the stars. Science seeks not only for facts, but the explanation of facts; not even chiefly for facts, but the sense and significance of facts. What is the herbarium of the botanist more than a hay-loft, if it does not signify, if it does not mean something, and mean something about life, and something intense and true? Since, then, the scientific process includes the imagination, and a very high and excellent form of it, the scientific expression must needs be illumined, here and there, at least, by this fair intruder—if we must call it so—illumined by it wherever and whenever it makes fact or the sense of fact clearer, stronger, more stirring, more easily received, more fully remembered, and, withal, more fruitful of good. "Science," as Tyndall says, "may be critical without imagination, but it can never be creative without it."<sup>3</sup> The main body of science is its product, and it must needs reveal its process in its native air.

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(3) **Forms of water.**



We have, then, science, by observation, experiment, and the reason, tormenting the facts of nature to force them to exhibit their origin, causes, relations, its essential beauty consisting in the natural harmonies revealed, but admitting, besides, a chance glory of the imagination.

Turning now to another phase of our subject, we may inquire about poetry. Professor Sharp associates it with philosophy and theology as arriving at causes and origins.<sup>4</sup> To find out if this be true, we may take any phenomenon of nature, the rainbow, for example, and see how the poets have treated it. Beginning with Browning:

“Only the prism’s obstruction shows aright  
The secret of the sunbeam, breaks its light  
Into the jewelled bow from blankest white;  
So may a glory from defect arise.”

This could not have been written without the knowledge of the spectrum and the causes of the rainbow; but does he teach the cause of the spectrum in the different degrees of refrangibility of the various and innumerable wave lengths of light, and the further cause of refrangibility itself? He leaves this to the physicist. He relates the phenomenon to no cause, no process, no other phenomenon. What does he do? He utters himself. He expresses an emotion and a hope. He paints. He is an artist. He gets new paint and a brush from science, it is true, but he paints a very old picture, a very beautiful picture which the world will paint in its multi-vari-colors as long as there is one hurt heart that longs for healing. It is the same old picture: the broken shell heals with pearl, expressed in so many ways, in so many lands and languages.

Again:

“Rather learn to love each facet flash of the revolving year;  
Red, green and blue that whirl into white.”

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(4) On Poetic Interpretation of Nature.

Red, green, and blue revolved like the revolving year whirl into white in any of our schools nowadays and no marvel. We all know that, and he took it for granted that we knew it; and took the whole round year in its infinite swing, and with one white flash from the fire of Parnassus, made it glow on canvas at arm's length, concrete and beautiful, concentrating in the heart of the beholder the whole circle of the seasons softly bathed in happy memories. Again, I must say, he connects phenomena with no cause. He shortens allegory into metaphor and simile into symbol; he paints and we stand breathless before the fair sweetness that makes us dumb.

Once more, and this time from *Sordello*

"Light thwarted breaks  
A limpid purity to rainbow flakes."

This is a triumph of art. Beauty stands bare and naked with the air of the gods about her. Yet he teaches nothing about cause; and in reality there are no flakes. He takes knowledge for granted and uses it for quite other purposes than teaching about light. On the contrary he uses it as a means of expression. He reveals an emotion, a sort of universal one, paints it, paints it with new colors; but it's an old picture, old as time, old as religion; it's the story that only the crushed grapes yield their wine, and will last as long as disappointment hopes for good and love and immortality kiss the lips of death.

Or take Coleridge's rainbow, "made up of tears and light"; while borrowing no paint from science and putting its imagery two steps off, it is no less beautiful for that, and no less beautiful because it is not, in reality, made up of "tears". By means of the metaphorical use of tears, he not only makes it glow with color but also with emotion, and half concealed in the shadow stands sorrow as the womb of beauty.

Or take Byron's "the evening beam that smiles the clouds away." Here is the rainbow again with its prophecy of hope, but no explanation of the phenomenon and no attempt at an

explanation, not even an attempt to be true to fact; but Byron was true to his art of painting and revealing beauty and the deep essential world-hope while he heightened the sense of emotion and the pleasure of it through the imagination and imaginative language. I might extend three quotations endlessly and to every phase and form of nature with the same result; no explanation, but instead a picturesque emotionalized expression of beauty, suited to communicate the emotion of the writer to the reader. The poet is a revealer, a revealer of beauty, of beauty alive, warm, radiant, imaginatively and ideally laid bare—a revelation, a truth in solution, a glory passing the glory of the angels.

We have here then, poetry in no way concerned about connecting phenomena with their causes, nor in any way discovering their origin or relations. This is not the province of poetry. The poet's art is the art of expression.

Mr. Stedman says, the poet treats things as they *seem*, the philosopher as they *are*. "To the ancient poet", he says, "the Dawn was a joyous, heroic goddess, speeding her chariot in advance of the sun-god along the clouds, while beauteous Hours. . . scattered many-hued blossoms down the Eastern sky." For the educated modern, he says, "There is neither Aurora nor Apollo; there are no winged Hours, no flowers of diverse hues. His sun is an incandescent material sphere, alive with magnetic forces, engirt with hydrogenous flame, and made up of constituents more or less recognizable through spectrum analysis."<sup>5</sup> This is all beautiful and true; but, so far from making out his case that the poet treats nature and life as they seem, every point in his illustration is against him. No goddess appears as pictured in the grand Aurora fresco in the Rospiglio palace in Rome, to which he refers; no chariot seems to advance ahead of the sun-god; no Horæ have ever been seen scattering many-hued blossoms. Not one thing he mentions is true to the detailed appearance in nature. But they are true to feeling and to beauty, and to both the associations which produce them and express them. It is not

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(5) The Nature of Poetry.

a seeming that is pictured in the joyous goddess, but that emotion so intimately associated with the sun; nor do the hours seem to be fair winged maidens, but the poets made them so, that they might have a picturesque thing, a fair form, not devoid of emotion and sweet humanness, scattering flowers. The Greek adorned the nature he painted and planted his own emotions in all his gods—what everyone everywhere does. In this, one of the most beautiful conceptions that imagination has reached, he gathered all the sweet experiences, sensuous and lovely, around the circling of the suns, and pictured them superbly in the loveliness of woman whose heart was warm to his. That is, he emotionalized nature and in it found his own proper expression. The idea was all; appearances vanished; the woman was but his metaphored, poetized idea. He took the joyous emotion and embodied it in something totally different from the appearance of the thing in which it immediately originated, but in something in which the highest form of this particular emotion is most constantly associated and by which it is most uniformly produced and through which it must, of necessity, be most completely expressed and communicated. Its effect is heightened so, being at once concrete and universal. In this particular case it was a woman, since to the Greek mind woman was herself sweet and passionate beauty, the flower-scatterer and joy-dispenser. She was his picture of the morning because the same elevation of feeling which was partial and thwarted in the Dawn was complete in her. He wants to convey an experience, an emotional experience, no matter what the appearance of the thing which produced it, he looks for something which universally does produce that effect; woman, fair, fond, passionate woman, never fails to produce it; she, therefore, becomes the metaphored emotion. The poet does not look for something like the dawn in appearance, but something like it in effect. He reproduces the emotion and communicates it, all he intended, by the law of association—a truth, a deep and essential truth, elemental and expressed in an elemental way. It has common origin with all figurative expression, which is to say, all language; for all language arose

in metaphor, or the expression of a likeness in one particular by something different in other particulars. It involves both likeness and contrast, and the likeness frequently has no reference at all to appearance.

“The trees clapped their hands.”

“All the mountains laughed.”

“The morning stars sang together.”

What do these express? Literally interpreted a most ridiculous falsehood. Whoever saw trees clapping their hands, mountains laughing, stars singing? Certainly they do not express the appearance of nature nor the way in which nature behaves, but an emotion by the most common associates of that emotion. The glad heart projects its own feeling into the trees, mountains, stars, humanizes them, and makes them act like men in order to communicate the emotion. It expresses truth better so; the contrast brings out the likeness and abolishes the commonplace, and we, at the same time, become one with nature deeply bathed in a gentle afflatus.

This poetic principle properly applied would remove much criticism of the Bible, reveal the proper method of interpreting its poetic passages, and emphasize anew the saying of Jesus, “The letter killeth.”

Poetry is not poetry by reason of its being true to nature or false to nature, literally interpreted; by being fact or semblance of fact—it might be parable, it might be myth if it bore true message; by piercing to the meaning of phenomena or the relations of phenomena; not even by expressing things pictorially as they seem, but by being true to the beauty-sense and the heart of things. It pictures; it does not photograph. Its imagery and its form no matter what their origin, must be suited to communicate these idealized and pleasurable veracities of beauty. For our purpose, “poetry is”, as Spencer defines it, “idealized emotion expressed in the idealized language of emotion.”<sup>6</sup> This includes rhythm in its highest form

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(6) *Essay on Style.*

of musical regularity and conforms to the most general law of style. Science includes both analysis and synthesis, poetry both the poetic energy and the poetic form, poetic impulse and poetic art.

Since the time of Coleridge and Wordsworth, it has been the fashion to speak of science as the antithesis of poetry. Is this true? A simple summary may help us. This summary, however, is not intended to be either exhaustive or exact, but merely suggestive. Science interprets nature, poetry uses it as a medium of art; the same nature which in science serves to stimulate thought, in poetry serves to stimulate the nobler emotions; the process of science is rationalization, the process of poetry, idealization; the product of science truth realized and relative, of poetry truth emotionalized and beautiful; the purpose of one to make truth prevail, to give pleasure and exaltation the purpose of the other; the chief thing in science its process; in poetry its product; science teaches causes and relations, poetry reveals beauty and heightens it; science addresses the reason mainly but also the imagination, poetry the imagination mainly and the taste and cares only not to offend the rational order; since science must be realized, its diction must be representative, limited, definite, since poetry is idealized, its diction must be symbolic, suggestive, musical, indefinite, unlimited, universal, concrete; the one uses the word in its solid nucleus of meaning, the other with its vast halo of suggestion through association in literature and life; science in attempting to convey the sense and beauty of the relations of things may have rhythm before it reach its fitting and adequate expression, but rhythm, like other imaginative prose at irregular intervals; poetry must have rhythm, but at regular intervals; that is it must be metrical, or there remains no distinction between prose and poetry—one will shade indefinitely into the other. In these respects, then there are certain differences which may be called antithetic; better, as it seems to me, complementary. I agree perfectly with Stedman that they differ in method; but I say that the method of science is more than analysis, and of poetry more than artistic vision.

But are they antithetic in the sense that whereas poetry is beautiful, science ugly; or poetry interesting, science dull; or poetry false, science true? Such will not be admitted for a moment. They do not stand opposed in any such sense. To take, as Stedman<sup>7</sup> does, a splendid impersonation of a storm-cloud sweeping down upon Labrador and New Foundland, translate it into the commonplace of the weather bureau, then call this an illustration of the two modes of expression, the mode of poetry and the mode of science, is exceedingly misleading. He touches science at its lowest ebb for his illustration. There is nothing, absolutely nothing in his weather report that the mind can rest in. It is but raw material, the skeleton, yet to be transfigured by science into a fair Galatea. The scientist is constantly wrangling resolutely with significant facts to make them tell their meaning, and when they do, even the poet might look forward to one such experience in a lifetime and be content if he reach it and rest in it.

Science might even, in some cases, supplant poetry by its higher interests and keener intellectual delights; but in the face of all this Professor Shairp describes Wordsworth's "Yarrow Shepherd" going forth into the dewy dawn, feeling the glories of the rising sun, "the first stirrings of that which", as he says, "when the poet fashions it into fitting words, becomes immortal song." Then adds, "had he been college-bred and crammed with all the 'ologies which physical science now teaches, would he still have had the same elevated joy in the presence of that spectacle?"<sup>8</sup> Professor Shairp did not mean to imply a necessary negative, let us say, and yet there are those who do, and who put their stigma upon science and learning as necessary antagonists to the poetic and religious emotions.

Once more from Stedman.<sup>9</sup> "The colors from the auroral dawn—for the poet still calls it auroral—are rays from this immeasurable incandescence refracted by the atmosphere and

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(7 and 9) *The Nature of Poetry.*

(8) *On Poetic Interpretation of Nature.*

clouds, under the known conditions that have likewise put to test both the pagan and biblical legends of that prismatic nothing, the rainbow itself;" and adds this quotation from Keat's *Lamai*:

"There was an awful rainbow once in heaven:  
We know her woof, her texture; she is given  
In the dull catalogue of common things."

This wail is indeed plaintive and pathetic and has within it far-reaching implications. In the first place, the rainbow is not a prismatic nothing, nor is it a scientist who says it is. It is relative, but so is all else we know. It is an exhibition of energy and, in the last resort, in one way or another, that is all we know of the physical universe. It is as much a reality as the hands we work with or the brains we think with. All that science has done is to show its light alliances with trembling borders of mystery, new fields for poet and seer, skirting a wider horizon.

Is there anything then in the nature of scientific study which destroys or tends to destroy, the love and appreciation of beauty in one naturally poetic, the Yarrow Shepherd, for example? This final question, for which we have waited, we now set ourselves to answer directly.

Everyone enjoys a beautiful landscape, a rolling wave on the seashore, blooming flowers and rich, ripe fruit clusters in the summer time; but the higher intellectual delights which go deeper than the surface, are reserved for the student of nature, and yet, I maintain, the surface beauties but attract and intoxicate him the more. Does the ice lose its smoothness or zest for the skater because he knows that it is made up of regularly and horizontally arranged water blossoms, millions and millions with their tiny, sparkling hexagonal stars facing the sky, more beautiful than the red roses of the summer garden? Does the flaming house across the street burn with less brilliance because I know the flame that licks the air with its fiery tongue evolves enough energy to carry an engine half



round the world, and many tons, leaving but the dull ash behind, recline on evanescent wings in the invisible sky, and that all this is due to chemical affinity? Does the hungry man lose his appetite because, forsooth, he knows that the food in the red waves of his blood hurries to the rhythmic music of his heart, carrying without loss or gain, the energy borrowed from the plant that came from the sun and which has now passed through all the solutions and filterings of the visceral laboratory, has waked every sleeping chemist from the crowded shelves of the alimentary canal, has heard the Orphean harp of life behind the purple curtains vast and dim wooing it back to life again? For I would have you remember that resurrection realities are native to every living cell in its strange, rhythmical, zymotic reciprocities in a vortex of material change. As the biologist faces this deep music and miracle, which our physiologies call assimilation, does he, therefore, eat with less relish than do others? Does the sun cease to warm you or the light to thrill you with joy because you know the process of its coming, and that every square yard of streaming sunshine yields enough power to lift seventy-five thousand pounds one foot high every minute of the day? Does quantitative knowledge destroy qualitative experience? Has the dawn lost its glory because you know there are hydrogen flames in the surface of the sun? Has the rainbow grown dim since the other day you explained it by a drawing on the blackboard? Is the starlight less grateful because you know that ninety-five per cent pours in from infinite distances and invisible stars? Does the restful green of nature that gives us that elevation of heart on a dew-girt spring morning lose its verdure because we know it to be a complex chemical compound called chlorophyl, or when we know that without it all would be one vast stagnant waste of death? Or does nature bear less nobly His divine image and superscription because we know that change and higher life depend upon minute microscopic things we call bacteria? The flowers are beautiful and their perfumes sweet; shall they be robbed of their sweetness when we know that they are there to lure the bee they

feed with honey to her task of flower fertilization, that the bee and the flower are engaged in a business of brute utility? When music's sweet tenderness elevates you to the happiness of tears, does it grow dumb when you recollect that it is wave motion you are hearing? Does the thrill of the full mellow music of Melba or Schumann-Heinck vanish when you recollect that she has a larynx and vocal chords and how the organs must be placed and used to produce such magnificent effect? In a word, are you charmed less by music and nature as you learn more about them? The questions multiply and the answer is evident: I say, with Professor Andrew Wilson,<sup>10</sup> "there is nothing, absolutely nothing, in the nature of scientific study which, to a mind naturally poetic", the Yarrow Shepherd's, for example, "can chill or destroy the sense of beauty or the faculty of poesy in which it originally rejoiced." On the contrary, so far as there is any tendency at all, it is clearly in the opposite direction so long as the wider alliances keep pace with the scientific temper. The biologist sees this wonder-working nature, as Tyndall puts it, "not as brute matter but as the living garment of God." The clod the plowshare turns is no longer a little, lifeless, senseless dirt, but crowded and crowned with living vitalities, the poetry of mystery shrined in beauty—God's inner temple. Between the blades of grass that sprout on the dull clod, life trembles with all the sensitive energy of matter. It is the holy of holies; it is nature's divine mercy seat, where sit the seraphim and the cherubim and the ark of the covenant of peace. To the biologist, or the student of the works of God, their are a thousand avenues for the insinuations of beauty and reverence where others pass on and see nothing, and his wider vision, I maintain, obscures nothing of that which is near. He has augmented the elements of strength in his character; increased in almost endless variety the fruitful means of self-improvement; multiplied almost infinitely his independent resources

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(10) For a number of suggestions and for this paragraph almost literally, I am indebted to Prof. Wilson's "Science and Poetry."

of happiness through beauty. How glad, then to see the purple clusters rich about us with no flaming sword to guard the gate-way back to Eden! How grateful that the biologist, too, may sometimes sit down in the vestibule of the sky-dwellers, and hear the music and feel the twilight fall about him.

If it should need further proof that biology does not clip the wings of angels, it would be enough merely to refer to those who have lived and written in this age of biological revolution; the most spiritual and pervasive missionary period of the world; great religious leaders, not a few, social reformers, seers; many of our chief imaginative writers; Browning and Tennyson in the midst of it, thoroughly conversant with it, prophets of it, true to it, for the most part in expression, using its truth and whatever it gave of artistic material to heighten the effect of their art; but neither did their eyes grow dim, nor was their natural force abated, and many whose names would have led all the rest anywhere between Milton and Tennyson adorn and fructify this period of biological invasion.

And yet, withal, to some, biology will still seem a stab of fire, but to others gentle as the south wind's breath. Be assured my friends, that for every evening grave at the sacred altars of life, religion, poetry, there will rise nobler and lovelier angels of light. If the ancient allies of the poets are gone; if silver-footed Thetis no longer presides over stream, nor Dryad nor Oread over forest and mountain; if Olympus is dethroned and the sun-god no longer bears the form of mortal,—still when we build our fires at the ancient gateways of peace and sincerity, their spirits will come to us out of the free air like a light out of the sky, bearing the sword of Attila and of power. Poetry will not leave us because the nymphs are dead. There is something elemental in us that made the nymphs, which will come again in fairer and ever fairer forms.

Glendoveers, spirits of the air, beneficent and beautiful. There were two, Red and Violet, farthest apart of the spirits of the air. It chanced once upon a time that they dwelt

together. Where they touched was a fringe of purple. Red said "It is mine"; Violet said "It is mine" and the purple faded. But at last they decided to say no more "It is mine", and went on a long journey together to see all the stars, and the purple border grew and it was very beautiful. After a thousand years they came back and where their feet touched the green grass purple violets sprang up. So the ruddy health of biology touches life's fairer violet, farthest apart of the spirits of the kingdoms of the air, and the purple border grows in their star flights together. Biology out of its black pitch and coal tar, long buried in earth-night, gives to poetry its materials of art and its many colored paints, underlies its conditions, its processes, its progress; poetry gives to biology its luminous expression, bodies forth idea in passionate fairness and nature in beauty, not as it seems, not as it is, not as anyone thinks it is, in literal garments, but as the dream power of the heart, tender to the silken caresses of the dream-god of beauty, pictures and persons it in the peach bloom of life.