

ARTICLE VII.

MR. JOSEPH COOK'S LECTURES ON BIOLOGY AND
TRANSCENDENTALISM.

[The following notice of the work on Biology was prepared by a scientist especially interested in the subject of the work ; and the notice of the volume on Transcendentalism was prepared by a scholar who, having listened to Mr. Cook's words as spoken, is so much the better qualified to speak of them as written].

1. **BIOLOGY** ; with Preludes on Current Events. By Joseph Cook. With three colored Plates, after Beale and Frey. Fifteenth Edition. 12mo. pp. 325. Boston : James R. Osgood and Co. 1878.

The scientific portion of this work is embraced under two heads : the facts of recent biology, and the endeavor to prove therefrom, by the scientific method of reasoning, the existence of a soul in man.

In order to form an estimate of these lectures that shall be at once clear and just, it is needful to keep before the mind these general considerations :

1. The novelty of their scope and method. The literature of apologetics would make a library of vast proportions ; but through it all, one would vainly look for a work like this. An attempt to hold large popular audiences, by the discussion of the relations of modern science to theology, on the avowed basis of the scientific method, has never before been made ; indeed, from the nature of the subject, could not, until these latter days, have been made ; and even now the number of those who combine sufficient knowledge of the various sciences, of theology, of metaphysics, and of logic, with the power of popularizing such knowledge in public discourse, before the learned and the unlearned alike, to even essay such a task, must be very limited. On every man of genius, who has a new thought, or a new method of expressing thought, to give to the world, these three burdens are laid : he must prepare for his work, he must do it, and, what is hardest and most wearying of all, he must educate his audience, develop the standard by which he is to be measured, preside over the school in which his critics are to be trained, charge the jury who are to pass upon his claims. Upon this latter task, in the accomplishment of which time, together with the infinite and interacting forces of society, must co-operate, Mr. Cook, by the publication of this volume, now enters. There is no other work on biology, there is no other work on theology with which this volume of lectures can well be compared ; it is a book that

no biologist, whether an originator or a mere middle man in science, would ever have written. Traversing a very wide field, cutting right across the territories of rival specialists, it contains not one *important* scientific misstatement, either of fact or theory; not only the propositions, but the dates, the references, the names, and the histories of scientific discoveries and speculations are presented as they are found in the sources whence they are taken, or at least with only verbal and minor changes. But while Mr. Cook does not state the biological facts erroneously, he does not always state them well; he *dys-states* rather than *misstates*; that is, he presents facts out of due relation and proportion to each other, and to the reasonings derived from them, magnifying some, minifying others, and sometimes, in the revolution of his arguments, allowing one to eclipse another. Every year, almost, the committee for arranging the pictures at our art exhibitions is censured, justly or unjustly, for not classing these pictures with wisdom and taste and impartiality: the leading positions are given to inferior pictures, while the corners and out-of-the-way spaces are assigned to works of solid merit; and thus while each artist may have done his best, the average impression may be unfortunate. Some such charge as this may rightly be made on these lectures, which, with all their phenomenal excellences, yet, from the scientific point of view, are extraordinarily unsystematic in their arrangement. Scientific enthusiasm and the scientific sense are not identical, and do not always co-exist. Mr. Cook will cross the continent for a fresh discovery in science, which, when obtained, he may not always use scientifically; in the laboratory of the specialist, and in the theories of the scientific philosopher, in chemistry, in the microscope, in electricity, from sources the most recent and out of the way, he gathers the family of facts which, from the antagonism of their natures, cannot dwell together in perfect unity. It would not be a hard task for one whose mind is under the rigid control of the scientific sense — by which is meant the faculty of seeing things as they are, and in their just proportion and relation, without reference to real or fancied tendencies — to take this work, and by various transpositions and elisions and changes in phraseology comparatively slight, but without extensive addition or subtraction, to prepare therefrom a systematic compend of the central facts and problems of modern biology.

This analysis is not censorious, nor even critical; but rather descriptive and explanatory of the difficulty that friends and foes alike encounter in this volume. As a master in painting may get satisfaction from an exhibition, and be able to assign proper credit to each artist, however unwisely the pictures may have been arranged, so one fully versed by experiment and research and practical experience with biological science can from the present work obtain correct views on the matters involved, while a non-expert may misinterpret both its science and its philosophy.

To reduce these lectures from their fragmentary, poetical, and converse-

tional form to a systematic epitome of biology would, however, be to destroy their popularity and their usefulness with the class to whom they are chiefly addressed. Neither in this country nor in any other country are there at present any considerable number of experts in all the branches of science here touched upon. Mr. Cook's listeners are learners, not critics, receiving for the first time the facts and speculations of science as he brings them fresh from the closet and the laboratory. It is a result, as well as a sign and proof, of the limitations of the human mind that it sooner receives and better retains new ideas in science when they are presented unsystematically, incidentally, even accidentally. A systematic teaching of science implies and involves on the student's part a triple task : reception, rumination, and anticipation—an understanding of each thought as given, a carrying in the memory of what has already been given, a foreboding of what is to come; under these combined burdens even the disciplined intellect often bends and breaks ; such is the psychological elucidation of the admitted evils of cramming. On the other hand, science unsystematically taught avoids the stress of recollection, and the pain of responsibility for what is yet to be imposed, and requires only that each fact be considered as it rises to view ; the combining, the co-ordinating, the adjusting of the facts, the building of the edifice out of the materials thus gathered, must take place subsequently, perhaps unconsciously, in the learner's mind at a later stage of its development. Hence it is that from the perusal of even the lightest and flimsiest novel, where a plot is to be traced and characters are to be watched, we find rest and relief in the tit-bits and gossip of an ordinary newspaper, where we can read what and when and as much as we please, and stop at any moment. Hence it is that in the study of medicine it is proved more and more that clinical lectures are better for the student, in many respects, and on subjects where they are admissible, than didactic instruction ; and more and more they are assuming prominence in hospitals and colleges. Hence it is, also, that the self-taught scholar, despite all the defects of self-teaching, outstrips, for a time, in compass, if not exactness, of learning the favored scholar of the university.

In this work, from the opening chapter on bathybius to the closing remarks on the enswathement speculations of Ulrici, very little can be anticipated by the reader, or probably was fully anticipated by the lecturer ; everything is unexpected, abrupt, sometimes precipitous ; a series of constant surprises, which are much more delightful to the common mind than a logical setting forth of facts would be, as oftentimes a glance at a shop picture, on suddenly turning a corner, causes intenser aesthetic pleasure than a wearisome march through the noblest galleries. From all this it follows that to read these lectures as one would read a systematic treatise on science by a scientific man is to caricature their purpose ; to criticise them by the conventional standards for works of science would be a satire on criticism.

2. The recent and difficult and unsettled character of the scientific topics discussed. Biology is a generic term, including whatever relates to the science of life, and variously, and not always logically or consistently, subdivided into physiology and psychology, in their many departments, and requiring, also, the re-enforcing aid of electrology, microscopy, geology, palaeontology, and chemistry. Many of these sciences are but of yesterday, if not of to-day; everything connected with them suggests incertitude, changefulness, fluidity; to study them even in their very latest discoveries, is more like walking on the water than on firm soil. Before this huge, whirling mass of gaseous crudities and contradictions shall have become consolidated, how vast the amount of waste material to be thrown off into infinite space. All human science, or systematized knowledge, must pass, or has passed, through three stages, the pre-exploratory, the territorial, and the organized. Some of the sciences included under, or relating to, biology are but just passing out of the territorial into the organized stage, where only experts are expected to occupy and cultivate them. The last word of such sciences may or may not be a solid foundation on which to build a new philosophy, but is more likely to be a shifting sand-bar, which the next tidal wave shall sweep utterly away. Scientific truth is, indeed, not a matter of time, but of demonstration; for time crowns error as well as truth; the latest claim and the oldest may be alike true or untrue; but, after knowledge has once become organized, all the confirming voices of experts, every year of endurance, and every survival of hard assault, and, above all, each surrender of skilled opponents gives it added strength, and makes it worthy of increasing reverence. But these are tests which many of the claims of biology are too young to have successfully passed. The monographs from which Mr. Cook obtains his facts have mostly appeared during the past five or ten years; some of them the very year in which the lectures were delivered.

3. This work has no preface, which it imperatively needs. The spoken style is so different from the written, and Mr. Cook's arrangement is so unsystematic, that these lectures nowhere distinctly and formally state the author's philosophy. The topics of the individual lectures are chosen, in some instances, on the occasion of local and transient excitements; are adapted — as in public discourse they must be — for the day, the hour, the moment, and, with their artistic interruption of logical continuity by anecdote, poetry, rhetorical, and personal statements, are in a measure commanded by the audience. The method of treatment could not be radically changed on publication; but the ideal spoken style never reads well, never should read well; and in this case its defects could have been fitly supplemented by a preface composed in the literary style, and prepared with the finest care, — as Paley in the leisure of invalidism worked out his *Natural Theology*, and Butler labored during twenty years on his *Analogy*, — with scientific and logical exactness of plan and choice selection of

language, and, with the highest and severest standard always in view, addressed only to science, scholarship, and philosophic culture. Such a preface would have made clear these three distinctive features of Mr. Cook's philosophy :

First, that it can be scientifically proved, both in general and in detail, that the *arguments of scientific materialists against the existence of a soul are worthless*. Thus the special purpose of this work on biology is mainly a negative one. ✓

Secondly, that the battle-ground between science and religion is at present in the brain and nervous system. The question of all questions for the future is, whether naturalism or supernaturalism shall carry the human brain.

Thirdly, that reasoning on religious subjects should be followed to its logical conclusions under the guidance of the scientific method, wherever it may lead us.

Although none of these propositions are stated formally and exactly in these words, yet adumbrations of them appear constantly, here and there, throughout the lectures. Such a preface as is here proposed, by crystallizing these scattered hints, would have made clear to the reader what is now obscure and unsuspected, would have been as a light on the brow, so illuminating in advance the unfamiliar pathway as to lessen the risk of colliding opinions, would have taken the arms from hostile critics and guided the search of friendly inquirers, and — in ways too subtle for words, but fully obvious to the man of science or letters — have simplified and aided the process by which the philosophy of this Lectureship is to grow into scholastic and popular esteem.

The permanency of this work, also, would have been better insured by such a preparatory treatment of its central doctrines ; since in literature nothing can long survive that does not take root in the needs of the choicest intellects ; the thoughts that live do so because the minds of the few leaders of each generation provide for them nutritious and congenial soil. The law of nature in this regard is imperious and cruel ; on this seething ocean of time a book must keep on the very crest of the wave, or be swamped, and sink out of sight forever.

These general considerations — by which, as it is hoped, the key-note to a right criticism has been struck — leave little space or need for details. These lectures, in their scientific relations, are divided — though not formally by the author — into just four sections : the first treating of evolution ; the second, of bioplasm as seen under the microscope ; the third, of the automatic movements of decapitated animals, and the distinction between automatic and influential arcs ; and the last, of the electrical irritation of the brain.

The lecture on bathybius, with which the course opens, is, in some respects, the most vulnerable and tempting to critics of any in the book.

It is an instance of the disarrangement — not *mis*-statement, but *dys*-statement, disproportionate statement — of which I have spoken (p. 382); the poorest picture has the best place in the gallery. The bathybius controversy is simply a part or phase of a preliminary exploration that a few scholars are making in the dark and far away border-land between the living and non-living. Of its possible future the most learned man is the most ignorant. The facts of its history up to date are given by Mr. Cook with substantial correctness, but in language that is not always wise, and which to the non-expert class — of which his audience, in its relation to that subject, must be almost entirely composed — is liable to be misleading. It is very true that Straus, — one of the most inconsistent of reasoners, — in his work, *The New Faith*, hurriedly seized the bathybius claim, overestimating almost ludicrously its magnitude; but in this respect he is not to be imitated, but avoided, by those who would oppose him.

The other chapters on evolution contain, in a very compact shape, the crucial questions now at issue on this stupendous theme. What Mr. Cook's own creed may be he nowhere positively avows; but after the recurring showers of imagery have passed by, there appears this one central, shining truth, that through universal nature the tendency of all things that live is to grow and develop after the manner of a tree of the field. To this general doctrine, that leaves the ultimate mystery of things where it found them, — the philosophy of the school of Mivart, as opposed to that of Haeckel, — Mr. Cook undoubtedly subscribes, and if he had written a preface would probably have so stated. The general principle of evolution is now opposed only by those who wish to be behind the age.

The section on bioplasm is, perhaps, the strongest in the book. It is probable that no specialist could state the facts, on the whole, more correctly; and it is certain that no one could popularize them with even approximate brilliancy or power. The experiments on frogs and fish deprived of brain are also given accurately and interestingly; as are also the facts and theories of cerebral localization, as developed by the epoch-making researches of Fritsch and Hitzig. It should be said that these lectures contain the first, and, I believe, the only, popular account of the electrical experiments on the brain that has appeared; and, although not essential to the general argument, they are very interesting; and the facts, although derived from the writings of a partizan, are accurately stated. Among cerebro-physiologists no experiments in recent years have excited so much attention as these. They have furnished the basis of several scientific reputations, and are yet a theme of constant discussion. Mr. Cook rightly says that the preponderance of physiological opinion is not on the side of some of the French authorities, but of the conclusions of Hitzig and Fèrrier and of the American experimenters who have revised their researches; but he must be a man of supreme courage or supreme wisdom who could surely predict what the twentieth century may have

to say on this question. At present the doubt and division of sentiment among cerebro-physiologists is not in reference to the facts, which are precisely as stated by Mr. Cook, but to the interpretation of the facts.

While, however, the scientific portion of this volume is, in the main, correct, there are a number of minor errors of taste and arrangement that can be and should be corrected in subsequent editions.

In his deference to German authority Mr. Cook, so far forth, is wise; for in science and philosophy Germany does the original thinking for both continents. The three greatest scientific advances of the century are, unquestionably, the evolution hypothesis, the theory of the conservation of force, and spectroscopic analysis; and all three are of German birth. Germany originates, England combines, America popularizes. The combining genius of the English Mr. Cook does not always appreciate. Besides Bain and Beale and Darwin and Carpenter, the Psychology of Spencer, the Physiology of Mind by Mandsley (first edition), the fruitful suggestions of Hughlings Jackson, and the lectures of Brown-Sequard might properly have been considered in this volume.

The phrase "scientific method" often appears in these lectures, as also in the Principles of Science of Jevons, the last, and in many respects the best, of all our writers on logic; but in neither work do I find a satisfactory definition, without which the phrase may be useless or deceptive. The scientific method I would define as that method of reasoning that consists in fixing the boundaries between the probable and the possible, between the absolutely known and the absolutely unknown. This is the method which, without defining, all the physical sciences, so far as they have made any solid advances, have instinctively followed. It is not exclusively inductive, as some have fancied, but includes both deduction and induction.

Tested by the scientific method, what advances do the biological facts contained in this work make in the department of natural theology? To what extent is Paley's watch superseded? How much wiser is modern science, with all its instruments of exact research, and discoveries ever increasing in splendor, than was the emperor Napoleon, when to his atheistical crowd of officers he put this silencing question, as he waved his hand toward the stars, "But who made all these?" The answer must be that there has been an advance in natural theology, but in degree, rather than in kind. The microscope brings us nearer to nature; the telescope brings nature nearer to us; but not the one nor the other, nor both combined, nor the spectroscope, — even though it make the distant stars our near neighbors, — have done aught, or can do aught, more than simply to extend the range of the normal vision, thereby immensely increasing the quantity, but not radically changing the quality, of the evidence by which we have been wont to infer the existence of an intelligent Evolver behind the things evolved.

Mr. Cook claims, and with scientific justice, that spontaneous generation has never been proved. Yet farther he might have gone, and predicted, with entire assurance that the future would sustain him, that on account of the limitations of the human senses, even with all conceivable appliances, it never could be experimentally proved, and that — whatever deduction may yet accomplish — the chasm between the living and non-living state never can be inductively bridged. If, however, we infer that because the ultimate phenomena of life are out of the reach of known or conceivable law, therefore it is absolutely and scientifically demonstrated that they can only take place through the intervention of soul, we take a long, if not an infinite leap, and leave science and the scientific method behind us. Life I would define as the power of inherent renewal. All that we know as living or organic has this power of renewing itself from within, or *subjectively*; while all that we know as non-living or inorganic can only renew itself from without, or *objectively*. But the ultimate phenomena of the inorganic world present problems that are as hopelessly unanswerable as those of the organic. Why does one mode of molecular motion make light; another, heat; another, electricity? Why should one rate of vibration of the luminiferous ether make the color of violet, and another the red? Why should the combined spectrum make white light? Why should it not? Not toward, but away from, the solution of these great problems modern science, on all its lines, is now advancing. Beneath the trees of Athens, in the courts of the Temple at Jerusalem, in the philosophic villas of ancient Rome, these elementary questions could be answered as well as at this hour. Man, indeed, with all this patchwork of the senses, — his telescopes and microscopes and spectroscopes, his delicate tests of chemistry, his barometers, his electrometers, and dynamometers, and endless measurers and detectives of natural forces, — is yet practically shut out from nature — a prisoner in an infinite palace, to whose treasures, after much groping, he finds now and then a key, which to every door that it grudgingly opens reveals numbers more that seem to be eternally closed.

When now we bring all these facts of biology into the focus of the scientific method, what do we clearly see?

1. It is absolutely, scientifically proved that no law known to man, or now conceivable by man, can account for the phenomena of life and mind. This is the leading idea of the book; and a preface, such as we have suggested, would have so stated, and thus have saved an enormous amount of misconception.

2. It is shown conclusively and indisputably, that the claims of those who have assumed that recent researches in science, and particularly in microscopy, have made it possible to explain the phenomena of life and mind by known laws of molecular action are of no scientific worth.

3. It is shown, therefore, that the latest science has no positive deduction against the existence of a soul.

4. The objection of materialists on the physiological side being thus removed, Mr. Cook would contend that the psychological argument for the existence of a soul — that which is based on our intuitions and instinctive beliefs — should be accepted as valid.

The argument of this work, although not prominently so stated, is precisely the argument of Butler's *Analogy*, modernized, popularized, and brought down to the last discoveries in the domain of organic nature. Its theological value consists in this: it shows that the argument of probability as developed by Butler is as good now, after all the advances of science, as it ever was. This argument, Mr. Cook holds, is made more complete by Revelation, for which the biological argument merely prepares the way, by removing the objections of materialists.

The scientific portion of this work has suffered not a little from one-sided criticism. The complaint of Goethe, "few Germans, perhaps few men of any modern nation, have a proper sense of an aesthetic whole; they praise and blame by passages," may be made of Americans even more justly than of Goethe's countrymen. Books, like men, should be judged not by special defects or special excellences, but by the general impression of the whole, the average of the good and evil that is in them; and the instincts of men, that so far transcend the reason, do in time thus judge all books and their authors, and will so judge these lectures. Over the mass of people, to whom religion is a matter of emotion, the influence of this work must be not direct, as a scientific proof of the existence of a soul, but indirect, as an intellectual and moral inspiration. But through all nature the seemingly indirect is more universal and more useful than the direct operation of all the great forces. The forest as it lifts itself toward the sky both fills our streams and saves the earth from drought; as it were by accident the revolving moon floods the world with silvery light, and carries to and fro the necessary tides of the sea. This work, whatever its faults may be, must, for the religious world in this country, make an era in the popular discussion of these themes; borne on the wings of poetry and oratory it will carry the truths of science — or the record of the earnest efforts of science to find the truth — to thousands of homes where hitherto all modern science, certainly all biology, has been but a dreaded and unknown wonder. It will be found in the scholar's library and lie upon the ploughman's table; and wherever it goes it cannot fail to enforce, on the dullest as on the ablest, at least the one constantly forgotten lesson of humility, always derived from the contemplation of the infinite littleness of man when brought face to face with the majesty and mystery of nature.

2. TRANSCENDENTALISM; with Preludes on Current Events. Tenth Edition. 12mo. pp. 305. Boston: James R. Osgood and Co. 1878.

Any one who undertakes to review Mr. Cook, ought, first of all, to

assure himself that he has laid aside small technicalities, and has prepared himself to look at things generously and comprehensively. An address given without manuscript, taken down by a short-hand reporter, and afterward published without essential reconstruction, must, of necessity, be estimated differently from one carefully reduced to writing before delivery. Then, again, an address before a large audience will materially be quite unlike a talk upon the same topic, before a few individuals, in a small room. In the presence of a great assembly, the extemporaneous speaker, if he is judged fairly, must be judged by the conditions under which he speaks. If he is to hold his audience, and bring it back again to the same place, he cannot busy himself very much upon a thousand unessential details. His speech must move on rapidly, boldly, without losing time on the niceties of his connectives. The transitions must often be abrupt. The wide-awake listener will fill up the little gaps out of his own common-sense, and will like the speaker all the more, in that he compliments his hearers by supposing that they know something, and are able to move in the drift of his own thought. The volumes which have grown out of the Monday Lectures, ought all to be weighed by the above-mentioned circumstances. Many a man can sit down in the quiet of his study and find fault with these books who would empty Tremont Temple very speedily if he were to mount upon the platform and attempt to deliver lectures, written or unwritten, upon similar themes. Nothing is more wearisome in public, or even in private speech, than merely technical propriety. The orator in a great assembly must abandon himself to his theme, — not speaking carelessly and at random, but with well-considered aim. Certain niceties, however, which belong naturally enough to the *essay*, must be left out of the *oration*.

The eleven lectures which compose this volume were given in Tremont Temple, Boston, during the winter of 1876-77. It would be impossible to find any single word which could accurately measure and describe a course of lectures having such breadth, compass, and variety as these. The word *Transcendentalism* may serve perhaps as well as any other, but is, at the best, only an approximate title. As it was our privilege to be present at most of these lectures, we prefer to estimate them as a *hearer*, rather than as a simple *reader* of the published book. Besides, in the space allotted for this notice it would be impossible to enter upon any large and critical survey of the volume in hand.

Every one who has attended Mr. Cook's lectures for any length of time, cannot but confess that he has passed through a remarkable experience, and such as he could not, beforehand, have anticipated. To find himself one, in an audience of two thousand persons, assembled week after week, at midday, listening with fixed and profound attention to discourses upon philosophy, is, in itself, an evidence of some kind of power in the speaker, which, to say the least, is very unusual. Few are the men who could

hold an audience under like conditions, to such themes. Undoubtedly, philosophy can be taught, and is taught more carefully and connectedly in the recitation-room of the University than it can be before the great audiences in Tremont Temple. But in the University it can also be made very dry and technical, and often is made so. Here it is lifted into light and air, and goes out upon the broad ranges of practical use. It speaks directly to the souls of men with all the solemnity of a sermon. In the rapid sweep of the discourse little faults of manner, little infelicities of thought or expression, little inaccuracies of statement are hardly to be noticed, so grand and elevating is the aim of the speaker, and so strongly is he bearing the hearer forward toward the end he has in view. The very charm of these lectures, as one listens to them, is, that philosophy is here wedded with a vivid ideality, — that the resources of literature are brought to its illustration, — that history, art, poetry, are all made ministering spirits in the unfolding of the deepest workings of the soul. Something of all this must be lost when one sits down, in the distance, calmly to read the published volume. But he who reads, though he may discover some things to criticize, will find himself in converse with a man who has an aim high and noble, and a philosophy which bears men toward the good, and ministers to the highest interests of human society.

ARTICLE VIII.

THE ORGANIC REUNION OF CHURCHES.

BY PROF. J. P. LACROIX, DELAWARE, OHIO.

WILL such a reunion ever take place? Have we good grounds to anticipate that churches which have once become confessionally distinct will ever, to any considerable extent, be merged again into organic unity? What has been the lesson of history thus far? Is it not of very discouraging purport? Has it not been the fate of the church from the very first century of its existence to the present day to suffer one after another of its members to break off into independence and isolation? And has she ever, to any considerable extent, had the fortune to re-absorb any of the very prominent of these revolted members?

A very interesting discussion of this subject is found in a prize Essay on the Reunion of Churches, by Rev. G. Joss, of Saanen in Switzerland.¹ The book begins with a general statement of the whole series of influences that are at play in the general subject of separation and reunion; thereupon follows a careful historical review of the circumstances of the several

¹ Die Vereinigung Christlicher Kirchen. Leiden: E. J. Brill. 1877.