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PROFESSOR HUXLEY'S EXPOSITION OF HUME'S PHILOSOPHY.[1]

PROFESSOR HUXLEY is always an interesting writer, whatever may be his theme. He never fails to be clear and forcible, and is usually both vivacious and amusing. It is true his positiveness makes him defiant and contemptuous of men and opinions of whom and of which he has very little knowledge, and ought to say little or nothing. And yet his ignorance is often so complete and unconscious that his positiveness becomes diverting, while his self-complacent good-nature is always so manifest that the critic loses all sense of irritation in sympathy with his serene self-satisfaction, and abates even much of his moral displeasure at his frivolous trifling with the most important moral and religious truths, by reason of the succession of surprises which his audacious paradoxes occasion. Professor Huxley may not inaptly be styled the William Cobbett of our current philosophical radicalism. He is like Cobbett in acuteness, directness, humor, and earthliness. He is like Cobbett in the clearness, directness, and vigor of his style. Above all, he is like Cobbett in being never weary of having a fling at "the parsons."

The writer informs his readers that it was at the desire and suggestion of Mr. Morley, the editor of the series of "Biographies of English Men of Letters," that he undertook the task of writing upon David Hume. He half apologizes for his audacity in making the attempt, inasmuch as he does not profess to be himself a man of letters. He excuses himself, however, by the consideration that Mr. Hume has at present greater significance

[1] "Hume," by Professor Huxley. New York, 1879.

and reputation as a philosopher than as a literary man, and that his own familiarity with science in some sense qualifies him to write upon Hume's philosophical system.

The reader who is at all familiar with the special signification in which the term science is persistently used by men of Professor Huxley's way of thinking, as synonymous with physics, will perhaps be surprised that he should find any meaning or place left for philosophy either in his thinking or his terminology. That he attempts to find both is made to appear as he proceeds. Indeed, this biography derives its chief importance from the circumstance that it is an elaborate attempt on the part of an ultra-physiological materialist to recognize, after a fashion of his own, the significance of the problems which have been proposed by metaphysicians proper, and to solve them in such a way as to reconcile Hume with Kant, Locke with Descartes, upon the irenical basis furnished by the metaphysics of associationalism and the psychology of cerebralism!

Prof. Huxley divides his treatise into two parts, entitled respectively "Mr. Hume's Life" and "Mr. Hume's Philosophy," the first occupying 45 and the second 160 pages. The biography states concisely the principal external incidents of Mr. Hume's life, and the salient features of his character as seen by the common eye. So far it is well enough. And yet we cannot but regret that a life and character so eminently individual and original, and so suggestive of the times, had not been treated by a writer competent vividly to conceive and graphically to depict both the man and his age. Indeed, for a biographer of the requisite intellectual and moral qualifications, we cannot conceive a finer subject than Hume the man, and the man of letters. A life of Hume both as a man of letters and philosopher, vividly conceived and graphically set off by some just and lively portraiture of his times, might be given within the compass of one of Mr. Morley's volumes, and be a priceless addition to English biography, were it written by more than one man whom we could name. But then how different would that man be in his stand-point from Mr. Huxley, and how different would be the impressions and lessons from the story and the criticism!

Part II., on Mr. Hume's Philosophy, was doubtless designed to be what Prof. Huxley describes it, an "exposition of Hume's

philosophy." He informs us that in preparing it he "applied himself to the task of selecting and arranging in systematic order the passages which appeared to him to contain the clearest statements of Hume's opinions." He adds he should have been glad to confine himself to the comments which might serve to connect these excerpts, but excuses himself for overstepping these limits by "an ineradicable tendency to try to make things clear." The reader would expect from this announcement to find a tolerably complete statement of Mr. Hume's philosophical opinions, made clearer, perhaps, by explanatory remarks, with here and there a brief criticism interposed, or perhaps a supplementary observation. He would certainly have reason to look for very much of Mr. Hume's philosophizing and very little comparatively of Professor Huxley's. He may reasonably be surprised, therefore, when he finds that the treatise contains as much or more of Mr. Huxley's philosophy than it does of the philosophy of Mr. Hume. He could not object to an exposition of Mr. Hume's philosophy in Professor Huxley's own language. He would have no reason to be offended had Professor Huxley now and then expressed his dissent from Mr. Hume's opinions, and his reasons for the same. Nor, indeed, could he reasonably complain had he drawn his illustrations, confirmations, or refutations from modern science, whether physiological or any other. But he may certainly feel some surprise to find that the philosophy is in the main Professor Huxley's, reinforced now and then by Mr. Hume's, and not infrequently substituted in place of that of the great Scottish leader. The treatise is certainly a striking example of the tendency of modern physics and physiology to rush into metaphysics. It is certainly not the first time that Professor Huxley has essayed an attempt at philosophy. His well-known lecture on Descartes seems to have prepared the way for his discussion of Hume — resembling it strikingly in its manner of treatment, its conclusions, its audacity, and its blunders.

It is comparatively of little consequence, however, whether the present treatise ought to be called Mr. Hume's Philosophy or Mr. Huxley's. So far, however, as it contains the latter it invites and demands a candid criticism, even though the results of such a criticism should show that the author's "ineradicable tendency to try to make things clear" has resulted only in making clear his

own failure to vindicate his materialistic and atheistic conclusions, even with the authority and prestige which he sought from Mr. Hume.

Before entering upon this critical examination, we would call attention to the hope expressed by the author "that there is nothing in what he may have said which is inconsistent with the logical development of Hume's principles." This suggests the important question which has been agitated by critical students, viz., whether Hume held any fixed and logical system of philosophy, either in its principles or conclusions. Hamilton insists that he was not a dogmatist, but a sceptic; that he did not assert his own principles and proceed to derive from them their logical consequences as his own conclusions, but expounded the principles of the received philosophy, *i.e.*, the philosophy of Locke, with the inferences which they necessarily involved; leaving it for his readers to decide whether the inferences disproved the premises by a *reductio ad absurdum*, or whether the difficulty of reaching or phrasing any trustworthy *data* might not justify a sceptical distrust or despair of any philosophical exactness of statement (Met. Lects., xvi., xxxix.). There is much in the spirit of Hume's earliest treatise which would indicate that he often wrote in a spirit of mischievous banter, which found its chief delight in puzzling the average mind with the lucid statement of current metaphysical theories and the logical derivation of incredible paradoxes from the premises furnished by the received philosophy. As we follow the movements of his mind in his later treatises, we find him more cautious of dogmatism, more guarded and *suave* in his manner of writing, and more careful to avoid giving offence to other thinkers, theologians being always excepted. His famous Essay on Miracles is as remarkable for its sly indirectness as it is for its skilful argumentation. Even the dialogues on Natural Religion, which he declined to publish during his lifetime, indicate a singular indecision or indefiniteness of philosophical opinion united to a sensitive timidity in avowing his real or even his prevailing conclusions. Hence the question has often been raised, and never satisfactorily answered, which of the personages in these masterly dialogues represented his own sentiments. The most plausible answer to this question seems to us to be that each of them

represents Hume in one of his varying moods, and all together bespeak a man who was gifted with great intellectual subtlety conjoined with the mastery over a singularly lucid style, but was perpetually vacillating with the changes of his own half-formed convictions. There are strong internal evidences in his writings that the statements are true which Huxley treats with such lightness, that Hume in his more earnest moods relaxed from the frivolous temper which he usually assumed when he touched theological questions or religious truth.

Professor Huxley is no such man.. He is downright in the opinions which he holds, and outright in expressing them. He is least of all an Academic, but as Sidney Smith said of Lord Macaulay, "is always cocksure of everything"— of the worthlessness of what he calls "pure metaphysics," of the scientific certainty of his biological psychology—in short, of every point of the philosophy which he finds in or reads into Hume, and of the conclusions which he deduces from it. Every step which he takes is positive and firm. He would have his readers believe that Hume was the forerunner of the modern metaphysics of which Mr. Huxley is the acknowledged head in physiology, Mr. Bain the most distinguished analysist in psychology, and Mr. Spencer the most profound and comprehensive philosopher and theologian. He goes even further in his sanguine positiveness. He tries to persuade himself and his readers that Locke, Descartes, Spinoza, and Kant all approximated on many points to the same principles with himself, and are worthy of the very highest respect in the temple of the new philosophy.

Professor Huxley begins his exposition with a chapter on *The Object and Scope of Philosophy*. It is worthy of note that at the very outset he recognizes a distinction between science and philosophy. Both have to do with knowledge. Philosophy attempts to answer the question, What can I know? "What is commonly called science, whether mathematical, physical, or biological, consists of the answers which mankind have been able to give to the inquiry, What do I know? They furnish us with the results of the mental operations which constitute thinking; while philosophy in the stricter sense of the term inquires into the foundation of the first principles which those operations assume or imply." He soon discovers that this comprehensive question

can be answered satisfactorily only by that analysis of the power of knowing which we call psychological. Thus far we find no difficulty in keeping company with the critic, when all at once he brings us to a pause by turning upon us with the assertion, "*Psychology is a part of the science of life, or biology*, which differs from the other branches of that science merely in so far as it deals with the psychical instead of the physical phenomena of life." From one point of view this assertion might be considered as harmless enough. From another it simply begs a score of questions and commits us to his entire theory of physiological, not to say materialistic, philosophizing. He supports this view by the remark that as the physiologist studies "functions," so the psychologist searches after "faculties." He adds the not very original or profound remark that mental phenomena are more or less affected by bodily states, and that as in physiology we must know something of physics, which treats of the lower operations of the body, so in psychology we ought to consider those higher functions of which physiology treats. From all this he concludes that psychology and physiology must follow the same method of investigation, and can differ only in the subject-matter with which they are concerned. That psychology has a special subject-matter he defends against the positivists, but not before, in almost the same breath, he had turned against the "pure metaphysicians" who "attempt to base the theory of knowing upon supposed necessary and universal truths, and assert that scientific observation is impossible unless such truths are already known or implied," apparently forgetting that two pages earlier he had affirmed that "philosophy, in the stricter sense of the term, inquires into the foundation of the first principles which these operations assume or imply." It will be seen that the Professor has already fallen into deep water, and has begun to flounder where very many have floundered before him. In other words, he has first classed biology among the sciences, as contrasted with philosophy, and then has placed philosophy under psychology, and psychology under biology, and thus brought back philosophy to a special science, even the science of life, which means a science of the brain, and finally given it the *coup de grace* by attacking the pure metaphysicians for doing what he had said all philosophers

must do, *i.e.*, seeking to find "the first principles which the psychological operations assume or imply."

He does not seem aware, however, that he has lost his footing, or that he flounders at all; for he seems to recover his footing by saying that "it is assuredly one of Hume's greatest merits that he clearly recognized the fact that philosophy is based upon psychology." He refers here to the title of his first work as a "Treatise of Human Nature, being an attempt to introduce the Experimental Method of Reasoning into Moral Subjects." The title is certainly very significant, and the explanation of its import as given by Hume himself, in the passage which Huxley quotes on page 51, very clearly sets forth his views as to what the "experimental method" is. It shows very satisfactorily that Hume, so far as he reached definite views, anticipated the modern physical school in a then novel theory of the soul, and the method of studying its phenomena. We cannot complain or wonder that Prof. Huxley at this point claims for his own views the authority of Hume. But he commits a grave offence when he proceeds to refer to Descartes and Locke and Kant as sanctioning similar opinions in regard either to the nature of the soul or the method of attaining to psychological and philosophical knowledge. In citing their authority he not only makes a muddle of their opinions, but leaves his readers in a muddle as to the object for which he quotes them. He first observes (p. 53) that "the memorable service rendered to the cause of sound thinking by Descartes consisted in this, that he laid the foundation of modern philosophical criticism by his inquiry into the nature of certainty," and that it is a clear result of the investigation started by Descartes "that there is one thing of which no doubt can be entertained," "and that is the momentary consciousness we call a *present thought of feeling*." We beg Professor Huxley's pardon. This is not the doctrine of Descartes at all. What he insisted upon in his famous argument, *Cogito, ergo sum*, was the existence of the *ego*, as involved in and clearly discerned "in each momentary state we call a present thought or feeling." This is the truth which Hume ridiculed and denied most persistently. In proof of our assertion we refer to the second of his Meditations, and to Mr. Huxley's own lecture

upon Descartes, published in his "Lay Sermons, Addresses, and Reviews" (p. 328, Am. ed.), in which he asserts that in the proposition I *think* three propositions are included. "The first of these is 'something called *I* exists;' the second is 'something called *thought* exists;' and the third is 'the thought is the result of the *action* of the I.'" He then proceeds to argue that, of these three propositions, in his opinion the second only can be true. That is, Professor Huxley does not quote from Descartes either in word or thought, but cites what Professor Huxley argues Descartes *ought to have said.* If any tenet was characteristic for Descartes to affirm and for Hume to deny (cf. pp. 165–6), it was the existence of the *ego* as given in every state of consciousness. For Professor Huxley to cite the authority of Descartes in favor of this doctrine is singularly audacious.

Scarcely less daring is his citation of sundry passages from Hume as containing an anticipation of the technical theory of modern Agnosticism, whereas they are simply expressive of his contemptuous disesteem of the frivolous logomachies of the metaphysical speculation current in his time. Scarcely less cool is the effrontery with which he cites Locke's sensible remarks in respect to the necessity of recognizing the limits of human knowledge, and Kant's restriction of all logical knowledge to the sphere of the phenomenal as tending in the same direction. Indeed, this first chapter, on the Object and Scope of Philosophy, is wholly disappointing. It neither gives us the views of Mr. Hume with any appreciation of his historic position nor the views of Professor Huxley with any frankness. The citations and arguments from Descartes, Locke, and Kant are of no significance to any reader who knows anything of their teachings. Even the just recognition of philosophy as different from science, and of the relation of philosophy to psychology, is annulled by the degradation of psychology to biology, and the obvious preparation for his subsequent argument that metaphysical relations are nothing more than cerebral outgrowths.

The second chapter treats of *The Contents of the Mind.* What the precise signification of this phrase may be does not appear at once. Whether the objections urged by Huxley are valid, that the conception of the mind as an entity endowed with faculties is a legacy "of ancient philosophy more or less

leavened by theology," or the doctrine quoted from Hume be correct, that "what we call the mind is nothing but a *heap or collection* of different perceptions united together by certain relations," or the cautious view finally sanctioned by the critic be the only one which it is safe to adopt, "that we know nothing more of the mind than that it is a series of perceptions," it still remains true that the contents of the mind must signify the various kinds of phenomena which make up the heap or series.

We do not accept this doctrine, but hold to that of Descartes that the mind is itself an agent capable of those various modes of acting and suffering which are called by Huxley its contents. But waiving this point, we limit ourselves to Mr. Huxley's exposition and critical analysis of Hume's doctrine of the elementary phenomena of which the mind is the subject. These are correctly stated as reducible to two classes, viz., *impressions and ideas*, the first of which includes "all our sensations, passions, and emotions as they make their first appearance in the soul," and the second the faint images of impressions or antecedent ideas. Huxley criticises very justly this view of Hume, on the ground that it does not include "relations." In doing so he might have referred to Hume's own words already quoted, as teaching a better doctrine, in which he speaks of "different perceptions united together by certain relations." As a decisive example that Hume is wrong he appeals to every act of memory as necessarily involving in one case "the feeling of the *succession* of two impressions," and in the other "the feeling of their *similarity*." He very justly makes a stronger point against Hume, that relations figure largely in his fundamental doctrine of association and are altogether essential to his explanation of causation. He urges also against him that in his own account of the nature and origin of relations he is inconsistent with himself. For these reasons he ventures to amend Hume's catalogue of the contents of the mind by an additional or third class of original impressions—viz., *relations*.

Having enlarged Hume's inventory of the contents of the mind by adding relations to impressions and ideas, he raises the very important question whether the possession of one or all of these simple elements involves an act of knowledge. Of all the questions which he could possibly ask, this is fundamental to an

understanding of the historical position of Hume's theory and to a successful criticism of its fatal defect. Stated fully the question is this: Must the mind exercise the act of knowledge in *gaining* what Huxley called its contents, *i.e.*, its elementary states, whether these are impressions, ideas, or relations; or must it first *possess* these elements before it proceeds to unite them in an act of knowledge? This we affirm to be the most important question which could possibly be proposed for an answer.

Professor Huxley refers us at once to Locke's definition of knowledge "as the perception of the agreement or disagreement of ideas," which Hume tacitly accepts. According to this definition, he rightly reasons, the mind must have ideas, etc., before it can unite them in relations. This would involve the inference that the mind cannot know its simple states, as of pain, however violent, or any specific sensation, however definite, because, forsooth, it must first possess ideas before it can discern their agreement or disagreement—that is, before it can know. But surely, Huxley rightly reasons, whenever we have a sensation we must know it; the distinction between the two being merely verbal. Is not Locke's definition defective? Huxley does not suggest the thought. He makes a joke of the matter. Instead of extricating himself from his embarrassment he frankly confesses it, and even more frankly owns that "the 'pure metaphysicians' make great capital out of the ambiguity" by "declaring that even the simplest act of sensation contains two terms and a relation—the sensitive subject, the sensigenous object, and that masterful entity the ego. From which great triad, as from a Gnostic trinity, emanates an endless procession of other logical shadows and all the fata morgana of philosophical dreamland." With this jocose confession of weakness, our philosophical scene-shifter lets fall the curtain upon the second act of his promised exhibition, leaving the act of knowledge wholly unexplained by which "the contents of the mind" are gained.

We cannot suffer our manager to raise the curtain again and discuss the "origin of the impressions" without calling attention to the dexterity with which he omits a discussion of this cardinal question in the philosophy of Hume, and indeed in all phi-

losophy. Every tyro in philosophy knows, or ought to know, that the idealism of Berkeley was logically derived from Locke's definition of knowledge as the perception of an agreement or disagreement of ideas, or from the assumption which this definition implied, that we must first gain ideas before we can discern them in relations. Berkeley took Locke's definition to be literally correct, and reasoned from it that we know only *the ideas* of matter and their relations, but never can know matter itself. Hume made a similar application of it to our ideas of spirit, and concluded that all that we know of spirit are our ideas of it; that we do not and cannot know the *ego* or agent—because the "masterful ego" is only a heap or collection of impressions. Berkeley and Hume together furnished the *reductio ad absurdum* of Locke's defective definition of knowledge, and forced upon philosophers the necessity of revising and correcting it in the way indicated by Professor Huxley, by adding relations to the contents of the mind. Many of the so-called "pure metaphysicians" also go still farther, and give a corrected definition of knowledge which the materialists and associationalists overlook or reject. This corrected definition would be as follows: The mind, "that masterful entity the *ego*," gains its ideas by observing existing entities in relations (or as related) to one another. This is its function, and in the exercise of this function it finds the authority to trust the contents gained by its own acts. It does not find itself in possession of its materials, it knows not how—as "the contents of the mind," as impressions or ideas, nor even as relations—and then proceed to compound them into knowledge, but it finds things or entities in combination, or related together, and proceeds subsequently to decompose them into ideas, and to express these ideas in language. As Professor Huxley himself explains of memory, the mind not only views ideas previously present with more or less vividness, but it recalls these in a relation of succession. So it is of all experiences or mental activities: they are known to exist, and not only are known to exist, but to exist in relations to one another. They are necessarily and uniformly given in combination. They are affirmed in propositions which the mind subsequently analyzes into subject, predicate, and copula. As everything living is essentially complex; as the vegetable and

animal cell already exist, or the protoplasm is certain to show itself in distinguishable elements united into living wholes—so the mind apprehends whatever it knows, in elements. These as known become "the contents of the mind," as united or separated by the several relations which itself discerns.

How widely contrasted this view of the mind and its functions is with that which Professor Huxley assumes and teaches will appear as we follow his expositions in detail. What excellent reasons he has to dismiss it with a jest may appear in the sequel. The arts of thimblerigging are not confined to the *manual* dexterity by which the attention is diverted from a movement which the operator is desirous to conceal perhaps from himself!

If our view of knowledge is correct, the mind in knowledge is pre-eminently active, and its position in respect to whatever it knows is a position of complete and independent self-reliance. The function itself is altogether unique—so unique that it will suffer a comparison with no other. Whether the ego perceives or is conscious, whether it remembers or reasons, whether it invents or interprets, it appears as an individual agent which is in no sense the servant of the objects which it discerns or explains. To interpret its acts by materialistic analogies, or to explain them by the laws which control the world of matter, is simply to destroy its capacity to judge of matter and explain its phenomena. To interpret its phenomena or products by the phenomena which address the senses, or to calculate its results by weight or measure, is to destroy the authority of the agent that weighs and measures. To assume that the acts of scientific judgment by which biology is created are themselves only biological phenomena of a subtler complexion, is to make biology itself an uncertain product of cerebral excitement. In like manner, to degrade the science of the mind under the guise of applying to it the experimental method, by forgetting or denying that it discovers and enforces the principles and laws which are essential to all scientific method, past, present, and future; to make this agent to be the possible product of a changing constitution, or of the progressive growths of an accidental environment—is to be untrue to the most elementary experiences which we have of the nature of knowledge, and to the most splendid achievements of "that mas-

terful entity" which in these modern times speaketh such great things, and often such presumptuous things, and always such brilliant things by the mouth of Professor Huxley and those who think with him.

In Chapter III. our critic proceeds to expound Hume's corrected theory of *The Origin of the Impressions.* He ought here to throw much needed light on important problems. The reader should keep in mind that the word Impressions is used as equivalent to sensations *plus* relations, both of which make up "the primary irresolvable states of consciousness." We notice, first of all, that in this discussion the defective theory of knowledge to which we have adverted is continually assumed, and in several features which we have not yet stated. First of all, it seems to be implied that in the act of knowing *the object known* is the efficient agent, and not the mind. The impression is represented as produced by "the *sensigenous* object" upon the mind, whatever that may be, whether it be the brain or "a heap," "a collection" or "a bundle of impressions." Whatever it is, it is only the passive recipient of whatever effect the object produces in or imposes upon it. Next, the relations which Huxley had noticed as not adequately recognized by Hume are grouped and treated as on a par with sensations so far as their "origin" and method of production are concerned. They also are simply the effects of the object as it operates on the mind. It is marvellous in the eyes of a "pure metaphysician" to observe that Professor Huxley goes so far in the right direction in recognizing relations as essential elements in knowledge, and yet after all so readily sinks them to the level of sensations. He is not so outspoken as Herbert Spencer, who, after making as much or more of relations in the economy of knowledge than he, proceeds to define, say for example, the relation of likeness or equality between two colors or sounds as the *sensations* that are experienced in effecting a transition from the sensations of color or sound in question. Huxley does not say this, but his theory logically requires him to hold it.

In expounding Hume, the Professor observes that he agrees with Descartes that "all our perceptions are dependent on our organs and the disposition of our nerves and animal spirits." He also shows, and correctly enough, that Hume taught that the

primary qualities and the two classes of secondary qualities are alike, in being impressions produced on the senses. Whereupon Mr. Huxley leaps to the conclusion that Mr. Hume "fully adopted the conclusion to which all that we know of psychological physiology tends, that the origin of the elements of consciousness is to be sought in bodily changes the seat of which can only be placed in the brain." He quotes again from Hume to the effect that there can be no possible objection from the nature of matter or mind, as known *à priori*, "against the possibility of a causal connection between the modes of motion of the cerebral substance and states of consciousness." The substance of Hume's argument is that, inasmuch as causation is resolvable into casual associations, anything can be the cause of anything else if only it is constantly conjoined with it. Whereupon Huxley waxes bolder in the affirmation that what Hume had provided for as possible has now been established as certain—that "what we call the operations of the mind are functions of the brain, and the materials of consciousness are products of cerebral activity." He then adds: "It is hardly necessary to point out that the doctrine first laid down is what is commonly called materialism. In fact, I am not sure that the adjective 'crass,' which appears to have a special charm for rhetorical sciolists, would not be applied to it. But it is nevertheless true that the doctrine contains nothing inconsistent with the purest idealism." The readers of Mr. Huxley will not be surprised at this statement or the argument on which it is founded. It is no strange thing to find him urging with the utmost confidence the truth that the brain is all the mind which science can recognize, and the phenomena of spirit are altogether dependent on modes of motion, and then turn about and add: but after all it is of no consequence what we say, for modes of motion on the one side and the corresponding spiritual states on the other are simply two uniformly adherent phenomena of we know not and care not what substratum, call it what you will. In a similar fashion reason Spencer, Bain, and Lewes. We submit, however, that it is not altogether fair to make Hume teach doctrines like these and anticipate the modern dogmatic two-faced materialism. The ambitious and deferential references of Huxley to the "pure metaphysicians" Leibnitz and Fichte, in this

connection, do not relieve him of the charge of reading the philosophy of Huxley between the lines of Hume. It is true, Hume the sceptic did suggest that everything which we call the substance of matter and spirit is utterly beyond our apprehension, and that all we do know of either is simply sensations; that both matter and spirit themselves are nothing more than collections of sensations and emotions. But Hume the dogmatist, when he suggested that, for aught we know, the several changes in the animal spirits or the nervous system are adequate to account for every description of mental phenomena, treated matter as the substance well known and real to the solid common-sense of common man, and as the producing agent of all spiritual manifestations, and therefore the only permanently existing agent in the universe. Mr. Hume the acute reasoner against the possibility of any philosophy is one man, and Mr. Hume the assailant of those spiritual truths which are vital to all morality, faith, and worship is altogether another.

Mr. Huxley himself is also an example of a man who can play two *rôles* in reasoning and scarcely know when he passes from the one to the other. When Mr. Huxley reasons as a physiologist or paleontologist, there is no man so positive an assertor of the reality of matter and its infinite capacities for evolution into forms of wonder and beauty. But Mr. Huxley the metaphysician is the most uncertain and timid of men as to whether matter or spirit have any existence, and does not care what name you give to either or its phenomena. When he comes before an American audience with his enthusiasm freshly excited by the remains which had been freshly gathered in an American museum, he stamps forth with his feet his irrepressible and enthusiastic conviction that evolution is a demonstrated fact; but when he enacts the *rôle* of a "physiological metaphysician," then matter and spirit, the old horses and new, with their infinite number of intervening forms, are all, in the generosity of his idealistic candor, at once converted into sensations, and sensations and emotions are declared to be all that we know of matter and mind. Forsooth, the successions and associations of these sensations and emotions constitute the facts and science of either and of both. On the one hand, he asseverates that physiological psychology has taught with absolute positiveness that all the varieties of so-called

spiritual activity are produced by modes of motion in the cerebral substance. But again putting on his metaphysical robes, he declares that modes of motion, bulk, and figure are nothing but sensations, and consequently materialism and idealism are interchangeable, and it is folly to ask which you will prefer, for at bottom they are one.

Growing so liberal in his catholicity, he condescends, in this very chapter, to accept the long-discarded doctrine of innate ideas, and invites Descartes, the former high-priest of spiritualism, to enter into the temple of the new philosophic faith, and officiate with distinguished honors. These innate ideas, he informs us, are nothing more nor less than "the product of the reaction of the organ of the mind on the stimulus of an unknown cause, which is Descartes' *je ne sais quoi*." This assertion might be admitted to be true if the phrases *organ of the mind* and *je ne sais quoi* were omitted. But against both of these Descartes would have protested with his utmost energy, and his school would have exclaimed with philosophic horror, *Procul, O procul!*

We ought not to be surprised that with this liberal construction of Descartes' doctrine of innate ideas he should administer a reproof to Locke for grossly misunderstanding him, nor perhaps that he should extend to Kant a patronizing expression of gratification that he had the penetration to anticipate the doctrine propounded by Mr. Huxley, that "coexistence and succession are mental phenomena not given in the sense-experience." We are all of us greatly obliged to Mr. Huxley for the small favors bestowed in the recognition of these relations as superadded to pure sense-experiences, but we confess that we cannot clearly discern in what way they are the products of "modes of motion" in the cerebral apparatus. We apprehend that however cordial may have been the invitation to Kant and Descartes to enter the temple of Mr. Huxley's faith, on condition that they would assert that the relations which are superadded to sense-experiences are themselves brain-growths, they would be rather slow to accept it.

In Chapter IV. the author proceeds to give his views of the higher operations of the mind, under the title *The Classification and the Nomenclature of Mental Operations*. He reasserts at the beginning, more roundly than ever, the doctrine that all mental states are effects of physical causes; that they occur in

assignable portions of the cerebral substance, both the impressions and relations when originally received, and also in all the subsequent modifications to which they are subjected. Every intellectual activity falls into one of the three groups of sensation, correlation, and ideation; ideation signifies the recall of sensations, either in the relations originally experienced or as more or less modified. In one point only Huxley differs from Hume. Whereas Hume makes memory and imagination to differ from sensation chiefly in that their phenomena are less vivacious, Huxley insists that in memory the objects remembered must have coexisted with other ideas in the past and preceded impressions or ideas now present. This is what he means by correlation, emphasizing coexistence and succession, on which Hume had placed but little stress. It is to be remembered, however, that the relations themselves are conceived by Huxley, especially with sensations, as "feelings produced by cerebral changes." He emphasizes also expectation as equally important with memory. But the element of knowledge as related to reality, whether in the past or the future, is left wholly unexplained. Recognition, or the certainty that the event revivified actually occurred, is resolved wholly into the phenomena that one idea is recalled in connection with another. Knowledge or belief of the future is explained as a so-called present state of consciousness, having no relation to the "sensigenous object" or "the masterful ego." Knowledge in the form of memory is the recall of two or more ideas in the relation of succession to one another and some present impression, while expectation is equally destitute of the element of any belief in the future conception as real.

Generic ideas, also, which play so important a *rôle* in scientific processes, are the result of the frequent revival of a few elements in individual impressions, to the neglect of the great number which only occur occasionally, the element in the process of forming and using such ideas which is of any significance to knowledge being wholly left out. The conjunction of two or more generic ideas, "as heat and flame, weight and solidity," in the so-called relations of causation, is explained by both Hume and Huxley by association and custom. If generic memories of succession are strengthened by repeating similar combinations in new impressions, the process is called *verification*, every case of

which strengthens belief by simply giving greater energy to association. This is all that either Hume or Huxley has to say of the higher intellectual processes, so far as these can be performed without the aid of language. Knowledge is but the occurrence of successive or similar states of consciousness, which, whether they represent realities of matter or spirit, are not known to be either and are not known to be anything, even what they are interpreted to be, and are the attendants of the modes of motion in the sensigenous object, in connection with changes in the cerebral functions. The relations of succession, coexistence, and similarity are also products of modes of motion and cerebral correlates. Memory is but the recall of conjunctions of ideas and impressions. Classification is the result of association. Propositions of causation, with their explanations of the past and their predictions of the future, are founded on custom, which signifies the more or less frequent association of impressions or ideas. Last of all, the experiment which verifies every theory does this only by making stronger the bonds which association has already established.

This is the theory of the higher operations of the mind which Mr. Huxley, in the name of Mr. Hume, commends to the men of the present generation as the net result on the one hand of the new philosophy, which is the outcome of physiological psychology, and which he would have us believe is not only enforced by Hume, but in a sense sanctioned by Locke, Descartes, and Kant, and on the other hand as sufficient to explain and justify the supreme confidence which present and future science exacts from all its votaries, however bold are its assertions concerning the history of the past or confident its theories concerning phenomena that cannot possibly be verified. Science nowadays erects a tower that rises beyond the clouds, and threatens to overtop the very battlements of the heavens beyond which faith had imagined it now and then could catch some glimpses. It would seem that in order to support so lofty a structure it would require a foundation broader and deeper than Mr. Huxley's metaphysical analysis of the higher intellectual processes.

We ought not to be surprised to find, after Mr. Huxley has lowered the highest operations of the human intellect to cerebral

motions and associational combinations, that he should be prepared to find no difference between the mental phenomena of animals and the mental phenomena of men. This doctrine he proceeds to establish in detail in Chapter V., which is devoted to the discussion of this point. He begins by adverting to the truth that as the use of language is proved by the example of children and deaf-mutes not to be essential to these higher processes, it follows that the absence of language on the part of animals does not of necessity involve the entire absence of these higher activities. He urges still further that "whatever reason we have for believing that the changes which take place in the normal cerebral substance of man give rise to states of consciousness, the same reason exists in the belief that the modes of motion of the cerebral substance of an ape or of a dog produce like effects." Moreover, the actions of an ape or a dog give evidence similar to that which is furnished by man, that both are capable of every variety of intellectual activity which is achieved by him. Dogs remember and dream and generalize and reason. Comparative psychology, now reinforced by comparative physiology, sanctions this conclusion, and Huxley notices that although Hume in some sense anticipated the existence of this science, with its incidental testimony to the likeness of intellectual processes in both animals and men, he yet hesitates to find any similarity between the "inference of the animal" and "the process of argument or reasoning in man." On second thought, however, he finds him to hold that even the "experimental reasoning" in man "on which the whole conduct of life depends" is "nothing but a species of instinct or mechanical power that acts in us unknown to ourselves." From this Huxley gives his own theory, which is simply what we should expect to find, viz., that instinct covers every mental process—from the reflex acts of the nervous system up to the most deliberately reasoned process of scientific deduction. But this view of the matter, Huxley proceeds to observe, involves in some sense the doctrine of innate ideas as held by Descartes, and he for the second or third time extends to him the right hand of fellowship. But he fails to note that the innate ideas of Mr. Huxley are simply the more highly developed capacities of a well-trained and well-descended brain, and the

innate ideas of Descartes are in no sense whatever dependent on the brain or the animal spirits, but would be excluded from holding any relations whatever to matter.

Language remains to be disposed of as something peculiar to man. It is noticeable that Mr. Huxley is in haste to despatch it in a very speedy and summary fashion. He certainly throws no light whatever upon its nature, and evidently feels no little embarrassment in explaining how, by means of its potent alchemy, thought becomes visible and science is made possible. All the explanation which he gives of it is summed up in the commonplaces: Substantives are signs of mental wholes; attributes, of the parts of which these wholes are composed. Predication is a sign of "the feeling of a relation," which carries us back to the resolution of an experienced or felt relation into an impression, and smuggles in the knowing or a predicating agent, who has been resolved into "a heap or collection of impressions and ideas," through the phrase "feeling of a relation," in which an agent who can feel is implied but not confessed.

From language Huxley proceeds to the verbal propositions in which "men enshrine their beliefs." Of these beliefs he considers Hume's Philosophical Theory of Necessary Truths, The Order of Nature, The Soul, Theism, The Passions and Volitions, and The Principle of Morals. We do not propose to follow Mr. Huxley in his remarks upon Mr. Hume's opinions upon these topics. But we cannot refrain from noticing a few of them. He finds to his discomfiture, it would seem, that Mr. Hume recognizes a clear distinction between relations of ideas and matters of fact, and that under the first he comprehends mathematical relations and all the so-called intuitive and even all demonstrated truths. Mr. Huxley's "ineradicable tendency to make things clear" finds it hard to reconcile this statement with either his own or Hume's theory of impressions or relations, or the doctrine of instincts or custom. Had he chosen to avail himself of Hume's doctrine of the origin and nature of mathematical knowledge as expounded in the Treatise of Human Nature, he would have found one more harmonious with the drift of his psychology and metaphysics. It is a doctrine which would set most modern mathematicians aghast, and we do not wonder that Prof. Huxley does not refer to it, but rather gives him-

self to the work of explaining away the distinction which Hume had recognized as existing between intuitive relations and matters of fact! He urges that had not "matters of fact" been given to us through the senses, we should never "in fact" have apprehended mathematical entities or the relations which they involve. It follows that geometrical and numerical quanta are in some sense matters of fact! Moreover the axiom, "Things which are equal to the same are equal to another, is only a particular case of the predication of similarity, and if there come no impressions it is obvious there could be no predicates," and breaks out with the *naïve* interrogation, "But what is an existence in the universe but an impression?" Indeed, thou solid, matter-of-fact, critical, defiant Mr. Huxley! Has it come to this, that, misled by a narrow psychology and ensnared by shallow metaphysics, thou hast been brought so far as to confess that this solid universe of matter, with its wondrous protoplasm containing within itself such wonder-working power and potency, and gathered in vast reservoirs in the abysmal depths, and baptized with a name befitting its mysterious hiding-place—that all these are nothing but *impressions?*

But we return from our digression, as Huxley returns to his logic after this exclamation, to say if what are called necessary truths are analyzed they will be found to be of two kinds: "Either they depend on the convention which underlies the possibility of intelligible speech, that terms shall have the same meaning, or they are propositions the negation of which implies the dissolution of some association in memory or expectation, which is in fact indissoluble, or the denial of some fact of immediate consciousness." The resolution of what are called logical laws into a convention in order to the possibility of communication between man and man reminds one of the exclamation of Sancho Panza, "Blessed is the man who *invented* sleep!" inasmuch as it attributes the recognition and use of conceptions as identical with one another to a convention or contract suggested by the desirableness of language.

Our necessary beliefs of matters of fact are resolved into propositions which cannot be denied without breaking some association of memory or expectation, "or the denial of some immediate fact of consciousness." We stop at this last phrase

with delighted surprise at discovering that Mr. Huxley has allowed himself for once to recognize man as a being who can know something, even though what he knows is only a fleeting impression. Hitherto, in common with Hume, he had made the elements of all mental activity to be impressions produced by the "sensigenous object" and existing only as fleeting phenomena, and out of which, by means of custom and association, all else was built up. But here at last he confesses that man can know a fact, viz., a fact of consciousness; that is, that knowledge or belief is exercised by the mind in immediate consciousness, and the reality known may not be denied.

When Mr. Huxley, in still further confirmation of his meaning, explains that "the denial of the necessary truth that the thought now in mind exists involves the denial of consciousness," he asserts what we think a most obvious and elementary truth—a truth that is fundamental to our confidence in either knowledge or philosophy. But in asserting this truth he abandons the very corner-stone of Hume's teaching, that impressions are the elements of our intellectual states.

In order still further to weaken our confidence in necessary truth as contrasted with matters of fact, he observes that what we call matters of fact almost universally include their relations, as when we say red is unlike blue we have a fact or relation of similarity, or when we recall a fact of memory we assert for it a relation of time. This is all true enough, but it does not meet the case, inasmuch as the so-called necessary relations that are also self-evident are not of this sort at all. Mr. Huxley does not care to present the subject of necessary truths as against the concessions of Hume any further than to assert that it is impossible to prove that the cogency of mathematical first principles is due to anything more than early-formed, constantly-repeated, and perpetually-verified associations. And here he leaves the matter. It would seem to be especially unfortunate for his cause that Professor Huxley has treated so superficially, and in a sense disposed so flippantly, of mathematical quanta and their relations. The majority of modern scientists are disposed to trust in mathematics, whatever else they may distrust. Few if any of them, unless they have been previously committed to the consequences of the metaphysical theory of physiological

evolution, will accept that view which brings these relations down to a level with matters of fact, or resolves them into the unbroken associations which come from often-repeated experiences. The pure mathematics are a strong outwork of sound philosophy which the believers of solid science and solid metaphysics and solid faith are under a common necessity to defend, because here is a central rallying-point for each and all, whether they make an onset or a defence. The axioms and constructions of pure geometry are a standing protest against modern cerebralism.

Professor Huxley deals almost as lightly and more inconsequently and inconsistently with the causal relation than he does with the mathematical, at one time criticising Hume, and then sanctioning the very error which he had criticised. In one breath he calls attention to the point that it is one thing to be indebted to experience for the belief that a particular cause is invariably connected with an effect, and altogether another to derive from it the belief which every scientist must accept, that every event is caused. And yet on the very next page he argues at considerable length to show that multitudes of men believe that the majority of events are wholly uncaused. The only possible reconciliation of the apparent inconsistency would be found in the theory which Stuart Mill holds, that the belief in the universality of the relation is as truly the result of experience as the belief of a single exemplification of it. This is doubtless Professor Huxley's own theory, but he passes the whole of this fundamental matter over too lightly to invite criticism. Inasmuch as he does not attempt to give his own metaphysics of causation and the uniformity of nature, we must be excused from noticing the scanty views which he seems to favor. We observe, however, that he does not undertake to reconcile Hume's theory of mathematical or causal relations with either Descartes' doctrine of innate ideas or Kant's doctrine of the *à priori* forms of the sensory or categories of the understanding. That would be an effort beyond the audacity of even Huxley's ingenious effrontery.

As Professor Huxley proceeds to Hume's doctrine of miracles he grows still more shy and reserved, finding himself in deeper water than that to which he is accustomed. He shows himself incompetent to measure the philosophical strength of Hume's

argument for the *à priori* improbability of any violation of the laws of nature whatever, as also to estimate the preponderating force of the counter-argument in support of the *à priori* probability of miraculous intervention whenever the necessities or ends of the spiritual universe demand or justify such an intervention. A belief in the uniformity of the laws of nature, which is founded solely on the generalization of experience, is too weak, as Mr. Stuart Mill confesses, to establish any conclusion that may not be overturned by a single example to the contrary. Prof. Huxley, however, says: "The day-fly has better grounds for calling a thunder-storm supernatural than has man, with his experience of an infinitesimal fraction of duration, to say that the most astonishing event that can be imagined is beyond the scope of natural causes." But why not say, in reply, that man, from his limited experience, is equally incompetent *to deny* that such an event is beyond the scope of *supernatural* causes? Upon Prof. Huxley's or Mr. Hume's explanation of the grounds of our belief in the natural and its uniformities, we cannot see why what has been considered to be uniformly natural should not be regarded as exceptional. To the suggestion that what seems to be exceptional may be referred to some law as yet undiscovered, we reply that the faith in uniformity or law even, if it be held to be derived from experience only and to be the product of association, may be overturned or weakened by such experience or association, so far as any *à priori* probability is concerned. In other words, it is on *à priori* grounds derived from the relations of purpose in nature that experience learns, in ordinary cases, to pronounce a miracle impossible and incredible. The fact that men do thus judge, in ordinary circumstances, of reported miracles gave to Hume's argument its plausibility, or rather its strength, as against credulity and fanaticism. It is true that on the grounds furnished by his own metaphysics or philosophy Hume had no right to appeal to experience at all as he did, as furnishing the grounds for faith in the uniformity of nature. But Hume the keen-sighted man of the world and the sensitive satirist of superstitious credulity was another person than Hume the logical metaphysician. Therefore, when he turned to the Christian miracles, he had so little appreciation of their import and the occasion for their occurrence that it was impossible he should

find any difference between them and those which offended his common-sense, and so, as a man of the world, he rejected them; but persuaded himself that it was on grounds of a profound philosophy, a philosophy certainly more profound than his own metaphysics ever provided. But Professor Huxley has no insight for this construction of Hume's argument, and he alternately flounders in his own incapacity to dispose of the problem with any satisfaction to himself or others, and sneers in his own contemptuous ignorance at truths and reasons for which he has no insight.

He fares even worse when he proceeds in the next chapter to the discussion of *Theism and the Evolution of Theology*. He remarks at the outset very truly that "Hume seems to have had but two hearty dislikes: the one to the English nation, and the other to all the professors of dogmatic theology." He did not add, which he might have done very truly, that if *contempt* were substituted for *dislike*, he himself sympathizes most cordially with Hume. This contempt is manifest in the want of interest which he manifests in the exposition and criticism of Hume's discussion of theism. In Hume's treatises, particularly in his Dialogues concerning Natural Religion, there is more acuteness, comprehensiveness, and earnestness than in any or all of his other philosophical writings. Despite the sceptical uncertainty into which he very frequently falls, he now and then seems to forget the pyrrhonist and to reason as a man, with a subtlety, force, and eloquence which are most honorable to what we may suppose to have been his prevailing convictions. The words which he puts into the mouth of Cleanthes, the advocate for the argument from design, are often strong and glowing. Professor Huxley has no sympathy with arguments in this direction, as indeed his thorough-paced associational metaphysics would allow no standing-place for a moment for design in Nature, and he slides over the discussion as easily as possible, interposing here and there a sharp remark to give energy to every negative conclusion and to weaken the force of any positive utterances. At the end of his comments on both Hume and Bishop Butler, he gives us the following: "Surely on this topic silence is golden, while speech reaches not even the dignity of sounding brass or tinkling cymbal, and is but the weary clatter of endless logomachy. One can but suspect that Hume also had reached this

conclusion; and that his shadowy and inconsistent theism was the expression of his desire to rest in a state of mind which distinctly excluded negation, while it included as little as possible of affirmation, respecting a problem which he felt to be hopelessly insoluble."

After having thus brought the authority of Hume, as far as possible, over to the side of the modern Agnostics, he proceeds to quote from the Essay on the Natural History of Religions, as a tentative effort in the direction of the modern doctrine that monotheism is the product of evolution. His scientific interest in this matter, however, is easily turned aside by the opportunity to satirize the free application to one another, by religionists of all classes, of the term Atheist as a term of reproach. Characteristically enough, having begun this chapter with the saying that "if Hume was ever bitter in his public utterances, it is against priests in general and theological enthusiasts and fanatics in particular," he concludes it with quoting a stanza or two of bitter and biting lines from Burns' "Holy Fair" against the professors of Scottish religion and theology.

The three remaining chapters are entitled *The Soul*, *The Doctrine of Immortality*, *Volition*, *Liberty and Necessity*, and *The Principles of Morals*. They contain no matter worthy any special attention, and the author shows in writing them that he had become weary of his task. He attempts to dispose of Descartes' doctrine of the immateriality of the soul by discoursing of the absurdity of his other doctrine, that a being whose essence is spiritual can hold no relations to matter. He quotes with approbation Hume's dogmatic assertions, that as for *himself* he never found that he could find in *himself* anything which he could call *himself*, but only "a *bundle* or collection of different perceptions," or "a *kind of theatre* where several perceptions successively make their appearance." He next subjoins several well-known puzzles from Hume and himself to illustrate the loose and variable application of identity to material objects. He thinks it quite enough to find that in respect to the evidences of the natural and necessary immortality of the human soul Archbishop Whately agrees with Hume, to whom he thinks the prelate was indebted for his own views. As to the moral argument, he sneers at the attempt to know anything about the divine justice, and the

necessity of another life for the vindication and completion of its work, and brings in Kant to endorse the position of Hume that the immortality of the soul cannot be demonstrated by the intellect, dismissing Kant's moral demonstration with a flippant word. The chapter on Volition, etc., furnishes an opportunity for him to utter the dogma that "so far, therefore, from necessity destroying moral responsibility, it is the foundation of all praise and blame; and moral admiration reaches its climax in the ascription of necessary goodness to the Deity." He then endeavors to meet the objection brought against necessity, that it makes God the author of sin, by observing that Hume attempts no answer to it, "probably because none is possible;" but subjoins in the next breath that the objection is "the direct consequence of every known form of monotheism," and adverts to the fact "that not long after the publication of Hume's treatise Jonathan Edwards, President of the College of New Jersey, produced, in the interests of the strictest orthodoxy, a demonstration of the necessarian thesis which has never been equalled in power, and certainly has never been refuted." Here, again, he must bring in Kant, with his intelligible freedom as pertaining to the human soul as a *noumenon*, for the purpose of a witticism about metaphysicians, which we may be pardoned for saying is as applicable to the "physiological" as to the "pure metaphysicians."

He concludes with a few pages upon Hume's Principles of Morals, in which this same Professor Huxley, whose psychology is materialism, whose metaphysics is evolutionism, and whose theology is atheism, avows himself a *sentimentalist* in ethics, declaring in so many words that, "in whichever way we look at the matter, morality is based on feeling, not on reason," and "the moral law, like the laws of physical nature, rests upon instinctive intuitions, and is neither more nor less innate and necessary than they are." Some men are destitute of a mathematical sense, others of any sensibility to art, and "some there may be who, devoid of sympathy, are incapable of a sense of duty."

In closing this critical examination of Professor Huxley's exposition of Hume, the writer finds himself inclined, if not constrained, to apologize for the detail and the length of a paper

that, as would appear, has been occupied with material which has proved so weak and unworthy. His apology is furnished in the importance of the theme, and the reputation and ability of the critic. The philosophy of Hume is rightly judged by Professor Huxley to have very great significance at the present time, by reason of its intimate relations to the metaphysics of that very influential school with which Professor Huxley is very closely identified. It also has a very definite genesis, having been evolved very directly and by stages which can be traced most distinctly from Descartes and Locke. It has awakened severe and constant criticism, notably from the Scottish and German schools, and been challenged in every one of its assertions and assumptions by a long succession of acute antagonists. Of all this Professor Huxley knows something, enough at least to impress him with the importance of his theme, and to prompt him to acquaint himself with the opinions and writings of Kant —how thoroughly and appreciatively may be gathered from the course of the present criticism. It would seem that his knowledge of the place which Hume continues to hold in modern thinking should have prompted him at least to treat his theme with greater thoroughness, and to acquaint himself more completely with Hume's critics and antagonists. It happens that not very many years before Professor Huxley's work was undertaken, a new edition of the works of Hume, accompanied by a very able and searching critical examination of the principles of his philosophy, was edited at the University of Oxford. Of the existence of this able criticism Professor Huxley makes no recognition. He does not often condescend to notice or refer to this edition of his works, although he makes some little parade of his bibliographical recognition of and reference to the only other complete English edition, which was published in 1810.

It is doubtless true that Professor Huxley is so well satisfied that the physiological metaphysics with the materialistic psychology and atheistic theology are so far established beyond all refutation as to release every one of their adherents from the obligation to fight any battle in their defence. As long, however, as the opposite party make a respectable showing and retain a manifest hold upon the faith of men who are disposed to defend

their opinions, it would seem to be no more than courteous for those who are so confident of their strength to exercise it after the methods generally recognized in legitimate warfare, especially when the challenge comes from their own side.

Professor Huxley in undertaking to state and define the philosophy of Hume, especially in relation to modern theories, might be held to the duty of doing his work with the candor and thoroughness which would command the respect of his opponents, by exhibiting an adequate knowledge of his subject-matter, and by opposing to their well-known arguments some earnest counter-discussion. In failing to do this, he has produced a work which rises no higher than a clever *jeu d'esprit*, but can have no influence except with that one-sided set of writers who, having fired away all the shot which they have at command in the defence of atheistic evolutionism, employ themselves in discharging rockets over their imagined success. In the mean time, no one is deceived but themselves and those lookers-on who mistake brilliant coruscations and repeated shoutings for effective arguments.

On the other hand, it makes a sober man sad to observe that these are indications of a decay of the truly scientific spirit among a certain class of educated men, which threatens a greater evil, if such were possible, than a temporary weakening or destruction of ethical and religious faith. We appreciate and enjoy Professor Huxley's acuteness and wit, without a thought of whom or what he strikes; but we cannot enjoy his superficial ignorance or shallow appreciation of considerations to which men of the highest rank in the world of thought have attached supreme importance. We regret that he should have lent his example to a tendency which is rapidly gathering strength—to the division of men of scientific spirit into two separate encampments, which instead of engaging in brave and vigorous controversy shall retire beyond even fighting distance, under intrenchments which are only strong enough to serve the needs of those who dare not measure their strength in the open field. Whether the indignant fulminations of unscientific and ignorant religionists or the contemptuous asseverations of unphilosophical and one-sided scientists do the greater harm is of little use to inquire. Mr. Hume did if possible infinitely greater harm to the world

by the uncandid and frivolous spirit which grew out of his utter distrust of the possibility of scientific certainty than by his attacks upon natural theism and supernatural Christianity. Professor Huxley is likely to do infinitely greater harm by the example of unscientific and superficial philosophizing which this biography furnishes than by the direct aid and comfort which he has furnished by his sneers and his dogmatism to scientific unbelief.

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UNIVERSITY QUESTIONS IN ENGLAND.

ALL the great university questions are now under consideration in England, in connection with the intellectual and social progress of the nation. With regard to some of them, what is going on there is instructive to us here. The general subject is, perhaps, even more important in our case than in that of England, because, apart from the interests of literature and science, a democratic society stands in special need of the elevating, refining, and moderating influence which is exercised by great intellectual institutions. We have been made sensible by recent occurrences in Canada of the folly of attempting to import into the New World the conservatism, or what is deemed such, of the Old World; but there is another kind of conservatism, consisting in the development of tempering agencies of a rational and permanent kind, which good citizens in a democratic country are specially called upon to cultivate. The improvement of these means of training national character is perhaps a more hopeful, while to many it is certainly a more congenial, line of reformatory effort than direct conflict with demagogism, faction, and corruption in the political arena.

1. There is one difficult problem with which the reorganizers of universities have to deal in England, but which does not specially concern us here—the adaptation of the medieval colleges to the requirements of modern society. Oxford and Cambridge were, till the other day, exclusively, and they still are distinctively and substantially, federations of colleges; and all the colleges either were founded in the middle ages, or if founded after the Reformation, preserved the medieval type. All were originally clerical, celibate, and quasi-monastic in their rule of life, as well as in their structure, though their objects were not, like those of

the monasteries, prayer and religious contemplation, but prayer and study; All Souls' College at Oxford alone being intended rather as a chantry than as a literary institution by its founder, whose wish in later times was negatively observed by sinecurism combined with social exclusiveness. Till 1854 the medieval codes of statutes remained legally in force and continued to cut off the colleges from intellectual progress. But in 1856 the bulk of them were swept away by a Commission of Reform under the authority of Parliament. The British Parliament never formulates principles, but in the University Reform Act it practically established the principle that the inviolability of a founder's will must be confined to his main object, and that all details must be subject to revision by proper authority whenever change of circumstances might render it expedient. Fifty years were the period taken as the limit beyond which no founder's foresight with regard to the best means of giving effect to his main object could be expected to extend; and the commissioners were empowered to deal freely with the details of every foundation which had been in existence for that period. This question is one which the people of the United States may some day be called upon to consider, if they do not wish their noble treasury of endowments to become a museum of donors' whims; at present it seems to be governed not so much by the philosophy of Turgot, the writer of the famous article in the Encyclopedia, as by the arguments of Daniel Webster, which are not philosophical, but forensic. A covenant with the dead may be kept in the letter, but if Time, the unceasing innovator, has broken it in the spirit, and there is no legislative power of bringing the spirit and the letter again into agreement with each other, the dead man himself is the most wronged. Scrupulous respect for the sanctity of property is a popular feeling so invaluable that we might well bear much inconvenience rather than impair it in the slightest degree; but it would surely not be difficult to make it plain to popular apprehension that there is no robbery in abrogating provisions which a founder himself, supposing him to be a reasonable being, would have abrogated had he lived to see their effect. A wise and thoroughly generous man would deprecate the compulsory observance of the details of his will in a public institution for fifty years, perhaps even for a single year, after his death.

Even where munificence is common, as we have every year illustrious proof of its being in the United States, munificence combined with entire freedom from vanity and from the lurking desire of self-perpetuation is comparatively rare. The most noble-hearted founders of intellectual institutions are sometimes personally unacquainted with the essential conditions of success; and bounty saddled with the enactments of ignorance may be a dead loss to the unwary recipient. "Never look a gift-horse in the mouth' is a foolish proverb, as many a public museum and other institution can testify. If the Trojans had looked a gift-horse in the mouth, they would have seen something which concerned them deeply.

The Reform Commissioners of 1854, however, failed to deal comprehensively with the question of celibacy. Their hesitation was not unnatural. On the one hand, compulsory celibacy is at variance with the principles of modern society, and fatal to the permanency of the college faculty, the members of which, in fact, have usually taken up teaching only as a mode of employing their time and increasing their income while they were waiting for a college living or other preferment. On the other hand, to abrogate the rule would be to put an end to the social life and break up the whole system of the college as it now exists. When the subject is mentioned, the thoughts of an Oxford man go back to an ancient dining-hall, a beautiful and noble room, hung round with old portraits of college worthies, in which all the members of the society are assembled at their meal, the fellows on the dais, the students at long tables down the room. Grace is said by the presiding fellow, and one of the scholars or junior members of the foundation, in a Latin form handed down from the middle ages. If it is a college festival, the "loving cup" goes round. Dinner over, the students retire to their own rooms, and there often make up parties of their own. The fellows withdraw to their "common room," where, while the wine is passed round after the fashion of the old country, the talk often runs on the affairs of the college and the characters, doings, and prospects of its junior members. The strength of corporate feeling and the attachment to the old house fostered by this system are valuable; still more valuable are the close personal relations and constant intercourse between

tutor and pupil which it encourages, and upon which an old Oxford or Cambridge tutor often looks back with no common pleasure. The social bond between the undergraduate members of the college is also favorable to the formation of character and to friendship: perhaps it is partly the want of such a bond in the American universities that leads students to seek a substitute in the "secret societies." If the fellows marry, they must live separately with their families, and for the most part out of college, for the arrangement of the monastic building repels married life. There will then be an end of the college as a society: as a barrack it may remain; but as a barrack it will probably be a nuisance, for, in England at least, it would be scarcely possible to maintain discipline, or even manners, among a large body of students rooming in the same building without the presence of the seniors. Still the quality of the teaching is the first object, and it can be secured only by the permanent devotion of the fellows, or such of them as constitute the college faculty, to their calling, with which the rule of celibacy fatally interferes. If the present commissioners can devise a mode of reconciling the improvement of the teaching with the preservation of the social life of a college, their ingenuity will deserve a crown.

2. The hideous system of religious tests imposed in Stuart times to keep the universities under the dominion of the state church has, after a protracted struggle, been removed: at least it has ceased to be compulsory; though we believe it is still legally open to the graduating student, if he thinks fit and has the clerical profession in view, to bind his conscience to formularies comprising several hundred propositions in theology, many of them controverted, before he has had time to form any well-grounded opinion. The university of Laud and Sheldon is now open to "Jews, Turks, infidels, and heretics," all of whom have taken advantage of the concessions, for the heir of the late Khedive was a student at Oxford. The major part of the fellowships has also been thrown open to laymen. But the remainder of the fellowships, amounting in some colleges to a moiety of the whole number, and all the headships except two or three remain tenable only by clergymen of the Church of England. In the middle ages everything literary was clerical; so that

when a medieval founder enjoined his fellows to take orders at a certain standing, he in no way prejudiced the literary objects of his foundation. But at the Reformation, literature, and science with it, passed in the main to the laity: the functions of the clergy were narrowed to the pastoral office and theological study; and institutions of which all the officers were clergymen underwent a corresponding contraction of scope and character, besides being enslaved politically to the reactionary party with which the Established Church was identified. Clerical restrictions on elections to headships and fellowships, especially those on headships, now act as powerful guarantees for the ascendancy of the Church of England in the universities. This fortress of Establishmentarianism is closely besieged by the Liberal forces, and in the end will no doubt fall. It is being daily rendered less tenable by the manifest progress of the new opinions among the academical clergy. The presidency of a layman, even if he were neutral in theological questions, could hardly be so subversive of religion as is that of a clergyman who, as everybody believes, would at once doff his black coat and white tie if he could do so without at the same time doffing his academical dignity with an income of $10,000 a year.

Anglican or clerical ascendancy is one question; religious education is another, though the two are naturally confounded in a country accustomed to identify religion with a state church. In a period of religious division, such as that through which we are passing, the happiest solution of the problem would seem to be a secular university open to all, with colleges each of which, while availing itself of the professoriate, libraries, and apparatus of the university, and sending its students into the common examinations, might carry on its special system of religious instruction and moral discipline within its own walls. But it would be impracticable now to appropriate the colleges of Oxford and Cambridge to different churches; and on this continent the practice of local separation has gone so far that a formation of colleges on the Oxford and Cambridge plan appears beyond our reach. The progress of religious thought, if it continues in the present direction and at the present rate, will soon change the aspect of this question. In the mean time, one who has been a student and tutor in a religious college at

Oxford, and who is now connected with a secular university in America, may be permitted to avow his conviction that, whatever may be the case with children, in those who are of an age to go to college spontaneity is the essence of religion; that compulsion breeds antipathy at least as often as it does the reverse; and that morally as well as intellectually the most industrious college is the best.

3. The curriculum both at Oxford and Cambridge, till about five-and-twenty years ago, was confined to classics and mathematics; and the study of classics at Cambridge was purely philological, while at Oxford it included ancient philosophy, with Aristotle for a text-book, and ancient history. Now, physical science, history, and jurisprudence are included as optional subjects for the final examinations, and admitted to equal honors with the old studies, though classics and mathematics are still retained as the general basis, and preserve their ascendancy to a great extent. Physical science, though it has immense attractions and will probably in time become the basis of education, does not lend itself very easily to the purposes of a university curriculum: lectures in it may be attended and notes of the lectures may be taken, but the real benefit of the study as a mental discipline cannot be reaped without going through a course of actual investigation and experiment which can scarcely be compressed into three years, even if the other studies are set aside. The system is in a state of transition and uncertainty, which will not be terminated till we have arrived at a more definite idea than we now possess of the object and functions of universities. In the middle ages a university was a place both of liberal and professional education, as well as a place of general study. The liberal education was preliminary and designated by arts, the professional education was final and designated by the faculties, the whole course, liberal and professional, extending over some fourteen years. In England the professional studies of law and medicine have now migrated from the universities to London. Is it desirable and possible that they, or the more scientific parts of them, should be recalled to their ancient home? Ought the university to be content with giving the student a liberal education, or ought it to put him in the way of winning his bread and but-

ter? Behind these questions there is coming up one of a more fundamental kind which is likely to press upon us more and more. What is the benefit derived from residence at a university by the general mass of young men who have no particular taste for learning or science, and are not destined to lead learned or scientific lives? Do they, on the average, get anything in the way of useful culture or preparation for active life which repays them for the sacrifice of time, the expense, and the moral risk? Would not their minds be just as well trained by the study of a profession or by business? Would they not pick up from books and journals read at home nearly as much of liberal culture as they carry away from the university? In the middle ages knowledge could be obtained only in the lecture-room of the professor; now it comes to you through the press wherever you are: you must still attend the demonstrator, but the lecturer might almost as well be attended by a short-hand writer as by the class. Perhaps the answer may somewhat vary with the circumstances of different countries. In England the number is very large of young men, the sons of the territorial aristocracy and the destined rulers of the community, who do not go into professions, and who, if they were not learning something and undergoing some sort of discipline at the university, would be learning nothing and undergoing no discipline at all. Small enough, no doubt, is the benefit that many of them receive; still it is better than nothing, and by giving their sons a long course of education men of wealth and leisure pay the highest tribute in their power to the country. It is said that a young nobleman at Oxford was heard to call out from his window, "If any fellow is going anywhere to do anything, I'll go with him." In his father's halls his lordly listnessness would have been the same, and at Oxford there were, at all events, one or two places to which university discipline forbade him to go. These remarks may be extended to such young heirs of wealth as there are in the United States, and in one respect with greater emphasis. The young English nobleman or squire has, by the institutions of the country, enough political or administrative work cut out for him to prevent his sinking, as a rule, to the lowest depth of Sybaritism; but the young American millionaire, take away his college culture and the

tastes that it may awaken, has no such salt provided to keep his mind and character from rotting.

It may be observed, in passing, that the effects of the old classical culture in England are not to be measured by the number and writings of the professional scholars. In these Germany has been far ahead of England, though, whoever may have been the greatest paleographist or antiquarian, it would be hard to name a greater "Grecian" than Porson. But it would scarcely be a paradox to say that the reason why Englishmen have edited and commented upon the classics less is that they have read them more. If perfect familiarity with the classics and a thoroughly classical taste are enough to constitute a scholar, much of the best scholarship of England would be found among amateurs. Many are the instances of statesmen and proconsuls who through life have kept up their classical studies in the intervals of business, and have turned to them as an intellectual haven in their old age; while the political sentiment of the ruling class has had in it, for the last three centuries, a strong ingredient drawn from republican antiquity.

4. It became clear at least thirty years ago that a measure of university extension would be needed, especially in the interest of a large class in the north of England, generated by the marvellous growth of commerce, which desired a high education, but shrank not only from the expense of Oxford and Cambridge and the sacrifice of time, but still more from the contagion of aristocratic extravagance and the complete interruption of all business connections and ideas. A plan was framed at Oxford by those who recognized this exigency, but at the same time wished to preserve the great historic centres, the purity of the national system, and the standard of national degrees. It was proposed to affiliate local colleges, of which there were several already in existence, and to permit the junior course to be gone through and the lower degree taken at the local college, the university prescribing the curriculum and holding the examinations; while those who desired to go through the senior course and to take the higher degree would be required to come into residence at the university. It was thought that the junior course and degree would meet the wants of men destined for business, and that a local college might provide an adequate

staff of teachers and apparatus for that purpose. The plan was tabled at the time, richly endowed bodies being rather slow in their movements; but it has now been called up again, and is likely to be adopted. In the mean time, however, circumstances have changed. Owens College, Manchester, which would once have accepted affiliation, has grown to what it deems the dimensions of a university. It has claimed university powers, and, after a long controversy and much hesitation on the part of the government, it has carried its point. The resistance, which found sympathy even among the trustees of Owens College, and the hesitation of the government, marked the aversion of the friends of high education in England to the multiplication of universities which they know will be followed by a lowering of the standard.

It remains to be seen whether England, having once got upon the dangerous slope, will be able to prevent herself from sliding into that "one-horse" university system which is the bane alike of Canada and the United States, and, like some other things among us—the state of the municipal franchise, for instance—seems to be at once deplorable and past remedy, since the weaker a college is the more certain it is to cling to its isolation. If the English need a warning example, several of our one-horse universities will furnish it to them with a vengeance. Nothing can be more patent or more flagrant than the inadequacy of some of these institutions to the functions which they pretend to discharge. A primary school convicted of anything like a proportionate deficiency of teachers, books, and apparatus would be at once closed. A small university must of necessity be a bad university. It must of necessity be narrow intellectually and socially: it cannot provide itself with a proper staff of professors, or with a good library, or with the collections and teaching apparatus which science now demands. All this is undeniable, but it will not induce weak colleges to give up their university powers.

In another way the one-horse university system is likely to do mischief. An untrammelled facility of graduation, with the present tendencies of American society, is pretty sure to produce a supply of graduates in excess of the demand. In an early stage of civilization the difficulty is in inducing men to

take to intellectual callings; but now, and especially on this continent, the difficulty is the other way. Founders of new colleges hardly consider what is to be done with all the alumni whom they will send forth. The intellectual callings are becoming overstocked, and it is cruel kindness to multiply the number of cultivated and sensitive natures condemned to destitution.

Oxford and Cambridge are so richly dowered with wealth, beauty, and history, and have such a hold on the heart of the nation, that if they are true to themselves they will probably keep their place. Possibly they may even reabsorb the University of London. That institution was called into existence only by the fatal bigotry which, in the supposed interest of a privileged church, excluded half the nation from the national universities. It has no staff of teachers, and is, properly speaking, not a university but a central examining board, conferring degrees on all comers without reference to their place of education or to the course which they have gone through, otherwise than as it is indicated by the examination. About fifty years ago a new university was founded, on the model of an Oxford College, at Durham, out of the surplus revenues of the cathedral. This was an unseasonable revival of a project of Cromwell, formed at a time when the communication between the north and south of England was less easy than at present. It has failed, and the university is fain to give substance to its spectral existence by an alliance with a medical school at Newcastle.

4. Another subject of discussion, and rather vehement discussion, is the system of examinations. At Oxford and Cambridge the examinations for students ambitious of honors are competitive, and more highly so at Cambridge, where the candidates are placed in order of merit, than at Oxford, where they are ranked in four classes and placed alphabetically in each class. The intensity of competition is greatly increased by such prizes as the fellowships, which are now bestowed on graduates by examination, and are of the average value of $1000 a year. Various objections are now brought against the system. It is said that the examination test is imperfect, that students are apt to be overstrained and exhausted by the effort, above all that the proper objects of study are supplanted by ambition or

pecuniary motives, and that the genuine student is prevented from following his natural bent, and forced to direct his reading to the impending examination. The practical question must be whether the good or the evil preponderates, and in England, perhaps, the weight in the scale of good may be increased by considerations which have no place in America. England is an aristocratic country, and these university honors and prizes, especially the fellowships, keep a door open for plebeian merit. On the other hand, there are aristocratic students in the English universities out of whom it is impossible to get any work without the spur. The life of Lord Althorp is in every way interesting as a history of an upright public man; and it contains a remarkable proof of the usefulness in some cases of competitive examination. Evidently, as Lord Althorp said himself, he would have sunk into a mere sportsman, absorbed in hunting or shooting, and have been lost to the country, had not his sense of his powers been awakened and his ambition kindled by a college competition. Against mere test examinations, without competition, such as are usual in American colleges, nothing can well be said. No other method of ascertaining proficiency has been devised, and it will hardly be pretended that Newton or Faraday would have been turned from his natural bent by having to pass a college examination in mathematics or chemistry. No doubt love of the study and the duty of self-culture are much to be preferred as motives to compulsion or ambition. But to trust to these alone would be to consign a large proportion of our present students to idleness and vice. If examinations are to be abolished, the students must be picked. Imperfect, of course, any examination test is; but at Oxford and Cambridge the result generally accords with the previous reputation of the students, so that the injustice can hardly be very great. A university, of course, is concerned only with the results of literary and scientific education; it does not pretend either to impart or to test any practical qualities, except industry and perseverance, and to quarrel with the examination system for not selecting men of action is to quarrel with a circle for not being a square. That in any examination which is tolerably managed mere "cram"—that is, facts got up by rote—can compete with real knowledge few who have had experience

in examinations will assert. We should like to see the man who being ignorant of mathematics could be crammed so as to solve mathematical problems, or who being ignorant of Latin could be crammed so as to write the language correctly. But, as Mr. Lowe said, "Cram is what I know and you don't."

The student's health, no doubt, is sometimes injured by overstrain in preparing for examinations: it is probably injured at least ten times as often by the indulgences to which idleness is prone. But there is no need for overstraining. Even under the competitive system regular work for a moderate number of hours each day will do all that can possibly be done. The mind is not a pitcher; it can take in knowledge only by an active effort, of which it becomes incapable when it is jaded. In the examination itself to produce your knowledge you must be fresh and vigorous; and the candidate who wishes to succeed had better reduce than increase the number of his hours of work as the time for the ordeal draws near. Bad habits will tell on the student as well as on other men. If your pupil breaks down, inquire whether he is overreading himself; but inquire also how many cigars he smokes, and whether he works late at night. The late Lord Westbury, at the time when he was holding the post of Attorney-General, which, as it combines the most tremendous legal work with nightly attendance in Parliament, is one of the most laborious in the world, was complimented on his wonderful freshness. "Yes," he replied in his singular mincing way, "and I owe it entirely to my habit of working early in the morning and not late at night: I set out in life with many dear friends who were in the habit of working late at night; I have lived to bury them all." Rise early, reward your own virtue in so doing with a cup of tea or coffee, if Dr. Dio Lewis is not looking on; get a good deal of your work done before breakfast, when the understanding, though not the fancy, is at its best; spend the evening in recreation, and sleep well. Then if you break down, you may justly charge it to the account of examination or Evolution.

The proposal to abolish examinations presents itself in rather ominous conjunction with an almost avowed desire on the part of the holders of academical endowments to rid them of educational duty, indeed of fixed duty of every kind, and to

turn the headships and fellowships into places of literary and scientific leisure. Universities, it is said, ought to be dedicated not to education, but to research. Scepticism still prevails as to the possibility of selecting "researchers," or of securing their activity when they have been selected; and it is not likely to be allayed by the disdainful tone in which the spokesmen of the movement denounce the idea of exacting anything of the researcher beyond his existence. Experience is against their policy. Neither the headships of colleges, which have been hitherto almost sinecures, nor the deaneries and canonries of cathedrals, which have been entirely so, have ever produced anything, even in the theological line, at all proportionate to their revenues, or which could even justify their existence. But those who do not wish to cast out education, or to bring in sinecurism, do wish to provide for research. The professoriate both at Oxford and Cambridge will certainly be enlarged; the incomes of professors will be increased, and leisure enough for private research will be secured to the professors. A certain number of fellowships will probably be left without educational duties, and the headships—the value of which ranges from $5000 to $20,000 a year—saving the clerical restrictions, are likely to remain much as they are at present. The universities will also be provided with funds for the assistance of special researches, which most people deem a more prudent investment than the endowment of researchers. Already the university presses bring out books, such as the Icelandic Dictionary, which require a large preliminary outlay, and would hardly be taken up as a commercial speculation by ordinary publishers. Ample provision will thus be made for the objects which, in America, the Johns Hopkins University is specially intended to promote. But universities, if they do their work well, will beget research beyond their own precincts. They will make the professions more scientific, and thus multiply Austins, John Hunters, and Maines. They will cause many a private income to be employed like that of Cavendish or Fynes Clinton. Mr. Morgan, of Rochester, and Mr. Lea, of Philadelphia, are just as much devoted to research as they would be if they were living within college walls. The intellectual and scientific world has grown far wider than it was when everything was concentrated in the universities.

6. In throwing open the fellowships and scholarships to examination, while many obsolete preferences in elections were unhesitatingly removed, hesitation was felt in abolishing the preference to poverty. It was done, however, and in the interests of poverty itself, as is attested by the most competent authorities, who assure us that more poor youths make their way at Oxford under the new than under the old system. Need is indefinite, and the person most in need is apt to be the most importunate or the best befriended. It is a cruel benevolence which tempts a poor and virtuous youth, who would be happy as he is, into an ambitious line of life without satisfactory proof of his being able to maintain himself at the new level; and the only satisfactory proof is his success in open competition. If anything in the eleemosynary way is to be done, let it be by means of a fund secretly administered by the college authorities for the assistance of deserving students in their need. The point is mentioned because it seems to have been mooted in the United States.

7. Union of manual labor with study, the generous vision of the founder of Cornell, has never been proposed in England, though in the little universities of Scotland, it is believed, there are still students who work on the paternal farm in the vacation. The experiment appears to have failed. Study and manual labor draw on the same fund of nervous energy, which is not sufficient to feed both; and a man exhausted by study requires relaxation, not toil. Some people seem to fancy that the labor of the hands alone is worthy of the name, and that there is something despicable in working with the brain; they might as well despise an engraving tool for not being a ploughshare. That university graduates will go back to the farm seems, under the present conditions of society, to be a dream.

8. Lastly, there is coeducation. The University of London has admitted women, not without strong opposition by a part of its governing body; but the University of London, as has been already said, is nothing but an examining board. Oxford and Cambridge have undertaken the examination of women who wish to become teachers; they have always allowed every one, whether students or not, and without distinction of sex, to attend the public lectures of professors; but they still hold out

against the admission of female students, though Cambridge is closely besieged by an outpost of the invader, Girton College, planted at its very gates. Every engine is plied, appeals are made not to reason only, but to sentiment, and enforced by a gentle intimidation, to which those who cherish a reputation for liberalism especially are apt to yield. Clearly enough not only this special question, but the more general and far graver question as to the future relations between the sexes, is likely to be settled by other influences than that of argument. Nature will break a settlement which reason has not dictated; but the experiment may cost us dear: we may find that it is possible to unmake women, though it is not possible to make men.

That the education of women ought to be high we are all agreed. But unless the functions of the two sexes are the same, high is not necessarily male. If the function of men, as a sex, is labor, that of women maternity and the management of a household (and it is difficult to see how the species can be preserved under any other arrangement), the presumption is in favor of some corresponding difference in final education, and there can be no illiberality in assigning to each sex that which it needs, not that which it does not need. If the two are destined by nature to be complements of each other, to train them up as competitors is not large-mindedness but folly. The wealth of marriage will certainly not be increased by the change. No man or woman can master the whole circle of knowledge and accomplishments; the more diverse, therefore, the acquirements of the two partners, the richer the union will be. Thoroughgoing radicals spurn the idea that the interest of wedlock is to be allowed to regulate these questions; but they will find themselves in collision with very deeply-rooted prejudice. Physiological questions we leave to physiologists, who are certainly not unanimous in pronouncing that the full male burden of intellectual labor can be safely imposed on the future wife and mother. The danger would of course be greater under the competitive system of examination at Oxford and Cambridge than under the system which prevails in the United States. But it is hardly conceivable that the feelings of young men and young women towards each other in England should undergo such a change as to admit of their competing against each other. Nor are

there many who would wish to awaken in the breasts of women the feelings which rivalry awakens in those of men, and which, it must be allowed, are a drawback on the good effect of the prize. No cast-iron rule need be laid down: our system must be framed not for Mrs. Somerville or Miss Martineau, but for women as a sex.

Supposing, however, that the final education of men and women is to be the same, it is a separate question whether they can receive it in the same universities. We cannot draw an affirmative conclusion from an experiment made with a few young women probably of an exceptional character, and certainly under the restraints of a novel and delicate position; even granting such experiments to have been successful, which in the case of the female students of Zurich appears more than doubtful. We have to ask ourselves whether the young women of the wealthier class generally can be safely mingled in a university with the young men of the same class. Let any mother, provided she is not an extreme radical, decide. In America there are excellent colleges for women, with full university powers, though we understand that those among them which at the outset professed and attempted to give a complete male education have found it necessary to make concessions to sex, as all universities would if the number of females in them became large. There is, in some quarters, a manifest desire to burst open doors merely because they are closed; but gratitude is due those who, like the liberal though stalwart President of Harvard, decline, in mere deference to such a desire, to jeopardize institutions which are doing good work in their own way.

8. Perhaps the list even of serious subjects would hardly be complete if we left out athleticism, the extravagant development of which in the English universities fills with apprehension many who are perfectly aware of the connection between a sound body and a sound mind. Success in athletics, notably in rowing, has now become an object competing nearly on a par with the proper objects of a university, and students plead training as a ground for the intermission of their studies, which, in fact, are incompatible with the animalism of an athlete. This may be partly the Nemesis of previous neglect of physique, though the young gentry of England can hardly be accused of having

habitually sacrificed the body to the mind; but it is difficult to believe that the abnormal and temporary development of muscle can really be conducive, as regular exercise and exhilarating pastimes are, to the normal and permanent health required to sustain intellectual labor in after-life. Whether it is not the reverse of conducive to such health is a question not to be decided by statistics confined to the cases of celebrated boating crews, which are sure to have been made up of picked men. The main source, however, of the mania, for it is nothing less, is, in England, the *ennui* of a wealthy and unemployed class; in the United States, imitation of England. University authorities have too often made themselves responsible for the growth of the tendency by the homage they have suffered themselves to pay to it. If their universities are gymnasia, their position is hardly a sound one: raw beefsteaks and the services of a trainer can be had without the expense and risk of going to college.

Horse-racing, the great pastime of the aristocracy in England, has become a sink of gambling and worse things. Rowing, pedestrianism, and other sports are being rapidly sucked into the same vortex. All alike are gathering a train of "professionals," who turn a liberal pastime into a disreputable trade. These men, mere brutes many of them, are exalted into idols, their coarse society is courted, their stolid sayings are repeated, the most ridiculous details of their bodily condition, the tidings of their catarrhs and boils, are mingled in cablegrams with the most momentous items of intelligence. They are compared to the athletes of Greece, and their matches to the Grecian games. Here, as we write, we are presented, in an account of a walking-match at New York, with a picture of the new Olympia, and of the heroes who are to awaken the lyre of another Pindar.

NEW YORK, Sept. 26.—It is estimated that the receipts will reach $72,000, giving the winner about $26,000 for his week's work. The reason for attempting to disable Hazael last night, by throwing a stone at him, was that a pool of $1500 had been formed on Rowell, Guyon, and Merritt for the first three places. O'Leary claims that his challenge to the winner of the present match takes precedence of Panchot's. Ennis is in the best of condition, and says he will now do splendid work. Weston's body is good, but his mind is certainly unsettled.

NEW YORK, Sept. 26, Noon.—An exciting finish between Merritt and Hazael is expected, as the second prize may amount to $12,000. Merritt does not seem in as good condition as might be. Guyon and Hart are going steadily and easily. Guyon makes some good running, but his feet are paining him dreadfully. It is reported that as soon as the men get themselves within the limit when they will be certain of making 450 miles and saving their entrance-money, some rapid running may be looked for. The fear of breaking down prevents quick work at present. Krohne and Hart rest but little. Taylor left the track last night at 9.45, and never appeared until 7.56.

NEW YORK, Sept. 26, 1 p.m.—Rowell on the track again at 12.11, looking sick. He left the track at 12.30, having made only one mile and two laps. His tent is tightly closed, and it is said that he has just had another fit of vomiting. Bottles of brandy and other liquors have just been brought hurriedly into Rowell's tent. Book-makers are afraid to bet until they can learn whether Rowell is really breaking up or not. He looks decidedly sick. There are dark rims around his eyes.

NEW YORK, Sept. 26, 1.16 p.m.—It is rumored that Rowell has been poisoned. Outsiders are now betting 3 to 1 that 550 miles will not be made.

NEW-YORK, Sept. 26, 1.30 p.m.—Rowell is still in his tent, and it is said has been seized with colic and cramps. The excitement is intense. That Rowell is very sick is beyond all doubt. The rumor has been started that he will have to be withdrawn. Betting at 1 p.m. stood 1 to 5 against Rowell; 3 to 1 against Hazael; 2 to 1 against Merritt; 20 to 1 against Guyon; 40 to 1 against Hart; 20 to 1 against Weston; 50 to 1 against Ennis; 100 to 1 against Krohne.

NEW YORK, Sept. 26, 2 p.m.—Rowell has come on the track again, and is making good time, though looking ill.

As Mr. Weston's mind is said to be certainly unsettled, though his body is good, it appears that the connection between bodily and mental health is not invariable.

It is idle to think that in the industrial communities of modern times we can revive the habits of the ancient Greeks, bodies of slave-owners dividing the leisure secured to them by the labor of their slaves between the gymnasium and war. Life now is too busy and too serious. The ideal of "noble boys at play," which the Greeks are said to have realized, may be poetic, but it cannot be ours. With the Greeks, however, athleticism was not mere play; it had in it an element of usefulness which preserved it from being childish; it was a preparation for war when war was the principal business of life, and when battles

were decided by personal prowess, not by long-range rifles. Rowing a shell or walking against time is almost as little connected with anything useful as trundling a hoop.

Moreover, the ancients did not confound muscular strength with intellect, or put them on a par. Hercules is represented with an unintellectual head; and there are representations of gladiators at Rome which are evidently caricatures of brute strength by artists who despised it.

At Oxford, while athletics flourished in superabundant measure, the volunteer rifle corps of the university languished and was with difficulty kept on foot. Yet here was something really Greek; here was the modern counterpart of the military duty performed to the country by every citizen of an ancient republic. At Cornell University and other institutions enjoying Federal endowments, the American Legislature has introduced the requirement of military drill and instruction. It is to be hoped that the law will take effect. Drill and rifle practice are almost as good a recreation as any game; they are not exhausting like athletics; they are likely to give the too bookish student just the bracing and the tone he needs. If they are not so necessary to the modern citizen as warlike training was to the Greek, they are necessary, though in a different way. War is not likely to afflict this continent since slavery is dead and Jingoism will probably not be long-lived. But war is not the only danger. The labor riots which occurred three years ago at Pittsburg and elsewhere revealed, by the lurid light of incendiary fires, the peril in which a society unarmed and without habits of military co-operation always stands. America is annually receiving from Europe masses of immigrants more or less malcontent and unaccustomed to any government but one of force; often she receives men whose trade is industrial conspiracy, and who have been ringleaders in the bitter conflict between labor and capital in the Old World. The army of the United States is very small, and there appears to be a disposition to reduce it still further, on the ground that it may be dangerous to liberty, though it has never swerved or shown the slightest disposition to swerve from its civil duty, even under the exciting and demoralizing influence of a great civil war. A practical recognition by American youth of the military duty of all citi-

zens in extremity is the only possible way of guarding liberty against anarchy, relieving society of its fears, saving honest industry itself from ruin, and making conspirators feel that while every one has full liberty of speech, however wild his opinions may be, those who proceed to lay violent hands on American civilization will do it at their peril.

GOLDWIN SMITH.

PROFESSOR TYNDALL UPON THE ORIGIN OF THE COSMOS.

IN his Belfast address as President of the British Association for the Promotion of Science, and in his defence of that address as criticized by Mr. Martineau, Professor Tyndall discussed the origin of the cosmos. The address and the defence have gone into permanent literature, and may be considered as embodying all that can be said by one of the foremost advocates of the materialistic philosophy, now so much the subject of thought and controversy. The following article upon the general topics involved is drawn from materials prepared somewhat in reference to the discussions of Professor Tyndall as they appeared; Part I. dealing with the address, and Part II. with its defence.

I.

After gaining primitive and necessary knowledge man attempts to pursue three lines of investigation. These are, first, to translate appearances into reality; second, to bring, by classification, apparent diversity into unity; third, to find out causes and understand the mode of their operation. In the first two we find the province of science. In them, with proper caution, reliable results may be reached, going so far as to include an orderly and classified cosmos. We propose to consider the third line of investigation mentioned, that of causes and their mode of operation.

In the first line of investigation the inquiry respects being. We inquire what is, as opposed to appearances. In the second

it respects the classification of what is. In both we have science. In the third it respects causation and explanation. In each of these the mind of man has been busy from the first, and it is within these that we must find the sphere of both science and philosophy. Let us but be able to translate all appearances into reality, to put all objects and subjects into their classes, and to know all causes with the mode of their operation, and we shall be prepared to graduate at the university of this present cosmos.

That the third line of inquiry is of deeper interest than either of the others there can be no doubt. It would seem indeed to be supposed by some to be the sole region of science, and that the whole interest of science and the impulse toward it are derived from this. Of this number is Professor Tyndall, for in the opening sentence of his discourse at Belfast he says: "An impulse inherent in primeval man turned his thoughts and questionings betimes toward the sources of natural phenomena." "The same interest," he continues, "inherited and intensified, is the spur of scientific interest to-day." Is this correct? Is the interest scientific, or philosophic? This will lead to an inquiry which needs to be made in the interest of clear thinking, after the difference between science and philosophy.

I have said that investigations in regard to what is, and the classification of what is, are scientific. They are so, so far as they involve a knowledge of fixed relations and of mathematical deductions from them. If there be, as there often are, connected with those inquiries, forecastings, conjectures, tentations, hypotheses, these, remaining such, are not science. Scientific knowledge is certain knowledge. I have also said that results properly gained in those investigations are scientific. They are so, because we seek and find in these results simply a knowledge of what is, and of its classification, and not a knowledge of its cause, or of the mode of operation of that cause.

And this gives us, I think, the best distinction between science and philosophy. Science is the systematic knowledge of fixed relations, as in pure mathematics, or of things in fixed

relations of resemblance, construction, or succession. It always assumes uniformity, and within the limits of that uniformity, certainty. The moment these elements of uniformity and certainty are eliminated you have no longer science.

Philosophy, on the other hand, teaches the causes and explanations of what has been, and is. Sometimes a knowledge of the cause is itself the explanation, but sometimes not. A man may know that light is the cause of the rainbow, but may need an explanation of the mode in which it is reflected and refracted in order to produce it. Not knowing each of these he would not know fully the philosophy of the rainbow.

This distinction between the knowledge of things as existing in fixed relations, and a knowledge of their causes and of their mode of operation, is a real one, and while usage has vacillated, and there has been a considerable border ground within which the terms have been used without much discrimination, it does, I think, lie at the basis of the distinction between science and philosophy, at least as those terms have been used in England and this country. The question of causation does not respect fixed relations already established, whether of resemblance, structure, or movement, but the origination and perpetuation of such relations. If we are to make a distinction at all between science and philosophy, the whole subject of causation must, undoubtedly, belong to philosophy. So long ago as the time of Cicero, he defined philosophy to be the knowledge of causes.

If, then, Professor Tyndall, or any one else, may choose to discuss the question concerning causes and their mode of operation as a philosopher, there can be no objection ; but so far as he comes to this line of inquiry as a scientific man, in the name of science with its imposing auspices as involving certainty, and with an assumption of superior penetration, through science, in this direction, he is in a false position. So far as Professor Tyndall, or any one else, may suppose or imply, as is constantly done, that a scientific man has, as such, any advantage in the discussion of questions on this line, it is a mistake. On the contrary, there are reasons why such a man is peculiarly liable to be unfitted for the fair discussion of such questions.

As scientific, men always work within fixed relations. They stand inside of them, and not outside, and nothing is more common than for men to be skilled in their own line of work while they know nothing of the philosophy that underlies it. This is notably the case with mathematicians and physicists. There are good mathematicians who do not know what the philosophy that underlies mathematics is, and skilful scientists who are ignorant of the philosophy that underlies science, and do not know the difference between science and philosophy. Some of the relations in physics, indeed many of them, have a precision and fixedness which brings them within the range of mathematical calculation, and then the mathematician and physicist transfer the necessity involved in the relations of mathematics over to the physical movements and combinations with which they coincide. Constantly dwelling thus upon fixed relations and their apparent necessity, they insensibly come to exclude that freedom of choice which belongs to another sphere, and is the opposite of necessity. They fall into the very anthropomorphism of which they sometimes speak with contempt, and are unable to conceive of a Being possessed of intelligence and will as constituting and sustaining these relations for a wise end. That they *are* for a wise end we can see, and it is the merest anthropomorphism to suppose, because we can not comprehend these relations in their infinity, and because continuous effort soon exhausts us, that there may not be an "everlasting God, the Lord the Creator of the ends of the earth, whose understanding there is no searching, and who fainteth not neither is weary."

It may, indeed, be said that the scientific man has an advantage in discussing the origin of all things from matter because he knows more about it. Perhaps so, but that depends on what it is that he knows. And what does he know, scientifically or at all, about matter in those conditions in which he attributes to it a potency to originate all things? This potency is ascribed to matter only as it exists in atoms and in molecules. but what evidence has the scientific man for the existence of the atom, or even of the molecule? Not the evidence of the senses. That he does not claim. No power of the microscope, marvel-

lous as that now is, has yet enabled him to penetrate so far into the depths of an infinite littleness as to discover a molecule even, and yet that is supposed to be much larger than the atom.

There is, however, as I have said, no evidence from the senses, no experimental evidence whatever, that either atoms or molecules exist, but they are believed to exist simply because, on that supposition, certain phenomena can be better accounted for than in any other way. It is simply a hypothesis. The scientific man who adopts it is, however, scripturally sound on one point. He believes with the apostle that "the things which are seen were not made of things that do appear." He, as well as we, must go back to the invisible. He may not believe in that "invisible God," the king eternal and immortal, of whom the apostle speaks, and to whom he ascribes honor and glory for ever and ever, but he does believe in invisible atoms to which he ascribes whatever honor and glory there may be from the construction of this marvellous cosmos, and of the puny creatures who speculate about it for a moment, and then, to quote the language of Professor Tyndall, "like streaks of morning cloud, melt into the infinite azure of the past." How sublime and charming—*to melt into the infinite azure of the past!*

Not allowing then, either that these inquiries are scientific, or that the scientific man has any special advantage in prosecuting them, we seek the origin or cause of the cosmos. This is what Professor Tyndall sought in his discourse. He is no positivist. He accepts as legitimate the impulse to inquire after causes, with the implication of course, as in all other natural impulses, of a satisfactory result. His object was to ascertain by a process which he evidently thought scientific, what that is which caused the cosmos, or underlies it, or lies back of it, and on which it depends. We desire to ascertain the same thing, and in doing this we wish for ourselves and for others the utmost freedom of inquiry.

Let us then look at the two possible methods which may be adopted in this inquiry. These are indicated by Professor Tyndall as the method from below, and that from above; and he adopts the method from below. This he does as a scientific man. This it is that we have to do with—the method, and the

method as adopted by science, and not at all with Professor Tyndall, except as he represents this. With the question whether he is an atheist or not, or whether, if he would be consistent, he must be, we have nothing to do. On either of these points there may be doubt, or no doubt, but it is certain that the method adopted in his discourse, and which he lauds as having been adopted by the most penetrating thinkers in past time, of solving the problem of this universe, is from below, and not from above; from the "subsensible," and not from the "supersensible."

Let us see, then, looking at the first method, how Professor Tyndall, as representing science, *states* and *solves* this problem. The problem, it will be observed, is precisely that which we have in inquiring after the existence of each other. In both cases we have an immediate knowledge of motion as produced by force, and in both the inquiry is, what lies back of that which is revealed to the senses, and which originates the force and directs the motions. In both inquiries, too, we are under the necessity of judging what kind of cause it is, by what we know of ourselves as originating force and directing motion.

This parallelism we insist on, and from it it will be seen that he who adopts the method of solving the problem from below has a double task to perform. He must first prove the existence of the atoms. This, in the present state of science, he cannot do, nor can he render it probable except by arguments which, as far as they go, are the same in kind as those by which we prove the being of God. In both cases the argument is from the visible to the invisible. We say with the apostle that "the invisible things of Him, from the creation of the world, are clearly seen, being understood by the things that are made, even his eternal power and Godhead." The scientific man says that the invisible things called atoms from the creation of the world are clearly seen, being understood by the things that are made—and there he stops. So far as they go the arguments are precisely the same, but here is the difference. Prove the being of God, and you solve every thing. One mystery, really no greater than that of the being of atoms, lightens up and explains all others; but prove the being of atoms and you have

still the far harder task of proving that they could have originated the present scene of things. These are the tasks, and accordingly, either by historical statement or by direct argument, they are both attempted by Professor Tyndall in his address.

First, then, how does Professor Tyndall, or science as represented by him, state the general question?

As already intimated, he either ignores, or fails to recognize, the distinction between science and philosophy, and, doing so, we inquire whether he does not, at the very opening of his discourse, both beg and narrow the question. In the sentence immediately following those I have already quoted in regard to the impulse of the primeval man and the spur to scientific inquiry, he says: "determined by it," that is, the impulse, "by a process of abstraction from experience we form *physical* theories which lie beyond the pale of experience, but which satisfy the desire of the mind to see every natural occurrence resting on a cause." This sentence, I venture to say, no man standing where Professor Tyndall did, and not far gone in science, could have written, for a sentence more unconsciously, and yet more transparently fallacious, is seldom found. The question respects "the *sources* of natural phenomena." In seeking these, having assumed, as he had no right to do, that the impulse inherent in primeval man is the spur to *scientific* rather than to philosophic inquiry, he says, "Determined by it we form *physical* theories to satisfy the desire of the mind to see every natural occurrence resting upon a cause." Physical theories! As if primeval mind could form only these. To satisfy the desire of the mind to see every natural occurrence resting upon *a* cause! As if the question were between no cause at all and one to be found in a *physical* theory! That is the way he puts it. He assumes that the original impulse impels to science only, and only to physical theories; and that the mind, failing to find these, must rest satisfied with no cause at all. This sentence is the original sin of the discourse, and corrupts the whole. The true statement I suppose to be, that the mind knows by necessity that every natural occurrence has a cause, and then seeks in the broadest way, not confining itself to physical theories, to find what that cause is.

Seeing thus how the scientific man begs and narrows the question, let us suppose the existence of his invisible atoms to be proved, and see how he proceeds to construct the eye. If this is to be done from below it must be through the inherent properties of matter. But this would be inconsistent with the definition of matter as hitherto given. This Professor Tyndall sees, and says that we need a new definition, but does not give it. I venture to say that no definition that will answer his purpose can be given without begging the question by first putting into matter by the definition all that he takes out of it. In constructing the eye he needs life to begin with, and also some low form of organization. How does he get them? Except from spontaneous generation, which he denies, he cannot get them. He has no right to them. But for the sake of the argument we will concede him these. We will grant him, in his own words, "a low form of organism with a kind of tactual sense diffused over the entire body;" and also a suitable "environment," to which, again, he has no right, and we shall then see how, with the aid of that scientific imagination for which, as we are told, our language has no name, the eye is formed. I quote, and ask special attention to the quotation, parts of which I take the liberty of putting in italics: "The action of light in the first instance appears to be a mere disturbance of the chemical processes in the animal organism similar to that which occurs in the leaves of plants. By degrees the action becomes localized in a few pigment cells more sensitive to light than the surrounding tissue. *The eye is incipient.* At first it is merely capable of revealing differences of light and shade produced by bodies close at hand. The adjustment continues. A slight bulging out of the epidermis over the pigment granules supervenes. *A lens is incipient.* And through the operation of *infinite* adjustments, at length reaches the perfection that it displays in the hawk and the eagle."

Is this science? It claims to be, but if there be any instance of credulity in the worshipper of an African fetich that goes beyond that of the man who can accept such a statement, I should like to see it produced. A slight bulging out of the epidermis over pigment granules is an incipient lens! Credulity

cannot go beyond that. "Infinite adjustments" in a low organism, with no provision for its own preservation or that of its species, and without an infinite adjuster or any adjuster at all! Compared with such a camel as that there is nothing in the Scriptures that is not a mere gnat. If this be the process of forming an eye as it shapes itself to the scientific imagination, commend me to that rather than to the imagination of the author of the Arabian Nights for feats of the impossible. Aladdin had a lamp to be rubbed for the imagination to fix on and only a palace to form, while here we have only "a kind of tactual sense diffused over the whole body, and the action of light to form the eye, more wonderful than any palace. There the work was done at once; here the work must have been continued through ages, and then the power of light and low organisms to produce incipient eyes seems, strangely enough, to have been exhausted in the beginning, and to have been handed over subsequently to a wholly different process called generation and growth.

And this account of a single eye formed on the surface of a "low organism," at whatever point the more sensitive pigment cells might happen to be, is seriously put forth as solving the problem of eyes as they now exist. It would not begin to solve it even if we were to allow that a single eye might be thus formed. What we have to account for is the *two* eyes, in the right place, with their optic nerves, and connections with the brain, and their muscles for motion, and defences, and fountains for tears, and ducts for carrying the tears away.

Nor was it the eye alone that was formed in this way. Professor Tyndall says, "So of the other senses; they are special differentiations of a tissue which was originally vaguely sensitive all over." Taking this basis we have seen how the scientific imagination got on with the eye, but I should like to see it try its powers on the ear. The problem here would be to form, by the pulses of sound, acting on "a tissue vaguely sensitive all over," the external and internal ear, or rather, to form for each such tissue two ears in the right place. How such pulses, acting from without, could form the external ear of a man, or of an ass, it is not easy to see; but how they could

open canals through bones, and form membranes, and little bones acting with a leverage, and the cochlea, and the eustachian tube inside the skull, I should like to bring to Professor Tyndall's test of "mental presentation." The nose would be less difficult. It is easy to imagine "a slight bulging out of the epidermis" caused by some pungent odor, or perhaps by an incipient attempt of the low organism to sneeze. The difficulty with the nose, however, would be to imagine the countless ages it must have required to pass from such "slight bulging" to the size sometimes attained by that organ at the present day.

Looking, then, at the way in which science states and begs the general question; at the uncertainty whether there are any atoms at all; and, if there are, whether they could originate life in "a very low organism vaguely sensitive all over;" and then looking at the task the scientific imagination has to construct from that the different senses, to say nothing of their "environment," and of the infinitely varied adaptations around us, we shall, I think, hardly regard the method from below as adequate to account for the present cosmos.

II.

In seeking the origin of the cosmos we may adopt the method from below or that from above. In the first case its origin will be from matter; in the second, from spirit. A spirit is an invisible agent, possessed of intelligence, feeling, and a moral nature, involving free will and the power of causation. For the existence of such an agent I hold that we have the same kind of evidence, and at least as much evidence, as we have for the existence of magnetism or gravitation. Magnetism is an invisible force or agent known only by its effects. Gravitation reveals itself to none of the senses, but the effect of the invisible force acting according to law, so reveals itself through the senses that we have no more doubt of the existence of the force than we have of the phenomena through which it is revealed. Not in vital action alone, but wherever matter is moved in ac-

cordance with law so as to produce either regular movements or regular forms, we have, through matter, the revelation of *thought*. We have that by which the universe becomes intelligible to us. The movement reveals the force ; the law reveals the intelligence, and I hold that he who passes, as all philosophers except positivists do, from the movement to the force that is back of the movement, is bound to pass from the law to the intelligence that is back of the law. Seeing movement we infer force ; seeing intelligible movement we infer intelligence. The steps are precisely the same. We may deny that law reveals intelligence and so be guilty of the absurdity of spending our lives in the study of a universe that has no thought in it and means nothing. But admitting that there is intelligible movement, the step to intelligence in the mover is the same as that from motion to force. Nor is there any thing more vague, or indefinite, or mystical about an intelligent force than there is about a force that is unintelligent.

As I have said elsewhere,[1] matter, as under the law of gravitation, presents itself in two aspects, one, that of necessity, the other, that of being controlled with reference to an end. The necessity is apparently absolute, since there can be nothing in matter to resist the force, and since its movements under this law can be mathematically calculated. These movements would therefore seem to have not only the necessity that belongs to physical law as uniform, but that absolute necessity which is involved in mathematical relations. On the other hand, we have, in the control of force directed to an end, evidence of choice and of freedom, and that matter under the control of gravitation is directed to an end there can be no doubt. And so these two aspects or faces of matter under law have looked, one toward necessity and atheism, the other toward freedom and God, and men have failed to see their reconciliation in the fact that absolute uniformity — even that which may be expressed by mathematical relations—may be the highest and most perfect result of an intelligent will working toward an end which could be best accomplished only in that way. These two aspects present themselves in every form of physical law.

[1] Outline Study of Man.

Nor do we find evidence of the presence of an invisible and intelligent agent only in law as involving the conception of regular forms and movements, and the control of matter with reference to an end, but also in that very uniformity and apparent necessity which is supposed to exclude intelligence. The highest form of activity known to us, that toward which every thing looks as a preparation and condition, is free and responsible causation. This world was evidently fitted up as a theatre for the action of man as a responsbible cause. For this responsibility we all agree that freedom in him is a condition. It is not so generally apprehended, or indeed thought of at all, that a theatre of uniformities simulating necessity, and in relation to the will of the agent actually necessary, is as necessary to responsible action as freedom itself. That it is so is evident because, without such uniformity and relative necessity, no one could so foresee the consequences of his actions as to be responsible for them. Saying nothing then of this uniformity and apparent necessity as the basis of experience, and so of all education, we see that it is necessary to responsible action, and find in it a signal instance of intelligence and wise design.

And not only do we see design in the uniformity and apparent necessity of the movements of matter, but also in the marvellous combination there is in movements, all of them equally under law, of an absolute and patent uniformity, and of an almost infinite diversity. The revolution of the earth on its axis is absolutely uniform. For thousands of years it has not varied in its time the fraction of a second. In the same way, that movement of the earth in its orbit which determines the march of the seasons is uniform. This was needed for stability, for the feeling of orderliness and quiet that belongs to a home; but in the weather and the winds, in the movements and forms of the clouds, all equally subject to law, there is an endless diversity. So with the qualities and forms of all natural objects. And this was equally needed to stimulate the faculties and give interest to life.

If now we look at this combination of stability and apparent necessity with movement and diversity, we shall see such an adjustment of the constant movements of matter to the purposes

not only of intelligence, but of responsible action, as to require the presence and action of an invisible spiritual agent on the same grounds that the movement itself requires the presence of force. Marvellous, indeed, is it when we turn from the appearance of things to their reality to find apparent stability resolving itself into movements the broadest and most intense, and to find the apparent necessity of physical law taking its place among the most signal evidences of wise design. And when that design obviously is to provide the conditions for responsible action, the implication is direct that such provision could be made only by an intelligent agent recognizing moral distinctions, and so by a spirit.

The common and unanswerable argument for the moral nature of God is the moral nature of man, and human history viewed on a broad scale; but if we find, as we do, in the movements and adjustments of matter provision for moral action, if we find the upbuilding and sustaining of a theatre for that, especially if we find in such provision and upbuilding the culmination of those movements and adjustments, then do we have the same evidence in kind for moral discrimination and purpose in the force that lies back of the movements that we have for the force itself.

Putting thus the inquiry in regard to intelligence and moral discrimination on the same plane with that in regard to force, I am of the opinion that, aside from the human mind and from history, we have evidence for an invisible agency or force pervading the movements of matter that works not only intelligently, but for moral ends, and that to this force we may as properly give a name and call it spirit as we give a name to the force that attracts iron filings and call it magnetism. I hold it to be an utter begging of the question on the part of Professor Tyndall to assume, as he does in his reply to Mr. Martineau, that in the evaporation of water and the formation of snow crystals there is no agency present but that of the sunbeams and the water. How does he know? He can see nothing else, but are his senses the test of a form of being that claims to reveal itself only by its effects? When the iron filings rise he can see nothing but the magnet and the filings. Nothing else is

revealed to any of his senses. Does he then deny that there is any thing else? If so, why does he speak of magnetism at all? When two bodies floating in the stellar spaces tend toward each other according to a law is there nothing but matter? If so, why speak of gravitation? Why of force? Did he ever see force? Does he know any thing about it except from its effects? If not, why not argue from its effects in full? If there are evidences of magnetic or electrical effects, we argue from them to magnetism or electricity in the cause. If then there be evidence of intelligence, of moral apprehension and purpose in the effect, why not argue that there is intelligence and a moral element in the cause? We say that wherever there is law manifesting itself through force in regular movements and in the construction of regular forms, there is evidence of a preconception and an idea that can belong only to what we call mind, and that whenever we find in the effect a reference to moral results we are to argue to a moral element in the cause.

In the first part of this essay I spoke of Professor Tyndall as accounting for the present state of things, man included, by a movement from below, and complained of him for saying that the origin of the cosmos could be attributed to matter only as it should receive a new definition, and then not giving the definition. He has since given it, and has also expressed himself more fully on other important points, as the origin and nature of life. This he has done with remarkable rhetorical power in the reply to Mr. Martineau above referred to, and the remaining part of the discussion will refer more directly to that reply.

First, then, I observe that Professor Tyndall disclaims any knowledge whatever of the power manifested in the universe. I suppose he knows it to be power, for he calls it so, but that is all. "When I attempt," says he, "to give the power which I see manifested in the universe an objective form, personal or otherwise, it slips away from me, declining all intellectual manipulation. I dare not, save poetically, use the pronoun 'he' regarding it; I dare not call it a mind; I refuse to call it a cause. Its mystery overshadows me, but it remains a mystery, while the objective frames which my neighbors try to make it

fit simply distort and desecrate it." Observe here, in connection with a recognition of mystery that is to be honored, and that could come only from a nature capable of religion, the nescience, almost infantine; the reverent fear that does not dare to call "it" a mind, or to use the pronoun "he" regarding it; the apprehension so great of any thing unfit than he runs into the absurdity of recognizing a power that he refuses to call a cause; the sensitive dread of distorting and desecrating that which he knows nothing about; the implication that not only his neighbors, but holy prophets and apostles whose example they follow, should stand abashed before the humility of science, and repent of having tried to make the mystery of the universe fit into objective frames that distort and desecrate it. "Mr. Martineau," he says, "professes to *know* where I claim only to *feel*." But feeling that has not its root in knowledge, what is it but fanaticism? Is the philosopher going over to the fanatics?

I observe, second, that this nescience precludes the possibility of any rational ground for worship. If Professor Tyndall would not *dare* to call the power, manifested in the universe a mind, much less would he dare to call it Father. Precisely what he would be afraid of I do not know, but he would not dare to do it, and so it would be impossible for him to put up the Lord's prayer, and, so far as I can see, any prayer. He seems at times to believe in some power besides the potency he ascribes to matter; but a power so vaguely related to us that it cannot be known either as a person, or a mind, or a cause, may, and ought to be, practically disregarded. Such a power can never be the object of faith, or love, or worship, or furnish the "basis" of any religion that shall have the value of moonshine.

We now pass from the consideration of this vague power to the interpretation of nature, a field where Professor Tyndall finds himself at home. In such interpretation he claims to be guided by a philosophical organ called by the Germans "Vorstellungsfähigkeit," but which has no English name. This he has often mentioned in his previous writings as a valuable aid in philosophical investigation. He says it means "the power

of definite mental presentation, of attaching to words the corresponding objects of thought, and of seeing these in their proper relations without the interior haze and soft penumbral borders which the theologian loves." Instead of "picturesqueness," he says this power demands "cold precision."

It is under the guidance of the power just mentioned that Professor Tyndall gives us his opinion, which, he says, is also "the conclusion of science," in respect to the origin of life on this planet. He does not, like a previous President of the British Association, seek that origin in meteoric stones from other worlds, but in the planet itself. "We have," he says, "strong ground for concluding that the earth was once a molten mass. We now find it crowded with living things." The question is, How were they introduced? In reply to this he says, "The conclusion of science, which recognizes unbroken causal connection between the past and the present, would undoubtedly be that the molten earth contained within it elements of life which grouped themselves in their present forms as the planet cooled."

We are here taught, first, that life is made up of elements which were originally in a molten mass. We are taught, second, that these elements of life were matter, for only matter can be "grouped into forms." Life therefore consists of matter. We are taught, third, that these elements remained uninjured in a molten mass. In fact it was their native element. We are taught, fourth, that as the mass cooled these elements "grouped themselves into their present forms." They *grouped themselves*. There was no external agency, no permeating or formative intelligence except that inherent in the elements themselves, and this intelligence was held so tenaciously that the fires of a molten planet could not drive it off. Why the elements should have waited for the planet to cool it is not easy to see. They would naturally find each other most readily when the mass was most fluid, and if one of them could resist the heat singly much more might a number when confederate. All this Professor Tyndall sees by means of the Vorstellungsfähigkeit, with none of "the interior haze and soft penumbral borders which the theologian loves." And this becomes the more luminous when we notice what that is in which Professor

Tyndall says that life consists—life itself after the elements are so combined as to make it up. Speaking of the potency of "pure matter," that is his expression, "*pure* matter," free from any dross, or any contamination of spirit, to build a tree, he says, "Think of the acorn, of the earth, of the solar light and heat—was ever such necromancy dreamed of as the production of that massive trunk, those swaying boughs and whispering leaves from the interaction of these three factors? In this interaction, moreover, consists what we call life." I had supposed that the life was in the germ of the acorn and might remain there for ages, as it is known to have done in grains of wheat in the Egyptian mummies without reference to the earth or solar light. But no; Professor Tyndall says it is in the interaction of these three factors that what we call life consists, and it will be seen at once with what power the Vorstellungsfähigkeit must have acted to enable him to see with "cold precision" within the mass of the molten planet the "interaction of the acorn, the earth, and the solar light." Professor Tyndall adds, "It will be seen that I am not in the least insensible to the wonder of the tree; nay, I should not be surprised if in the presence of this wonder I feel more perplexed and overwhelmed than Mr. Martineau himself." He certainly ought to. So far as appears, this assumption of the elements of life as inherent in matter necessitates spontaneous generation.

The next point relates to the diffusion at the present time of those elements of life, or of life itself. On this point the Professor is less confident, but it is clearly his opinion that life is so diffused that inorganic substances and vegetables, as well as animals, have consciousness and sensation. Speaking of the processes and wonderful results of vegetable life, he asks, "Does consciousness mix in any way with these processes?"

His reply is, "No man can tell." "In such inquiries," he goes on, "we are necessarily limited by our own powers. Alter the capacity and the evidence would alter too. Would that which is to us a total absence of any manifestation of consciousness be the same to a being with our capacities indefinitely multiplied? To such a being I can imagine not only the vegetable, but the mineral world responsive to the proper irri-

tants, the response differing only in degree from those exaggerated manifestations, which, in virtue of their grossness, appeal to our weak powers of observation." Then, after stating the relation of the animal, the vegetable, and the mineral kingdoms to each other, he says, "From this point of view all three worlds would constitute a unity in which I picture," using of course the Vorstellungsfähigkeit, "life as immanent everywhere."

According to this there is no knowing how far the jurisdiction of Mr. Bergh may yet extend. I hope this is not so, for I am a citizen of Massachusetts and have some responsibility for the Hoosac Tunnel, and I should be sorry to have laid at my door any part of the sufferings the rocks must have undergone through these long years, and especially since the discovery of nitro-glycerine. It would be too much, if, after being at such expense, the State is to be charged with cruelty toward those blasted rocks.

I next ask attention to the important fact that Professor Tyndall has now supplied the definition of matter, the absence of which I complained of in the former part of this essay. "Matter," he says, "I define to be that mysterious thing by which all this is accomplished." Here we are told what matter is. It is "*a mysterious thing.*" This is the only part of the sentence that is of the nature of a definition. The other part tells us, not what matter is, but what it does. But inasmuch as the confession of a mystery—and I am happy to know that the Professor believes in mysteries—does not let us far into the nature of the thing, let us turn to what matter does, and see if we cannot succeed better. "Matter is that mysterious thing by which all this is accomplished." All what? All the movements and processes, the adjustments and contrivances that we observe in inorganic or organic nature. To show this is the one object of the essay. In order to this he begins, as he says, "low down."

He takes water evaporated from the Caribbean Sea, and follows it to the Alps, where, through the formative power that belongs to "pure matter," it becomes a beautiful snow crystal. He then speaks of the oak, as already referred to, as the pro-

duct of the three factors, the acorn, the earth, and solar light, and says, "If the power to build a tree be conceded to pure matter," as he thinks it must be, "what an amazing expansion of our notions of the potency of matter is implied in the concession!" Amazing to be sure! He next passes to the animal world, and to man, and proceeds to show that man is formed by pure matter, thus: "Physiologists say that every human being comes from an egg not more than $\frac{1}{120}$th of an inch in diameter. Is this egg matter? I hold it to be so, as much as the seed of a fern or of an oak. Nine months go to the making of it into a man. Are the additions made during this period of gestation drawn from matter? I think so undoubtedly. If there be any thing besides matter in the egg, or in the infant slumbering in the womb, what is it? "Consider," he says, "the work accomplished during these nine months in forming the eye alone with its lens, and its humors, and its miraculous retina behind." Matter, we see, can perform miracles, though God can not. "Consider the ear, with tympanum, cochlea, and Corti's organ, an instrument of three thousand strings built adjacent to the brain, and employed by it to sift, separate and interpret, antecedent to all consciousness, the sonorous tremors of the external world. All this has been accomplished, not only without man's contrivance, but without his knowledge, the secret of his own organization having been withheld from him since his birth in the immeasurable past till the other day." Now comes the definition. "Matter I define as that mysterious thing by which all this is accomplished."

Have we, then, in this potency of matter, by which "all this is accomplished," that which was spoken of by Professor Tyndall previously as "the power which I see manifested in the universe," and which he regarded so reverentially? I suppose so, for if the power which carries on these processes be not the power manifested in the universe, we have no evidence that there is such a power. But whether this be so or not, Professor Tyndall asserts explicitly that man was made, not only of matter, but by matter. From this it will follow:

First, that man, who is a person, was made by a *thing*—

a mysterious thing to be sure, but still a *thing*. Hence the origin of slavery, which treats men as things.

It will follow, second, that matter is to be worshipped—that is, if any thing is. It is the dictate of both reason and the Scriptures that man should worship his Maker. "O come," says one of old, "let us worship and bow down, let us kneel before the Lord our Maker, for He is our God."

It will follow, third, that a man is to worship himself. It is not all matter by which a man was made, but that only of which he is composed. I see no good reason why a man should worship the matter that is in the topmost cone of a pine tree, for that had nothing to do with making him, but the matter of which he is composed, those elements that "*grouped themselves*" into a man, they were the maker of the man. But here is a difficulty, or rather there was originally, for how could a man bow down and kneel before himself? This must have painfully frustrated the original devout impulse till some person, specially moved by it, invented the looking-glass. Perhaps we may also get a hint here of the part of the body that is most worthy of being worshipped. It would naturally be that which had the most formative influence—that is, the stomach. Hence we see the fine philosophic instinct of some spoken of in the Bible, "whose god was their belly," or, as we should now say, their stomach. Hence too we may readily account for those Eastern devotees who spend whole days and even months in gazing upon their stomachs.

Such, so far as I can see, are the legitimate consequences of believing that man was made by matter, at least, if we allow, as Professor Tyndall does, that man has a religious nature that must in some way find satisfaction. In saying that man was thus made, and identifying as we must the power that made him with that which we see manifested in the universe, we see the progress made by Professor Tyndall both in knowledge and in courage during the time he was preparing his essay. In the earlier part of it the power which he saw manifested in the universe slipped away from him, declining all intellectual manipulation. He did not *dare* to call it a mind; he refused to call it a cause. Near the close of the essay he has no doubt what the

cause is. He dares to call it matter, and does not hesitate to call it a cause. "Matter I define as that mysterious thing by which all this is accomplished"—that is, *caused*.

But while Professor Tyndall speaks thus explicitly, it is instructive to notice how he is compelled to do the very thing he complains of in others, and ridicules them for. What, I would ask, is that *life*, the elements of which were, as he says, in the molten planet? Was it matter? Then why not call it so? Why speak of life at all? Why say that life consists in the interaction of the three factors, the acorn, the earth, and the solar light, when, if that little germ of the acorn that may be laid on the point of a penknife be removed, there will be interaction all the same, only the acorn will rot? That same life which he pictures as now immanent everywhere, in rocks as well as in organic beings—doubtless still in the molten masses of the volcano—is that matter? It ought to be something very definite and distinct thus to have a separate name, and to be pictured by the Vorstellungsfähigkeit, which "demands not picturesqueness, but cold precision." I venture to say that no conception of spirit as pervading and informing matter can be more indefinite, or hazy, or farther removed from any thing that can be properly called matter, than this of a "life immanent everywhere."

Thus does the necessity for the human mind of something back of matter assert itself even where it is formally denied; and if we must have something thus back of matter, why not admit that which is adequate to produce the effects which we see produced? Neither life, nor force without intelligence, is thus adequate. By excluding spirit we gain nothing in the way of comprehension, for it cannot be more mysterious than that mysterious thing called matter. In finding God as a Spirit, while we recognize the mystery that belongs to His being, as it must to all being, we solve minor mysteries in a way that gives a significance and grandeur to life that are in themselves an argument for the truth of that way. According to the scientist, the origin of the present order of things and the production of passing phenomena are due to pure matter. What a contrast between this and the statement of the Scriptures that comes to us

as fresh and appropriate to-day as when it was uttered near three thousand years ago: "But the Lord is the true God, he is the living God, and an everlasting king. He hath made the earth by his power, he hath established the world by his wisdom, and stretched out the heavens by his discretion." So much for the origin, now for the phenomena. "When he uttereth his voice there is a multitude of waters in the heavens, and he causeth the vapors to ascend from the ends of the earth. He maketh lightnings with rain and bringeth forth the wind out of his treasures. HE *is the* FORMER *of all things*, the Lord of Hosts is his name."

MARK HOPKINS.

COMPARATIVE VIEW OF AMERICAN PROGRESS.

IF the reader will take the trouble to glance at Walker's Statistical Atlas of the United States, he will observe that prior to the Louisiana purchase in 1803, the United States was bounded by the Mississippi River on the west and the Spanish possession of Florida on the south. The cession of Louisiana gave us all west of the Mississippi and north of the Red River, and of Mexico to the Pacific Ocean—a territory considerably exceeding the previous Union. The annexation of Texas in 1845, and the Texas cession of 1850, added a domain nearly equal to the States north of the line of the Ohio and east of the Mississippi; and the first and second Mexican sessions of 1848 and 1852 completed the line of our "scientific frontier" by giving us a territory about as large as the States south of the Great Lakes and east of the Mississippi. The United States of 1800 was therefore a country only one ninth as large as the United States of to-day. The centre of population is moving steadily westward. In 1800 it was on the meridian of Washington; in 1840, of Pittsburg; in 1870, of Cincinnati. In 1880 it may be expected to reach Indianapolis; and, as Mr. Walker prophesies, by the end of the century, the Mississippi River. If we compare the growth of population in the United States with the corresponding results for the population of England and Wales, it will be found that the general rate of growth in America is more than double the highest rate (16 per cent) of increase in England.

No country in the world ever exhibited such a regular and enormous rate of increase in the population as the United States does from 1800 to 1860. In England the rate increased from 1 per cent in 1670 to 16 per cent in 1821, when a distinct and

continuous decrease is struck. The rate of 16 per cent diminishes successively to 15, 14, 13, and 12, until it seems to have approached a stationary condition at 12. In regard to ourselves, the census reports show an average rate of increase of 33 per cent every ten years. But it should be borne in mind that an increase of population may be deemed a solid good or a dreadful evil according to the circumstances of the country in which it occurs.[1] If a commensurate increase of food and raiment can be produced by agriculture and by manufacture, an accession of consumers in the home market cannot but be beneficial to all parties; and the increase of population in such case may be deemed equally desirable in itself, and conducive to national strength and national prosperity. In no instance is this better illustrated than in England, where the large manufacturing towns have grown while agriculture has been neglected. Ten years ago Mr. Bright made a series of vigorous speeches embodying advice and counsel to the working classes of Great Britain.[2] He pointed out to them the mistake they were committing in crowding into cities and engaging in mechanical and manufacturing work to the neglect of agriculture. The burden of the advice was, "Go back to the land." He pointed out how much of the land of Great Britain and Ireland was still lying waste, held as deer-forests and grouse-moors, which, if cultivated, would maintain directly many thousands, and the produce of which would cheapen the necessaries of life to many thousands more who worked in cities. In England, Professor Jevons has very clearly shown that the population is divided into the distinct agricultural and manufacturing masses —contrasted as they are in every point of nature, history, and social condition.[3] To show that Mr. Bright was right, and that, had his advice been followed, much of the forcing of trade and overproduction of manufactures which has resulted in the present commercial stagnation and disorganization of the labor market might have been avoided, we will compare the condition of these two great portions by means of the rates of progress

[1] Rickman's "Preliminary Observations to Population Abstracts" (1822), p. 30.

[2] See "The Federation of the English Empire" (*Westminster Review*, July, 1879, p. 22).

[3] "The Progress of the Nation," p. 184.

of some of the most purely agricultural and most purely manufacturing counties:

AGRICULTURAL COUNTIES.

County.	Increase of Population per cent.*					
	1801–11.	1811–21.	1821–31.	1831–41.	1841–51.	1851–61.
Buckingham	9	14	9	6	5	3
Cambridge	13	21	18	14	13	—5
Devon	12	15	13	7	6	3
Dorset	9	16	10	10	5	2
Norfolk	7	18	13	6	7	—2
Somerset	10	17	13	8	2	0
Sussex	19	23	17	10	15	8
Westmoreland	12	12	7	3	5	4
Wilts	4	14	8	8	—1	—2

* Census of 1861. Population Tables, vol. i. p. 18. The negative sign (—) indicates a decrease of population, as in the cases of Cambridge, Norfolk, and Wiltshire.

To demonstrate how clearly Mr. Bright foresaw the dangers that lay ahead, it is only necessary to glance at the following and compare it with the table above:

MANUFACTURING COUNTIES.

County.	Increase of Population per cent.					
	1800–11.	1811–21.	1821–31.	1831–41.	1841–51.	1851–61.
Durham	10	17	24	29	27	30
Lancaster	22	27	27	24	22	20
Monmouth	35	22	29	36	17	11
Northumberland	19	15	11	12	14	13
Stafford	21	17	18	24	20	23
Glamorgan	19	20	24	35	35	37

Thus, while the population in some of the large manufacturing towns in England has increased at the rate of 30 and 37 per cent, 8 per cent is the highest rate of increase in the agricultural districts, and in three counties the population has actually decreased. But as Professor Rogers pointed out in the July number of this REVIEW, emigration has had much to do with this change. In the sixty-two years from 1815 to 1876 the total

number of emigrants who have left the United Kingdom is 8,424,942. Their destinations were as follows:

United States	5,467,075
British North America	1,549,010
Australasia	1,165,628
Other places	243,229
	8,424,942

Taking the money value of these emigrants at $1000 apiece, as is ordinarily assumed in this country, we find they represent a sum of $5,467,075,000 that English emigration has given the United States. But we find that here, as in England, there is a decided tendency to leave the millions of acres of magnificent lands unoccupied, and seek the large towns. Population seems to seek life for the brain, and such excitements as our cities afford prove too attractive for the rural populations, as the following will show:

Year.	Cities and Towns.	Per cent.	Rural.	Per cent.
1850	3,131,675	23.5	10,208,727	76.5
1860	5,081,086	28	13,287,002	72
1870	7,841,950	34	15,215,023	66

No doubt the census of 1880 will show a still larger proportion. In 1850 less than one quarter of the population of the United States lived in cities; now the towns contain upward of one third. The change may be to some extent accounted for in the change of the industrial condition of the West, but in general the immense demand for manufactured products which followed the war drafted the country population into the towns, there to exchange the quiet village for the crowded, squalid alleys, the busy workshop, or the gloomy mine. But it must not be forgotten that in the United States there is a happy medium between the large cities and their toiling thousands and the villages with their half-dozen stores and school-house. I allude to the manufacturing cities of from 10,000 to 25,000 inhabitants, which are growing up so rapidly, especially in our Western

States. Lots are cheap in such towns, and the careful, industrious mechanic soon has a home of his own, and he becomes identified with the city in which he lives.

We are now brought face to face with the real subject of this article—the basis of our prosperity. The actual condition of the United States is generally summed up as follows: The South with cotton, the staple textile fibre of the world's clothing; the West with meat and grain; the Northwest with lumber and leather; the Middle States with coal and iron; New York and New England with textile and other manufactures; the Pacific States and Territories with their vast stores of mineral wealth. But the last ten years has brought about many changes, and the movements of centres of industry make the above statement correct only with many modifications. As Mr. Courtney[1] has shown of England, so in the United States many industries that have died out in one section of the Union have grown up in another. For instance, take the effect of the war from 1861 to 1865 on the production and consumption of domestic cane-sugars. The product of the then three sugar-producing States, Louisiana, Texas, and Florida, for the year 1861–2 was unprecedentedly large, and was estimated at upwards of 191,000 tons, or 427,840,000 pounds. In 1865, however, this branch of industry had become so nearly extinct that it was estimated that no more than 5000 tons of domestic cane-sugar entered into the total sugar consumption of the country. During the last decade the production has rapidly increased.[2] In the early history of Virginia the light lands of the eastern counties were cultivated in tobacco, extensive shipments to England being made from towns on the Chesapeake, long since abandoned. Less than a century of tobacco-growing completely exhausted the coast counties, and left the towns, mansions, and churches that once flourished there buried in a forest of pine. Charleston formerly supplied almost wholly the northern part of Georgia and a large part of Tennessee with nearly everything that the country merchants dealt in, and Savannah shared to

[1] "The Migration of Centres of Industrial Energy" (*Fortnightly Review* December, 1878).

[2] "The Sugar Industry of the United States," by David A. Wells, p. 15.

some extent in this trade also. The two cities did an immense business. Now the channels of trade have changed with the growing competition of transportation. Trade has been diverted from its former course, and a depreciation of the business interests of these cities has followed. Country dealers are doing a large business, and are supplied directly from the North and West by rail, and new towns are springing up along the lines of railroad. Again, prior to the war the Eastern States alone manufactured textile fabrics. Since that time cotton manufactories have been put into operation in the South and West. Some time ago Tennessee had forty cotton-mills, running 56,358 spindles. In Georgia, at Atlanta, Augusta, Columbus, and Macon, are cotton-mills. Alabama, Mississippi, South Carolina, and Virginia have mills already in operation. The total amount of cotton manufactured in the South during the year ending September 1, 1879, was 152,000 bales; not a large amount, to be sure, but it indicates the beginning of a change. The South, it has been said, dreams of a period when the vast interest of cotton-weaving shall be distributed through the cotton belt itself. The West similarly has faith in a time when it shall monopolize, at least as far as home consumption is concerned, all those manufactures into which wood and iron enter. The fulfilment of both these expectations would silence and depopulate many of the industrial centres of the East. The following table shows that the contingency of a removal of the cotton-spindles southward is remote:

Year.	Total Takings by the Northern and Southern Mills.		
	Northern Mills. Bales.	Southern Mills. Bales.	Total.
1874	1,177,417	128,526	1,305,943
1875	1,062,522	145,079	1,207,601
1876	1,211,598	145,000	1,356,598
1877	1,288,418	147,000	1,435,418
1878	1,398,298	148,000	1,546,298
1879	1,416,960	152,000	1,568,960

The increased consumption at the South within the last five years has been 7000 bales; at the North, 354,000 bales.

But that a division of the business of those who work in iron and wood between the East and the West is as remote I do not believe, and indeed the facts indicate the reverse. The West is no longer purely given over to meat and grain. It is growing more important every year in manufacturing; and in industries where recent and reliable data can be obtained it will be seen that the strides made within the past few years are surprising, and worthy of the most careful consideration of political economists. In 1878 the State of Illinois alone made as many rails as the whole United States made in any one year prior to 1860. The four States of Illinois, Wisconsin, Indiana, and Kansas produced last year 266,783 tons of rails, upward of 30 per cent of all the rails produced in 1878 in the United States. Illinois and Indiana alone produced half a million tons of cut nails, over one ninth of the total production of the country. The spring of the present year witnessed the starting of new rail manufactories at Omaha, Nebraska, and Centralia, Illinois. The total production of rolled iron of all kinds in the United States for 1878 was 1,555,576 tons; of this, Indiana, Illinois, Michigan, Wisconsin, Missouri, and Kansas produced 232,553, or about one seventh. The ore in the iron regions of Michigan and Missouri is very rich and free from injurious ingredients, and is capable of being successfully employed for the manufacture of all varieties of iron and steel. Professor Newberry,[1] one of the best authorities on the subject, has observed that in these two iron districts the inhabitants of the Valley of the Mississippi have a supply of remarkably rich and pure ores, which is not likely to be exhausted for some hundreds of years, and which, from the small amount of phosphorus which they contain, will be the chief dependence of the American people for the manufacture of steel. To Chicago and Milwaukee, and other points on the shores of the Great Lakes, the ore of the Lake Superior iron regions is floated cheaply, and is manufactured where disembarked, or is distributed through the interior of Illinois and neighboring States to be brought in closer proximity to the coal. Already an immense iron rail industry, second only to Pennsylvania, has grown up, based on the relations which have been

[1] "Iron Resources of the United States" (*International Review*, November, 1874).

briefly indicated between the ore and coal. The increase of population on the shores of these lakes within the past quarter century is without parallel in history, and twenty-five years more will witness a still greater growth. The present indication is that the demand for iron will be greater than ever before, and will be met by the Western instead of the Eastern markets. This demand, according to Professor Newberry, must be furnished from three points or lines of manufacture: first, near the mines, where a limited quantity of iron will be produced from charcoal, and coke or coal brought as return freight; second, along the shores of lakes, where the ore is transhipped and meets the coal from the interior, as in Chicago; third, in the vicinity of the coal-mines, to which the ore is brought overland by rail, as at Springfield and Joliet. Neither of these points or lines can monopolize the iron manufacture, since return freights must be furnished to empty coal-cars as well as empty ore-vessels. The preponderance of the lake shores or the interior will be determined mainly by the point to which economy of fuel can be carried in our iron manufacture. With keen foresight and enterprise, the West, and especially Illinois, has taken the newest and now most profitable branch of the iron trade—the manufacture of steel rails. In the manufacture of Bessemer-steel rails Cook County, Illinois, has already distanced Allegheny County, Pennsylvania. Last year that great centre of the iron trade manufactured 72,246 tons of Bessemer-steel rails.[1] Chicago, during the same time, turned out 123,000 tons, and if the neighboring county of Will is counted in, the amount is increased to 178,000 tons, or 33,608 tons more than twice the entire production of Allegheny County. Last year the State of Illinois produced nearly one third of all the Bessemer-steel rails produced in the United States. In other branches of industry the same holds true. A few years ago all our best furniture came from Boston. Said a leading Chicago furniture-dealer to the writer the other day, "Not one dollar's worth is now bought east of Grand Rapids, Michigan." The leading hotel at Dundee, Scotland, is furnished from top to bottom with furniture made at Grand Rapids, Michigan; and what is more surprising,

[1] Address of William P. Shinn before American Iron and Steel Association at Pittsburg, June, 1879.

this furniture can be delivered in Scotland 25 per cent cheaper than it can be produced there. A small town in Indiana is now completing a large order for wagons for an English firm, who reship them from Liverpool to South Africa. The proprietor of a Chicago nail-works said the other day, "I remember the time when the first nail-factory was built outside of Pittsburg. The people of Pittsburg smiled, for they thought nails could not be made outside of that smoky town. But the enterprise succeeded, and as far West as Omaha nails are being made to compete with the East."

While the West is competing with the Eastern States in manufactures, the South is coming into public notice as a fine field for emigration. The following tabulated statement very forcibly indicates that until recently public attention has been singularly diverted from eligible colonizing districts, more accessible than the competing West both to the great centres of consumption and to the points of vastly-increasing foreign shipment of various agricultural products:[1]

States.	Unimproved Lands.	Percentage of Unimproved Lands in Farms to total Lands in Farms.
Virginia	9,980,871	55
West Virginia	5,948,140	69.7
Tennessee	12,737,936	65.1
North Carolina	14,576,668	73.5
Kentucky	10,556,256	56.6
Kansas	3,685,876	65.2
Nebraska	1,426,750	68.8
Iowa	6,145,326	39.5

Of course it is not claimed that the vast excess of unimproved lands in the Southern States named above has a present productive value equal to the same class of lands in the three Western States. A large proportion of the former is mountain-land, both inaccessible and wholly untillable. But the greater degree of intelligence now brought to bear in the cultivation, combined with the discovery in South Carolina of immense beds of mineral phosphates, which, when used as a fertilizer, supply the very element the exhausted lands most needed, will have a tendency

[1] This table is compiled from the U. S. Census Report of 1870.

to attract settlers. The abolition of slavery will make it less difficult for white emigrants to compete in agricultural pursuits. The mobility of the laboring population of the South not only excluded immigrants from new territory, and prematurely diminished the laboring population of the older States, but in these latter the slaves became massed together as the competition of the richer States of the Southwest came to be more and more felt there. Thus profitable planting required large capital, and small proprietors were at a disadvantage. Free labor was too expensive for both laborer and employer; hence many of the whites were forced to emigrate.[1] So extensive was this emigration that the census of 1860 showed that of the white persons then living in the United States who had been born in South Carolina, 277,000 remained at home, while 193,000 were permanently settled in other States; North Carolina retained 634,000 and had parted with 272,000; Virginia retained 1,000,000 and had sent off 400,000 of her native white population. The same causes practically prohibited manufactures, because manufactures even more than agriculture depend upon fixity of population. The great development of the manufactures of the West has been due to cheapness of living, uniformity and regularity in the supply of the necessaries of life; but these conditions were not attainable in the South, where, as Mr. Trenholm says, "a large part of the population was always on the move, and another large part lived in expectation of moving." The want of these manufactures was not severely felt in the South until after the war. Before the war all the Southern energy was put into the cotton crop, and with the money that it brought into the South it was easier to buy than to make. Mr. Atkinson, who has recently visited the South, says that the removal of slavery in the South will bring about the greatest industrial revolution ever accomplished. In this we fully agree with the distinguished economist. The incentive of labor in the South has not been wanting, and the mere fact that the last eight crops of cotton raised by free labor exceed the nine ante-war crops of slavery is alone proof sufficient of the advance in the production of wealth that has already ensued. Georgia invites the emigrant to easy

[1] "The Southern States: their Social and Industrial History, Condition, and Needs," by W. L. Trenholm, of South Carolina.

conditions of life. The upper pine-lands of the great State are now to be bought by the hundred thousand acres at a half dollar to a dollar an acre—the true country for the abundant production of wool, where no winter shelter for sheep is needed and where all conditions of health exist. The almost unknown valleys that lie between the Blue Ridge and the lateral ranges of Virginia and North Carolina offer homes for hardy men nearer the centre of civilization than the far West, but passed by until now because of the curse of slavery. If the well-trained tenant farmers of Great Britain, who are now surrendering their farms, should turn their attention to the opportunities offered in many parts of Virginia, they would find that it needs only brains and industry to put that great State once more on the list among the rich and prosperous communities.[1] As Governor Holliday said in his last annual message, "Virginia wants capital. She invites it cordially from beyond the lines. She offers a climate and soil and resources unsurpassed." The able and valuable work[2] recently issued by the State of West Virginia gives ample evidence of the vast and hitherto unknown resources of that State. Recent travellers through the State of South Carolina report marked signs of improvement and progress, much of which was said to have been made within the past two years. Property is changing hands to a great extent. Very many of the old property-holders have disappeared and new men are coming to the front. In the interior the indications of progress were perfectly clear in the new villages, the new lands in cultivation, and in the really vast amount of new fencing around both the old and the new fields.[3] Georgia was never in a better condition than to-day. Her loans are quoted in New York at $1.11 and $1.12, while her six-per-cent bonds are selling in Atlanta at $1.04. Actual figures show[4] that during the past two years more than 7000 immigrants have settled in the State of Tennessee through the agency of the State Bureau of Immigration. They have not come as paupers to increase the burdens of the State, but as purchasers of homes.

[1] "An American View of American Competition," by Edward Atkinson (*Fortnightly Review*, March, 1879, pp. 395, 396).

[2] "Resources of West Virginia," by M. F. Maury and W. M. Fontaine.

[3] New York *Herald* letters, April 23, 1879.

[4] Message of Governor Porter, of Tennessee, 1879, p. 19.

This State needs men of skill, industry, and thrift to occupy its large uncultivated territory. The entire area of Tennessee is 42,000 square miles, or 26,880,000 acres; about 6,000,000 acres are in cultivation, leaving over 20,000,000 acres unoccupied. The labors of the bureau are making Tennessee a formidable rival of States west of it, and with continued efforts the population of the State will be largely increased. Alabama, like the other Southern States, needs immigrants.[1] With a healthful climate, abundance of good and pure water, agricultural fields of rich productive soils inviting labor, mountains of coal and iron ready to be utilized, water-courses well distributed all over the State (of excellent capacity for factories), railroads and steamboats to convey the products of labor to market, a well-regulated and fairly-administered system of common schools—Alabama is certainly prepared to offer good advantages to those who desire to become citizens of that State. During the past two years it is estimated that not less than 100,000 immigrants have settled in Arkansas.[2] North Carolina, pre-eminently an agricultural State, is fairly prosperous.

Stock-raising in the South, especially in Texas, affords an immense field for enterprise. The aggregate of Texas cattle is unknown to the best-informed operators. The production of cattle in that State is about half as much as the total production of all the Southern States put together. Some idea of the magnitude of this trade may be formed from the fact that, from the Red River in Clay County west to the Pease River and south to the Colorado—embracing a territory of perhaps 25,000 miles—every ten miles square will certainly average 8000 head of cattle. The increase of cattle is said to be enormous—from 25 to 40 per cent annually, and frequently it reaches 50 per cent. Mr. Atkinson has pointed out what a field Texas is for German emigration. The German, he tells us, already knows Texas, and in one block of 60,000 square miles of land, by which the State of Texas exceeds the area of the German Empire, we offer more and healthy conditions of life for millions of immigrants; and on that single square of land, if they come in sufficient numbers, they can raise as much cotton as is now raised in the whole

[1] See Message of Governor Houston, 1878, p. 21.

[2] Biennial Report of Commissioner of Lands of Arkansas, p. 60.

South, that is to say 5,000,000 bales, and as much wheat as is now raised in the whole North, that is to say 400,000,000 bushels, and yet subsist themselves besides on what is left of this little patch that will not be needed for these two crops. The development of the cotton trade of Texas would necessarily help St. Louis and Chicago. The cotton trade in St. Louis has increased from 36,421 bales in 1872 to 330,088 bales in nine months of 1879. The cotton crop of Texas for 1878–79 was about 760,000 bales. The estimate for 1879–80 is 830,000 bales. If the leaders of Southern thought would only turn their attention to these large topics instead of constantly kindling anew dead issues that should be forgotten, the South would, according to all commercial and economic principles, attain to great prosperity—a prosperity which, it has been truthfully observed, cannot fail to be beneficial to the whole country, because it cannot be attained without the aid and concurrence of all.

But the East, as I shall presently show by actual figures, is not retrograding, though its public debts are large and mercantile failures since the panic of 1873 have exceeded by upward of $500,000,000 the business misfortunes of the West. So far as textile fabrics are concerned, it has been shown that the increase in manufacture has been upward of 350,000 bales of cotton in the past five years in the North, and only 7000 in the South. The competition with England in the cotton business has fairly begun, and will be carried on in this section of the country. Not only have we deprived the United Kingdom of 40,000,000 of people as customers, but we are threatening them with permanent active rivalry in outside markets. The consumption of British goods in foreign markets no longer grows at its old pace, and the reason is not far to seek. Her rivals are making greater progress; for, since 1870, Great Britain's annual consumption of cotton has increased less than 400,000,000 bales, whilst that of the United States has gone up from 928,000,000 bales in 1870 to 1,439,000,000 bales in 1877, an increase of 511,000,000 bales. One of the most gratifying signs of the stability of the East is the fact that, though the American manufactured goods are selling in all parts of the world and competing with goods from European workshops, the wages of our workmen have not been

lowered. On the contrary, in the State of Massachusetts, the State of all others most actively engaged in this foreign competition, the average weekly wages of workingmen in manufacturing and mechanical industries, allowing for the advance in the cost of living, were *ten per cent higher* in 1878 than they were in 1860; no account being made of the fact that the wages in 1878 were paid for fewer hours of labor per week in many industries than were required in 1860.[1] It has also been proved that the workingmen of Massachusetts, in the majority of cases, have the best quality of food, though not in so great quantity and variety as in previous years; that they are practising a rigid economy in purchases of clothing, dry-goods, boots and shoes, house-furnishing goods, and fuel; and that the majority continue to pay their bills promptly. In 1875, out of the 1,652,000 inhabitants of Massachusetts, 720,000 were depositors in savings banks to the amount of $238,000,000. During the last two years the deposits have slightly decreased. In 1876 the savings banks of the New England States and New York had 2,116,619 depositors, whose aggregate deposits amounted to $751,970,452, an average of $355.26 for each depositor. At the same time the savings banks of all France had 2,365,557 depositors, whose total deposits aggregated $132,082,793, an average of $55.80 for each depositor.

There remains now but one important interest to consider in our comparative view of American progress. Of all pursuits, mining is the most varied and least certain. In 1853 California produced $65,000,000 of gold, and as late as twenty years ago its annual product amounted to $50,000,000. At that time Russia produced about $16,000,000 a year, and Australia about the same as California. At the present time the product of California hardly exceeds $16,000,000 a year, while that of Russia amounts to nearly $25,000,000. But the Union Pacific Railroad has opened up other mines besides those of California, and the production of precious metal in 1878 was greater than in the year preceding. The chief attractions now are the silver mines located along the vast region traversed by the Pacific Railroad.

[1] For a full and, I think, conclusive demonstration of this important fact, the reader is referred to the Tenth Annual Report of the Bureau of Statistics of Labor of Massachusetts, pp. 61–95.

The first discoveries of silver within it were made in 1859. At that time the total product of the United States equalled only $200,000 annually. The product the past year equalled $46,726,314, of which $41,311,677 was from the States and Territories tributary to the Pacific Railroad.[1] The following table will show the product of gold and silver in the States in question for 1877 and 1878:[2]

States.	1877.		1878.	
	Gold.	Silver.	Gold.	Silver.
California	$15,000,000	$1,000,000	$15,260,679	$2,373,387
Nevada	18,000,000	26,000,000	19,546,513	28,130,350
Utah	350,000	5,075,000	392,000	5,288,000
Colorado	3,000,000	4,500,000	3,366,404	5,394,940
Oregon	1,000,000	100,000	1,000,000	100,000
Washington	300,000	50,000	300,000	25,000
Dakotah	2,000,000	.....	3,000,000	.....
Total	$39,650,000	$36,725,000	$42,865,596	$41,311,677

The total amount of gold and silver produced in the United States in 1877, according to the same authority, equalled $84,050,000, of which $45,100,000 was gold and $38,950,000 was silver. The amount produced in 1878 equalled $93,952,421, of which $47,226,107 was gold and $46,726,314 was silver. The product of the United States for 1878 equalled one half that of the world; that of the territory opened by the Pacific Railroad for the past year equalled $84,176,273, or nearly one half of the product of the world. There are few men among the most intelligent who fully comprehend the wonderful importance of such railroads as the Pacific and Northern Pacific roads until the facts are almost dramatically brought to their observation.

It has been long since enunciated that man follows, or at all events tries to follow, the lines of least resistance, when his movements are free as within the wide-spreading area of the United States. It has been shown elsewhere that in this way

[1] "The Pacific Railroad," by Henry V. Poor (*North American Review*, June, 1879).

[2] Report of the Superintendent of the U. S. Mint.

industries have shifted to those spots where they are pursued under conditions admitting the greatest return for the least expenditure of labor. It now remains for us to find out by the aid of such facts as we have at hand the present drift of our population. It has been truly said that it is only by a close observation of the entire field before us that we can realize something of the distribution of man, and even attain to some apprehension of the set of the tides of humanity reserved for the future.

The manufacturing States of the West are (if the figures of the Bureau of Statistics are worthy of credence) better places for the mechanic than the Eastern or the Middle States. I have compiled the following tabulated statement showing the average annual and weekly earnings and the annual expenditures of the families of workingmen in the Eastern, Middle, Southern, and Western States respectively:[1]

Eastern States.

Total average yearly expenditures	$670 22
Total average weekly earnings	15 14
Total average yearly earnings	787 28

Middle States.

Total average yearly expenditures	$786 52
Total average weekly earnings	18 95
Total average yearly earnings	985 40

Southern States.

Total average yearly expenditures	$818 07
Total average weekly earnings	16 09
Total average yearly earnings	836 76

Western States.

Total average yearly expenditures	$714 75
Total average weekly earnings	18 19
Total average yearly earnings	945 88

[1] Compiled from statements published in Mr. Young's work on "Labor in America and Europe," 1874, Washington, D.C.

From the above figures we may make the following summary:

	Annual Saving.
1. Western States	$231 13
2. Middle States	198 88
3. Eastern States	117 06
4. Southern States	18 69

These figures naturally suggest the inquiries: Is the West as promising a land to the manufacturer as it is to the agriculturist? Will it attract both industries? Let us compare the three sections. In this comparison Ohio will be left out as the connecting-link between the East and West. Maryland, Delaware, and the Pacific States will also be omitted, that we may better deal with the distinct sections of the country, and base our inquiry as near as possible on an equal population. The population of these regions in 1860 was as follows:

Eastern—1860.		Western—1860.		Southern—1860.	
State.	Population.	State.	Population.	State.	Population.
Maine	628,279	Michigan	749,113	Virginia	1,596,318
New Hampshire	326,073	Indiana	1,350,428	West Virginia	
Vermont	315,098	Illinois	1,711,951	North Carolina	992,622
Massachusetts	1,231,098	Wisconsin	775,881	South Carolina	703,708
Rhode Island	174,620	Minnesota	172,023	Georgia	1,057,286
Connecticut	460,147	Iowa	674,913	Florida	140,424
New York	3,880,735	Missouri	1,182,012	Alabama	964,201
New Jersey	672,035	Kansas	107,206	Mississippi	791,305
Pennsylvania	2,906,215	Nebraska	28,841	Louisiana	708,002
				Texas	604,215
				Arkansas	435,450
				Kentucky	1,155,684
				Tennessee	1,109,801
Total	10,594,300	Total	6,752,368	Total	10,259,016

In 1860 the nine Eastern States had a population of 10,594,300; the nine Western States a population of 6,752,308; and the thirteen Southern States 10,259,016. In the following table, representing the respective population of the same States at the present time, I have used the latest State census as far as possible. In States where no census reports have been taken since the United States census of 1870, the figures are based on

estimates made by Mr. Elliott (one of our ablest statisticians) in the Statistical Atlas of the United States:

Eastern.		Western.		Southern.	
State.	Population.	State.	Population.	State.	Population.
Maine	650,000	Michigan	1,500,000	Virginia	1,300,000
New Hampshire	320,000	Indiana	2,040,000	West Virginia	500,000
Vermont	330,000	Illinois	3,500,000	North Carolina	1,170,000
Massachusetts	1,821,000	Wisconsin	1,400,000	South Carolina	950,000
Rhode Island	300,000	Minnesota	765,000	Georgia	1,375,000
Connecticut	630,000	Iowa	1,700,000	Florida	250,000
New York	4,995,000	Missouri	2,400,000	Alabama	1,150,000
New Jersey	1,132,000	Kansas	850,000	Mississippi	1,000,000
Pennsylvania	4,125,000	Nebraska	500,000	Louisiana	1,000,000
				Texas	2,000,000
				Arkansas	700,000
				Kentucky	1,500,000
				Tennessee	1,400,000
Total	14,303,000	Total	14,655,000	Total	14,295,000

The growth of the population of the Western States in 19 years has been 7,902,632; that of the Southern States, 4,025,984; that of the Eastern States, 3,808,706—the increase in population in the nine Western States being nearly 8,000,000, or equal to the aggregate increase of the Eastern and Southern States in the same period.

Now let us compare the actual number of hands employed in manufacturing in the Eastern, Southern, and Western States in the years 1850, 1860, 1870, and estimate, from the best data at hand, the probable number engaged in manufacturing at the present time. First, I present a very carefully prepared table, showing the number engaged in manufacturing in the Eastern States in 1850 and 1860, and the rate per cent of increase in the decade; also, the number engaged in manufacturing pursuits in 1870, the rate per cent of increase between 1860 and 1870, and the average rate of increase for the 20 years. If we accept for granted that the increase between 1870 and 1880 will be at the same average rate as for the two decades preceding it, a very fair estimate of the probable numerical increase for the decade ending 1880 can be made, and the probable number of persons at present engaged in manufacturing fairly approximated. All the tables have been prepared in the same manner and are verified, and I think as near correct as it is possible to make such estimates:

EASTERN STATES—NUMBER ENGAGED IN MANUFACTURING.

State.	Number engaged in Manufacturing, 1850.	Number engaged in Manufacturing, 1860.	Rate per cent of Increase.	Number engaged in Manufacturing, 1870.	Rate per cent of Increase.	Average Rate per cent of Increase for 20 Years.	Probable Numerical Increase for Decade ending 1880.	Probable Number engaged in Manufacturing in 1880.
Maine	28,020	34,619	24	49,180	42	33	16,229	65,409
New Hampshire	27,092	32,340	19	40,783	26	22	8,972	49,755
Vermont	8,445	10,497	24	18,686	78	51	9,529	28,215
Massachusetts	177,461	217,421	22	279,380	28	25	69,845	349,225
Rhode Island	20,967	32,490	55	49,417	52	53	26,191	75,608
Connecticut	50,731	64,469	27	89,523	39	33	29,542	119,066
New York	199,349	230,112	15	351,800	53	34	119,612	471,412
New Jersey	37,830	56,027	48	75,552	35	41	30,976	106,528
Pennsylvania	146,766	222,132	51	319,487	43	47	150,159	469,645
	696,661	900,107		1,273,808			461,055	1,734,863

The facts here brought to light corroborate the statement heretofore made that the Eastern States are steadily and healthily growing. Both in 1860 and 1870 the percentage of growth in Rhode Island was greater than that of any other Eastern State, rising to 55 and 52 per cent; the lowest was the State of New York. Next is presented the exhibit of the West:

WESTERN STATES—NUMBER ENGAGED IN MANUFACTURING.

State.	Number engaged in Manufacturing, 1850.	Number engaged in Manufacturing, 1860.	Rate per cent of Increase.	Number engaged in Manufacturing, 1870.	Rate per cent of Increase.	Average Rate per cent of Increase for 20 Years.	Probable Numerical Increase for Decade ending 1880.	Probable Number engaged in Manufacturing in 1880.
Michigan	9,344	23,190	148	63,694	175	161	102,547	166,241
Indiana	14,440	21,295	47	58,852	176	112	65,914	124,766
Illinois	11,559	22,964	99	82,979	261	180	149,362	232,341
Wisconsin	6,089	15,414	153	43,910	185	169	74,207	118,117
Minnesota	.....	2,123	...	11,290	432	...	48,773	60,062
Iowa	1,707	6,307	269	25,032	297	283	70,840	95,872
Missouri	15,808	19,681	24	65,354	232	128	83,653	149,007
Kansas	.....	1,735	...	6,844	294	...	20,121	26,965
Nebraska	.....	336	...	2,666	693	...	18,475	21,141
	58,947	113,045		360,621			633,892	994,512

The steady growth of the manufacturing interests of the Eastern States seems tame when compared with the rate of increase in the Western States, whither the population drifts in following the "lines of least resistance." The lowest rate of increase (Michigan) is 175 per cent, which runs up as high as nearly 700 per cent in the new State of Nebraska. In 1850 only 58,947 were engaged in the Western States in manufacturing occupations; at the present time, according to this estimate, not less than 994,512 are employed. Lastly, the Southern exhibit is given:

SOUTHERN STATES—NUMBER ENGAGED IN MANUFACTURING.

State.	Number engaged in Manufacturing, 1850.	Number engaged in Manufacturing, 1860.	Rate per cent of Increase.	Number engaged in Manufacturing 1870.	Rate per cent of Increase.	Average Rate per cent of Increase for 20 Years.	Probable Numerical Increase for Decade ending 1880.	Probable Number engaged in Manufacturing in 1880.
Virginia	29,110	36,174	24	26,974	—34	—5	—1,349	25,626
West Virginia	.....	.....	...	11,672	..	..	....	.....
North Carolina	14,601	14,217	—3	13,622	—4	—3	—408	13,214
South Carolina	7,066	6,994	—1	8,141	16	7	569	8,710
Georgia	8,368	11,575	38	17,871	54	46	8,220	26,091
Florida	991	2,454	148	2,749	12	80	2,199	4,948
Alabama	4,936	7,889	60	8,248	4	32	2,639	10,887
Mississippi	3,154	4,775	51	5,941	24	37	2,198	8,139
Louisiana	6,217	8,789	41	30,071	242	141	42,400	72,471
Texas	1,066	3,449	223	7,927	130	176	13,951	21,878
Arkansas	842	1,877	123	3,206	71	97	3,109	6,315
Kentucky	21,476	21,258	—1	30,636	44	21	6,433	37,069
Tennessee	12,039	12,528	4	19,412	55	29	5,629	25,041
	109,866	131,979		186,470			71,919	258,389

The negative sign (—) indicates a decrease of manufacturing population, as in the cases of Virginia and North Carolina.

In the South, as might be expected, the figures reveal a very different story. Still I am inclined to think that the good things already shown about the Southern States may make the real facts in 1880 more pleasant to dwell on than our estimate. With reviving business the South should have 300,000 persons engaged in manufacturing in 1880. The result of the investigation may be thus epitomized:

RECAPITULATION.

State.	Number engaged in Manufacturing, 1850.	Number engaged in Manufacturing, 1860.	Number engaged in Manufacturing, 1870.	Probable Numerical Increase for Decade ending 1880.	Probable Number engaged in Manufacturing in 1880.
Eastern States.....	696,661	900,107	1,273,808	461,055	1,734,863
Western States.....	58,947	113,045	360,621	633,892	994,512
Southern States.....	109,866	131,979	186,470	71,919	258,389

Unfortunately I have not at hand the data to make the same extensive investigation in relation to agricultural occupations. In 1870 the Southern States were far ahead of the Western and Eastern States in this particular, but when we take into consideration the extension of manufactories in the West as compared with the South, the difference is more than made up. Here are the actual figures:[1]

EASTERN STATES.		WESTERN STATES.		SOUTHERN STATES.	
State.	No. engaged in Farming.	State.	No. engaged in Farming.	State.	No. engaged in Farming.
Maine.....	82,011	Michigan	187,211	Virginia	244,550
New Hampshire..	46,573	Indiana.....	266,777	West Virginia....	73,960
Vermont	57,983	Illinois	376,441	North Carolina...	269,238
Massachusetts....	72,810	Wisconsin.....	159,687	South Carolina...	206,654
Rhode Island.....	11,780	Minnesota.....	75,157	Georgia.....	336,145
Connecticut.....	43,653	Iowa.....	260,263	Florida	42,492
New York.....	374,323	Missouri.....	263,918	Alabama.....	291,628
New Jersey.....	63,128	Kansas.....	73,228	Mississippi	259,199
Pennsylvania	260,051	Nebraska	23,115	Louisiana.....	141,467
				Texas	166,753
				Arkansas.....	109,310
				Kentucky.....	261,080
				Tennessee	267,020
Total	1,012,312	Total	1,685,797	Total	2,669,496

It has been shown that the main crops of the South are cotton and tobacco. There was a time when the Southern States cared to produce nothing else, and with the foreign gold those crops brought they could buy the necessaries of life. That

[1] This table is compiled from the U. S. Census of 1870.

day has passed, and the farmers and planters of the Southern States see the advantage of not depending on a single crop. The following table has been prepared from the best official sources:[1]

	Corn.	Wheat.	Oats.	Hay.	Potatoes.
Eastern States.	$47,210,900	$45,213,875	$37,021,000	$144,825,000	$37,036,500
Western States	225,128,500	208,992,854	48,536,900	80,211,570	24,603,960
Southern States	157,390,500	55,627,800	19,238,900	13,844,380	5,199,390

The great difference in the value of the products near to and far from the seaboard makes the above comparison rather unfavorable for the West. Below I have prepared a table showing the average yield of corn, wheat, and oats, and also the value per acre in the Eastern, Western, and Southern States:[2]

States.	Average Yield per Acre. Bushels.			Average Value per Acre.		
	Corn.	Wheat.	Oats.	Corn.	Wheat.	Oats.
Eastern States	35	17	34.8	$24.65	$24.27	$15.05
Western States.....	31.4	15.4	35.3	9.05	15.09	7.92
Southern States.....	18.4	9.7	19.1	9.19	11.60	9.38

The highest average yield of wheat is in the Eastern States, where wheat averages 17 bushels to the acre; in the Western States, 15.4; and in the Southern States, only 9.7 bushels. The average value in the Western States of the wheat crop is $9 per acre less than in the Eastern States; corn, $15 an acre less; and oats, $7 less. Lastly, in this connection is given a table showing the value of the oxen, cattle, sheep, and hogs annually produced in the three great geographical divisions of the United States:

[1] Report of the Commissioner of Agriculture for 1878.

[2] This statement is based on the Reports of 1877.

	Oxen and other Cattle.	Sheep.	Hogs.
Eastern States.....	$61,006,452	$14,587,249	$20,552,899
Western States.....	121,503,102	17,912,600	68,262,653
Southern States.....	90,116,341	17,706,577	52,530,936

The Hon. David A. Wells, in his valuable essay on the "Elements of National Wealth," says:

"Be the value of the annual product what it may, by far the largest proportion of such product must necessarily be consumed as rapidly as produced, in order that the individual constituents of the nation—its men, women, and children—may simply live and make good the loss and waste of capital previously accumulated, leaving but a small fraction of the annual product in the form of surplus, or accumulation, which can be used for effecting future increased production and development."

The progress of a nation does not depend on what it has accumulated, but on the continuity of those processes and resources by which the wealth was won in the first place. In this, as our tables abundantly prove, the nine Western States stand pre-eminently ahead. The greatest wealth, the highest prosperity, is achieved where the two great occupations are the most equally divided. We have seen the dangers of an excessive development of manufacturing interests in England, and a neglect of agriculture; we have seen the evil effects of the other extreme in the Southern States. Each of the great geographical sections of our country may profit by the few facts herewith presented. The Eastern States have already awakened to the necessity of more scientific farming. The rapid increase in number of those engaged in manufacturing occupations in the nine Western States shows that every year the two great industries are becoming more evenly distributed in the West. In its eagerness to compete with the Eastern States the West should not forget that the foundation of its strength lies in its food-producing powers. Cheap food as well as cheap products of the mill and shop should be the aim. These comparative statements aid greatly in studying the nation as a whole. It is only by such

a study that we may hope to find out its strength and weakness, its success and failure. It is from such a view of our wants that all of us gain common-sense, common aims, and a deeper faith in the future of the Republic.

ROBERT P. PORTER.

THE A PRIORI NOVUM ORGANUM OF CHRISTIANITY.

MACHIAVELLI is credited with saying that "there are three classes of men: one who see things in their own light, another who see them when they are shown, and a third who cannot see them even then."[1] We have been thankful, as respects the mysteries of supernatural redemption, for a place in the second class, enabling us to see them when shown us by the authority of God in his Word. We confess that the effort to obey the earnest, not to say imperious, summons of those who would fain enter the first class, by assuming to see things more perfectly in their own *a priori* light, begets a feeling of perilous and growing nearness to the third.

We have no controversy with the advocates of *a priori* knowledge as such, even in the Kantian sense. We are no mere empiricists. We only object to the extravagant lengths to which some carry it, either in itself, or its uses and applications. We hold it to be unquestionable that pure mathematics and logic, *i.e.*, purely formal sciences, are capable of being established *a priori* in the strictest sense, or without proof from experience. Indeed, all universal and necessary propositions must rest upon such evidence, intuitive or deductive. They cannot be proved by experience or by any induction from particular facts, which are themselves contingent. Good and sufficient proof of many laws of nature may be obtained inductively from experience, or *a posteriori*. But *ex vi termini* necessary truths, which cannot but be, never can be proved from contingent facts which in their own nature might or might not be. No ex-

[1] PRINCETON REVIEW, April, 1849, p. 262.

perience of ours can grasp all possible instances of two straight lines, or of fraud and blasphemy, or all space and time. Yet we know with absolute certainty that no two straight lines can enclose a space; that fraud and blasphemy are immoral; that space and time are and must be illimitable. This *a priori* knowledge, however, beyond such formal sciences, is limited to a few first principles and elementary axioms. When we come to sciences which involve facts and truths of actual being, it cannot safely proceed a step without the support of *a posteriori* investigation and proof. Trigonometry will establish the height of a steeple, the length of a base-line and the magnitude of the angles formed by this with two other lines being first given. But how can these be ascertained unless by *a posteriori* investigation and measurement?

The history of human thought abounds in abortive, though often brilliant, efforts to construct ontologies, cosmologies, theologies, psychologies, systems of physics, ethics, politics, jurisprudence, by exclusive *a priori* methods. These can only result in signal failure in all the departments of applied science, and sciences of actual being. If any human mind could thus attempt to overfly human nature without a disastrous downfall, surely the mighty philosophic genius of Emanuel Kant, the foremost modern inaugurator of *a priorism* in philosophy, was equal to the task. But even he was a conspicuous example of his own illustration of philosophic speculation soaring to heights above its reach, when he likened it to the case of the bird flying upward into an atmosphere too rare to support its pinions. Baffled in the attempt, it is compelled to sink to its appropriate level. His speculative reason, after soaring to altitudes where it could neither "fly nor go," dropped down into a thicket of contradictions and antinomies, thus wrecking itself in the wreck of all objective knowledge. With "a noble inconsistency" he asserted the validity of the affirmations of the moral reason or conscience, although claiming for it an absolute infallibility inconsistent with the disorder of our moral nature, and the paramount infallibility of revelation. Fichte spun out the thread thus started from Kant's distaff into a subjective, egoistic pantheism, ending one of his lectures, according to Madame de Staël, with this piece of supersublimated transcendentalism: "In the next

lecture we will proceed to create God"! From this subjective egoism, Schelling ascended to the absolute ego grasped by an intellectual intuition so transcendant as to transcend consciousness; whence Hegel, lowering it into the domain of conscious thinking, brought this transcendant philosophizing *à priori* to its grand climacteric in the formulas, "Thought and Being are Identical;" "Pure Being = Nothing;" or in the paraphrase of the famous "Rejected Addresses,"

"And Naught
Is Everything, and Everything is Naught."

Another striking instance of the *à priori* method misapplied and overdone, in our judgment, is its use by the Rev. W. J. Irons, D.D., Prebendary of St. Paul's, London, in his article in the PRINCETON REVIEW for July, 1879. The topic treated is of the first importance: "Reason, Conscience, and Authority in Reference to Rationalism and Ultramontanism." His grand solvent of all questions in reference to every branch of this subject is the *à priori*. Indeed he appears to invest it with the prerogatives of a *Novum Organum* of matchless power and oracular authority for determining all Christian controversies. So far as we can gather from this and other writings of Dr. Irons, the outcome of it all, as will soon appear, is a strange complex of Kantian *à priori* Rationalism, Hierarchical Sacramentarianism, Anglo-Catholicism, pre-Reformation Christianity resting on tradition, historic creeds, and the Scriptures—all being kept in due subordination to the *à priori*.

On page 87 of the article referred to he complains that "men of education, but uneducated in philosophical thought, and with no knowledge of revelation as the enlargement of our perception of the *à priori*, not unwillingly accept the most illiterate revivalism as Christianity." On page 92 he speaks of "that enlarged knowledge of the *à priori* which the gospel gives." On page 73 he charges Catholics and Rationalists with "alike abandoning the *à priori*" and holding that if Christianity is to be "admitted at all, it must be so, right or wrong (as we have said), on the authority of the Pope or the authority of the Bible." Queer rationalists these, by the way! And who are justly or

even plausibly chargeable with holding that any system is to be espoused on any pretext, be it right or wrong? Again, page 78, he charges that "the previous question as to the possibility, *à priori*, of serving or pleasing the Supreme and All-perfect against our reason has been as little considered among the assertors of private judgment as among its deniers." As if, indeed, it could be against our reason to serve and please such a Being!

Again, page 81: "Our phenomena, experiences, or conditions may often be to us of the nature of authorities, but still such authorities as imply the *à priori*." On page 83 he complains of the "absence in Cornewall Lewis of the poetry of *à priori* thought, to a degree quite surprising." We think, in the potency ascribed to it by the Prebendary, it must be rather a faculty for poetical creations than for exact truth. In this we are confirmed both by the stupendous results achieved through it by Dr. Irons in this article, and the functions ascribed to it by him in antecedent publications of which this is a small but somewhat explosive echo. While we hold fast by the *à priori* in its legitimate sphere, we protest against the abuse of it when "shot madly from its sphere" in gross misapplication. The justness of the applications made of it may be fairly tested by their results *à posteriori*. We shall not argue the propriety of judging of the tree by its fruits, even if this should incur a fulmination of Dr. Irons against us for bowing to the authority of the Scriptures.

We are now prepared to notice a number of the astounding decrees of this new imperial authority, which comes with somewhat of the pomp and circumstance of a *Novum Organum* in ethics and religion. Of these the first is that submission to the authority of the Pope, and to that of the Bible, are the same in principle.

He says, pages 69–70:

"With a majority of Christendom, at this time, it is the Bishop of Rome, speaking *ex cathedrâ*, who is the "authority" to which reason and conscience is said ultimately to defer. With others it is the authority of Scripture, which, they think, is absolutely to be bowed to, even when it seems opposed to what men feel to be right in principle and true in fact. This idea of "authority" is essentially the same with both sides, and is based on

the supposition that divine truth must come to us in a form of external infallible certainty, even in detail."

Again, page 78:

"The appeals often made to the Divine Scriptures as the practical authority to which reason must surrender, after a certain amount of examination and criticism, are *eo modo* as difficult to reconcile to the rights of conscience as any put forth by Rome."

Does Dr. Irons believe that the "Divine Scriptures" are really divine, that they are the Word of God? If so, are they or are they not true with an "infallible certainty" guaranteed by the omniscient holiness of their author, whether "external" or not? And if so, are acceptance of their teachings and obedience to their precepts to be stigmatized as essentially the same with obedience to a fallible mortal? Does God speak in his Word, and are faith in and submission to his utterances on the same footing as unquestioning submission to the Roman Pontiff? Let him stake his soul on this principle who will. For ourselves, we have and desire no alternative but to obey "the Holy Scriptures, which are able to make wise unto salvation through faith which is in Christ Jesus" (2 Tim. 3:15.) That final ordeal which "shall try every man's work, of what sort it is," will show who has builded on the rock, and who on the sand.

One clause of the foregoing quotation puts in its strongest form what Dr. Irons, by innumerable forms of assertion and implication, is constantly imputing to evangelical Protestants, who receive the Scriptures not as the word of men, but as it is in truth the Word of God, which worketh effectually in them that believe (1 Thess. 2:13.) It is that they recognize the obligation to bow to the Scriptures when they seem "opposed to what men feel to be right in principle and true in fact." This, like so many of the author's representations of this type, is true or false according to the interpretation it is made to bear, and is so put by him as to convey a false charge or innuendo. No person, on the authority of Scripture, accepts that as true which he feels, *i.e.* knows, to be wrong "in principle" or false "in fact." To do so would be to accept contradictions and upturn the very foundations of all truth in sight and intelligence. No person would believe that two and two make five, or that a square is a circle, or

that the acceptance of bribes to pervert justice is right upon any supposed authority, unless some wild *ultra-fidian* whose motto is *credo quia impossibile*. No sane or intelligent believer would hold that such a meaning could arise from a right interpretation of the Scriptures.

Here is a legitimate case for an *a priori judicium contradictionis*. But this is not what Dr. Irons chiefly aims at. He refers to statements of fact, doctrine, or precept, for practical guidance, in the Scriptures, and believed and acted on by evangelical Christians upon the authority of the Bible, which involve what human reason, especially when under a hostile bias, cannot readily solve, or see in their harmony with other indisputable moral truths. To some minds these difficulties seem greater, to others less. For most Christians they have been gradually cleared up with the advance of spiritual and intellectual life till attenuated to a vanishing point, or quietly remanded to that region of mystery in which naturalists and supernaturalists must (Dr. Irons to the contrary notwithstanding, page 88) ultimately leave all the problems of nature and grace. *Omnia exeunt in mysterium*. We shall find, as we proceed, what special system of doctrines accepted by the great mass of earnest Protestant believers, on the authority of the Bible, Dr. Irons means to brand as antagonistic to his *a priori* standards, and therefore, even if taught in the Scriptures, in his view no more worthy of acceptance than the superstitions of Rome. We shall see, especially, that vicarious atonement, justification by faith, and the system of doctrine and life interlocked with them are particularly referred to.

Meanwhile, let us see how Dr. Irons' *à priori organum* or criteria of righteousness display their efficacy in misrepresentation of his adversaries, and of the issues between him and them. He says of these standards of authority that their advocates "have not succeeded in persuading men that any such standards take the place of reason or conscience among responsible beings" (p. 70). This implies that those who enthrone the authority of the Bible have attempted so to persuade men. Abnormal cases aside, no such attempt has been made, and the imputation of it to evangelical Protestants as a body is a sheer libel. When they betake, or urge others to betake, themselves to the Word of God

for the enlightenment and guidance of their reason and conscience, is this displacing or superseding, or is it elevating and invigorating these faculties? Nay, is it not by the very light of reason and conscience that the Christian is led to the oracles of God for that further and infallible guidance which it thus becomes manifest they alone can give? It is argued to wearisome repetition, as if those accepting the authority of the Bible questioned it, that "whatever comes before us as an obligation should commend itself to our intelligence" (p. 67). Who questions it? But does it follow because a given truth is clearly revealed by God, and for this reason the acceptance of it "commends itself to our intelligence," that we are always able so to grasp it as to bring all its sides at once within our comprehension, or that we are not to believe it till we can fully master it?—that, *e.g.*, the Incarnation is not to be believed till we can understand how a Divine Person could become flesh, and be at once very God and very man? He charges that such submission to external authority, like the Bible, would mean "the suppression of thinking, the persecution of investigation, and the silence of some of the best emotions of the heart of man." "A large proportion of nominal Christians would gladly keep things quiet, and secure peace at the price of truth." This is a grave charge, and if brought, under the somewhat indeterminate term "nominal Christians," against those who incur his objurgations for submitting to the authority of the Scriptures, is simple calumny. Where in all history have free and fruitful thinking and investigation flourished, if not in the atmosphere of biblical religion—a religion born of submission to the authority of the Word of God?

"The thorough desire to be right, the steady aim to be right, must accompany every step of our real progress" (pp. 72, 73). Surely. But what is the aim of the incessant iteration of truisms like this, unless on the assumption and implication that those who accept Christianity on "the authority of the Bible" (see p. 73) proceed in disregard of this principle? "The Catechism of Trent and the Westminster Confession admit the same principle of a formal authority commanding a dead acquiescence in certain points as 'revealed,' whether we can think them true or not" (p. 78). We shall not speak for the Catechism of Trent. With regard to the Westminster Confession, we content ourselves

with an indignant denial. Indeed, we think that candid judges will consider Dr. Irons about the last man to say this, if they will compare some Westminster definitions with his *a priori* ones on the same subjects. The Westminster Shorter Catechism says: "Prayer is an offering up of our desires unto God, for things agreeable to his will, in the name of Christ, with confession of our sins, and thankful acknowledgment of his mercies." Says Dr. Irons: "The Christian philosophy first regards prayer as the effort of the conscious being to hold its true relation with the Absolute. If thought is the effort of the 'Ego' to compare himself with reason, prayer is the effort to compare with the Eternal Good the individual attainment of it. The heart and mind of a man in true prayer are thrown on the *a priori* by a mighty inward *vis*, transcending the individual power, which ever projects itself on reason."[1] It may be due to our weakness, but we confess that, while we give a living acceptance to the Westminster formula on this subject, the best we could give to Dr. Irons' is a "dead acquiescence," if even that were possible. Nor can even the cultivated, to say nothing of the uneducated, masses, whose religious views are so degraded in Dr. Irons' estimation, get as much help from his *a priori* description of faith and religion as from these same maligned formularies. He describes "divine faith as a new sense of *a priori*,"[2] and pronounces religion "a solemn sense of the *a priori*."[3] We will not weaken such deliverances by any comment.

Nor will we consume further space with the quotation of passages asserting or implying that they who are concerned to conform their thinking and beliefs to the teaching of God in his Word, are therefore guilty of indifference to the rightness of their thinking and beliefs. Such charges and insinuations obtrude themselves all through not only this article, but other publications of the author having the remotest relations to the subject that have fallen under our notice. But we pass from these to show that Dr. Irons himself is compelled, after all, to concede the necessity of this deference to external supernatural authority, which he so fiercely denounces but cannot escape—nay, which

[1] "The Church of All Ages," by W. J. Irons, D.D. (London, J. Thayer), pp. 351, 352.

[2] Id., p. 161.

[3] Id., Preface, p. xiii.

form such a network in our moral condition and environment that the more he who holds to any God-given religion tries to escape them, the tighter he often draws them about him. He admits in his article that the "prohibitions of conscience" are sometimes "spurious" (p. 87). "No man, after all, is eager to claim intellectual freedom so far as to dispense with *all* authority" (p. 79). He declares that even on such vital questions as marriage, its lawful degrees of consanguinity, polygamy, parental and marital authority—"all these are questions on which natural morality can give but the vaguest possible decision." And though "all these, and countless other and more complicated questions, are involved in the very beginnings of society, and cannot be settled without the religious aspirations and sentiments being regarded and satisfied; and these all belong to the *a priori;*" yet "natural conscience without religion . . . in its least artificial state decides too indistinctly on such questions for its voice to be of use."[1] Nay, he adopts as unquestionable the following deliverance of Cardinal Newman (P. R. Art., p. 85):

"The sense of right and wrong, which is the first element in religion, is so delicate, so fitful, so easily puzzled, obscured, perverted, so subtle in its argumentative methods, so impressible by education, so biassed by pride and passion, so unsteady in its flights, that in the struggle for existence, amid various exercises and triumphs of the human intellect, this sense is at once the highest of all teachers, yet the least luminous. . . . Natural religion, certain as are its grounds and its doctrines as addressed to thoughtful, serious minds, needs, in order that it may speak to mankind with effect and subdue the world, to be sustained and completed by revelation."

He adds the comment, as if some parties questioned or ignored it [who are they?]—"But then it obliges us to own that we are held responsible for right doing by some direct though dim discernment that we possess, and not in consequence of elaborate definitions." But not only does this "dim discernment" of ethical truth require to be "sustained and completed by revelation." Natural religion, or the light of nature, however completed and clarified, could never give us the first glimpse of the Trinity, Incarnation, Divine Redemption in all its parts,

[1] "Church of All Ages," pp. 363, 364.

however it may prove our perishing need of them. The knowledge of all this must come to us by supernatural revelation from God, and be received upon his authority, if at all. It can only be known *a posteriori* from the testimony of God, and all pretence of knowing it *a priori*, by mere force of native *a priori* conceptions, is but *a priorism* run mad. What pretext then remains, after such concessions, for incessant charges against those who obey the revelations and mandates of the All-wise and All-holy God in his Word, of being disloyal to truth and righteousness, to conscience, and to God?

Whatever the motive for all this, it serves to prepare the way for discharging at that evangelical Christianity, which makes implicit conformity to the Word of God the law of its inner and outer life, the libellous caricatures of Clifford and Huxley, prominent among the agnostic materialists of our day. We come then to these portraitures of Protestant evangelical Christianity by which this hierophant of *a priori* righteousness illustrates its alleged superiority. Let us first make sure what it is at which this vituperation is aimed. He frequently applies the term Calvinism to it, a term with which he is very apt to label whatever lies between the ritualism and sacramentarianism of Rome and Anglo-Catholicism on the one hand, and rationalistic scepticism on the other: especially the religion of the great multitude who make the Bible their supreme rule of life, and adopt the maxim that "the Bible alone is the religion of Protestants." These include the great mass of earnest Christians in the middle and humble, with a large proportion of the higher and cultured classes. Thus we find him speaking of "the natural Calvinism of the uneducated."[1] "The popular Calvinism, and the Roman Catholic controversialists of the day, alike slur over the initial truth" alluded to. "To be one of 'the elect,' or to be 'in the true church,' seems, however, the first hope of modern Christians, Protestant or Catholic."[2] "The former seems the modern Calvinian and the modern Roman method. The latter (*i.e.*, as the whole volume shows him to mean, what he regards as the High-Anglican way) is natural, and leads to the supernatural in a right way. It is ethical, primitive,

[1] "Church of All Ages," p. 378.

[2] Id., pp. 177, 178.

and catholic."[1] Such is the author's *usus loquendi*. By Calvinism he means the form which Christianity naturally takes with the "uneducated," in which it actually prevails with the great mass of Protestants. "Calvinism" is the author's contrast with Romanism and High-Anglicanism. This style of speaking is carried out in the article under review, in which by such phrases as "the popular Calvinism," "the popular Calvinism of the uneducated," used synonymously with such phrases as "the uneducated substitute for Christianity which is so fatally spread among the populace," and "the popular substitute for our religion," represented also as that of "evangelicals." The vast sweep of his denunciations is still further decisively evinced when he speaks of "Chalmers' semi-Calvinian representation of Conscience sitting as a queen among our faculties" ("Church of All Ages," p. 208). This is, for substance, Bishop Butler's doctrine. If this is to be condemned as Calvinistic, very little of much importance in ethics and religion will be left outside of Calvinism, which, whatever its merits or demerits, need not fear such attacks. (For the writer's further views of the "Supremacy of Conscience and of Revelation," he must refer those interested to his article on that subject in this REVIEW for May, 1879, p. 671.) Such denunciations strike at the great body of evangelical Christians in the Church of England who embrace its Thirty-nine Articles of Religion, to which the Anglo-Catholic divines, like our author, seldom do honor: the Presbyterians, the Independents and Congregationalists, the Baptists and the Methodists, who are among the evangelicals, and certainly receive the teaching of the Bible upon the authority of God. It will be seen, too, that the caricatures endorsed by Dr. Irons are, for substance, equally applicable to the faith of all these bodies. That the views of evangelical Christians, within and without the Church of England, are identified in the author's estimation and reprobation appears still further from his language in the "Church of All Ages" (p. 47). "A form of nonconformity sprung up within the Church herself, and became known as 'evangelical,' . . . but the church as a body was unable to take up this movement, which chiefly contributed at the time to quicken the sects."

[1] "Church of All Ages," p. 183.

Indeed, Prof. Clifford is quoted as describing "the popular and received theology of Christian communities, as he understands it," in the following abominable caricature, about as near the truth as some disjointed and broken bones of a skeleton, tumbled together in a heap, would be like the complete body in full flesh and blood sustained by and adorning the same skeleton. Quite possibly fragments could be picked out of crude or passionate utterances of controvertists, and polemics, and even higher sources, including the Bible itself, and so jumbled together as to simulate the ghastly portraiture which we regret to be obliged to spread out again on the pages of this REVIEW:

"The condition of men departed this life depends ultimately on the will of a being who, a long while ago, cursed all mankind because one woman disobeyed him. The curse was no mere symbol of displeasure, but a fixed resolve to keep his victims alive forever, writhing in horrible torments in a place which his divine foreknowledge had prepared beforehand. In consideration, however, of the death of his son, effected by unknowing agents, he consented to feed with the sweets of his favor such poor wretches as should betray their brethren and speak sufficiently soft words to the destroyer of their kindred. For the rest, the old curse survives in its power, condemning them for the manifestation of his glory. To the dead, then, if this be the future life, there is left only the choice between shame and suffering. How well and nobly soever a man shall have worked for his fellows, he must end by being the eternal sycophant of a celestial despot, or the eternal victim of a celestial executioner."

Says Dr. Irons: "This, though expressed with a savage venom for which there is no excuse, is the popular Calvinism." He thus endorses its truth, and, in our view, therein shows a "savage venom" far less excusable in the self-proclaimed *a priori* oracle than in the earth-bound materialist. It is the less excusable that it is deliberate and from no sudden impulse. We find the same thing uttered in substance years ago, when he spoke of "some theories of justification unknown to the Christian creeds, and yet unhappily identified with Christianity itself by such writers as Professor Clifford and the author of 'Christianity a Civilized Heathenism.'"[1] This is an incidental sign that the caricature is applied to all those bodies of Christians which have for their basis the doctrine of justification by faith,

[1] "Church of All Ages," p. 389.

the key-note of the Protestant Reformation. Those who wish to see how far elaborate special pleading can be carried to argue "forensic justification" out of the writings of St. Paul, may consult Dr. Irons' "Bampton Lectures," note F, p. 515. On page 272 of the same volume they will find the whole doctrine "of the substitution of the personal goodness of the Saviour for that of the sinner;" of "his atoning death as a mere equivalent of vicarious suffering appropriated by us; that multiform mechanism of sudden pardon *ab extra* presented in so many ways among various Christians" denounced as "crudities so incompatible with the Gospel that it is amazing that any intelligent conscience has ever accepted them." This, however inaccurately expressed, is aimed at the common faith of evangelical Protestants, by whatever name called.

But says Dr. Irons, "The core of this fanaticism lies, however, in its mechanical predestination, which is equivalent to universal materialism, and is easily admitted by the imperfectly ethical multitude, educated or not" (p. 88). The upholders of mechanical predestination and universal materialism, whoever they may be, may defend them as they see fit. We know of none among evangelical Christians, whatever exceptional and sporadic cases may be hunted up. Certainly the Westminster Confession maintains predestination, "so as thereby neither is God the author of sin, nor is violence offered to the will of the creatures, nor is the liberty or contingency of second causes taken away, but rather established" (chap. iii. 1). And we commend to the attention of Dr. Irons, Bishop Ellicott, and Dr. Washburn, who have of late greeted the readers of this REVIEW with their views of Calvinism and predestination, the Seventeenth Article of their own church, which declares "that the godly consideration of predestination, and our election in Christ, is full of sweet, pleasant, and unspeakable comfort to godly persons." Dr. Irons, however, much as he detests predestination, does not seem able to get rid of it, as he confronts St. Paul's utterances about it. He says: "It is He who, as St. Paul's teaching is, 'plans' his world, or, as the word is sometimes said, predestinates. . . . Every intelligent being 'plans' beforehand, that is, 'predestinates.' . . . All predestination, too, implies a consideration of its object; election is moral, but predestination is the

inward act, the special thinking of the mind alone. If we speak of God's predestinating, we can only mean that God, the Supreme Mind, always proceeds according to that which he thinks best, in his government of his universe."[1] On this subject Dr. Irons and the creed of his church sufficiently answer Dr. Irons, not less than the following lines quoted by him:

> "To him no high, no low, no great, no small;
> He fills, he bounds, sustains, and *orders* all."[2]

Perhaps the author finds his Calvinian spectre in the slur contained in Professor Clifford's savage reference to the fall of the race in the Fall of its progenitors. There is no necessity of defending or extenuating the biblical and Christian doctrine on this subject, as held substantially by Calvinist, Arminian, Romanist, or Anglo-Catholic. If it could be wrenched out of the Bible or eliminated from Christianity, this would not destroy the facts still remaining in Nature and Providence, which, so far from being aggravated, are rather relieved by the scriptural account of their origin. Inveigh, if you please, against God for the permission of sin and the unsolved origin and wide domination of evil. The moan of the suffering babe, and the awful prevalence of sin, death, and woe in this world, under the dominion of a righteous and merciful God, still present an enigma which it will require a greater than Professor Clifford or Dr. Irons to solve. But why should Dr. Irons endorse scoffing caricatures on this dread theme? Surely, if they are just against Calvinists and evangelicals, they are no less so against himself. For he declares, "*If* there be a God, *since* there is a God, the human race is implicated in some terrible aboriginal calamity. It is out of joint with the purposes of its Creator. This is a fact, a fact as true as the fact of its existence; and thus the doctrine of what is theologically called original sin becomes to me almost as certain as that the world exists, and as the existence of God."[3] Again, he seems to adopt something like the realistic theory both of the Fall and Redemption. "It is an essential part of all the problems connected both with our

[1] "Christianity as Taught by St. Paul," by William J. Irons, D.D., p. 150.
[2] "Church of All Ages," p. 157. (Italics are ours.)
[3] Id., p. 186.

fall and our rising, that it is with associated man that we have to deal. Self-contained as we are [in so awful a solitude for each of us], yet are we, in our destiny throughout, parts of the great human whole. Our 'nature,' our 'humanity' are no nominal conceptions. None can win our assent to the theory that Human Nature is merely a 'collective term.' . . . All inherit physically a certainty of death, which affects the whole career of life. And there is a moral and social inheritance also. . . . The race of moral beings has a unity of its own, notwithstanding the individual unity of each of its members; and some injury has surely befallen the race, whatever be the share of personal responsibility in every one. . . . So that what has in later time come to be called 'original sin' is but a fact, most reasonably stated in the words, 'By one man sin entered' [for a beginning it must have had], 'and so it passed on to all men,' each adding his own sinfulness." [1] "There was to be as real a union for us with the second Adam as we had by nature with the first Adam." [2]

We leave this caricature of that Protestant Christianity which alone prevails or has life and power with the great body of Protestant religious people, to notice his parade of Prof. Huxley's blind fulmination (it lacks even the semblance of similitude requisite to constitute it a caricature), which wants any sign of being hurled more at Calvinism than Arminianism, or at anything less than all evangelical theology and religion. Says this scoffer in the abused name of science: "Who shall exaggerate the deadly influence on personal morality of those theologies which have represented the Deity as vainglorious, irritable, and revengeful, as a sort of pedantic drill-sergeant of mankind, to whom no valor, no long-tried loyalty, could atone for the displacement of a button of the uniform, or the misunderstanding of a paragraph of the regulations and instructions" (p. 88).

These denunciations by a materialist, as vague as bitter, against, for all that appears to the contrary, Christianity in general, the Prebendary quotes as "another example of the revolt of conscience against the prevalent Calvinism of the uneduca-

[1] "Christianity as Taught by St. Paul," by Wm. J. Irons, pp. 120–1–2.
[2] "Church of All Ages," p. 241.

ted." But he soon shows himself shy and wary, lest the charge he has thus exploded against the religion of so many Christian people should rebound upon himself. He suspects "regulations and instructions" may be meant for the Scriptures, and "uniform" for the Creed. When the Creed is impugned in the least iota, Dr. Irons reminds Professor Huxley that "things that look sometimes very small—*e.g.*, Davy's safety-lamp in a mine—may be important," so important that "no 'valor or loyalty' could atone for" the least breach of regulations about it. He shows doubts of having "caught the whole meaning of the passage." He not obscurely intimates that it is defiled with "scoffing," and that its author resorts to "hinting and mocking." Yet he agrees with Professors Huxley and Clifford that "such 'theologies' as they condemn in these places are abominable." Still he seems not to be quite sure that some part of his own may not be included. In fact, Prof. Clifford was specially intolerant of sacerdotalism.

And now what is the grand finale in which this parade and endorsement of these venomous thrusts at all living Protestant Christianity, beyond one narrow section of his own Church which homologates with him, terminates? What is its outcome? Answer, see page 90. "The position with which we began (section 4) is now made plain, that the popular substitute for our religion is what cultivated conscience rejects." We shrink from using the terms which alone can express our sense of the enormity of this conclusion from premises at once so slender and so false. The premises are the ravings of two distinguished materialists, largely classed as agnostics and nihilists, against the principles of the immense majority of earnest and zealous Protestant Christians—caricatures so gross that even Dr. Irons cannot refrain, while endorsing them, from rebuking the "savage venom," the "scoffing" and "mocking" which defile them.[1] And these are the typical dicta of "cultivated conscience:" proofs that "cultivated conscience" rejects the "religion" of the great body of Christian people, which he branded as not being the Christian religion, by declaring it a "substitute"

[1] Prof. Huxley's attitude is well understood. In regard to Prof. Clifford, W. H. Mallock says (*Contemporary Review*, vol. xxix. p. 172): "No one can

therefor. We recommend to Dr. Irons the application of his own well-expressed principle to his own procedure. "Neither have they [objections] any validity if they are directed against a caricature of our religion, and not our religion itself" (p. 87). We greatly prefer the rectitude fostered by the religion denounced as a "substitute" for Christianity, as tested by its fruits, to which we shall presently ask attention. Still further, notwithstanding these denunciations of it as "uneducated," he declares it to be "easily admitted by the imperfectly ethical multitude, educated or not" (p. 88). After all, then, it seems to be accepted easily by the educated as well uneducated multitude; only, to accept it is evidence of being "imperfectly ethical," not in respect to purity of life or fruitfulness of good works, but some kind of *a priori* standard; which is a poor substitute for them. This *a priori* religionism dominating over the authority of the Bible seems, according to this reasoning, to be the differentia of a "cultivated conscience." It must be narrowed down to this, in order to afford even a pretext for the allegation that the religion he stigmatizes is repulsive to the cultivated conscience and intelligence of our time. There is as large intelligence and as generous culture among its adherents as among its rejecters. *A priori* religionists have no monopoly here.

But suppose it were otherwise. While Christianity furnishes the stimulus and the atmosphere in which intellect, culture, science, and knowledge thrive, so that Christendom is the theatre of their greatest advancement and of the highest civilization of modern times, it is no less true that its chief triumphs have not been in the first instance among the philosophers and *savans*, *a priori* or *a posteriori*, but among the humble and average classes

be more vehement, more positive, more explicit than Prof. Clifford in his denial of any belief in God or in immortality. These beliefs, according to him, are absurd, are groundless, are demonstrably false. He attacks them in every conceivable way, with reason and with rhetoric. And yet, when he touches on the moral side of life, he adopts all the warmth and all the indignation of a religious zealot fighting for the glory of God. In the name of a high morality he calls all faith in the supernatural 'blasphemy' and 'unspeakable profanity.' Like the apostles of Christ, he invokes 'the sleepless vengeance of fire' upon those who do not share his unbelief, but who still 'soil their hearts,' as he puts it, with arguing for their gods, their hells, their heavens—'sickly dreams,' so he calls these, 'of hysterical women and of half-starved men.'"

of mankind, of whose elevation it has been the great lever. While welcoming all converts, and rejoicing in the submission of the wise and noble to its standards, it depends on no man's vote, but on the authority of God its Author. If any people, however cultivated, reject or scoff at it, so much the worse for them. They are so far wrongly cultivated, or abusers of their culture. Let them correct their vagaries and come into accord with eternal truth. God's Word standeth sure, and no earthly or unearthly principalities or powers shall prevail against it. With no contempt of learning on his part, it was the common people who heard Christ gladly. With the exception of the "philosophic apostle," who did so much to develop in the Bible the substance and form of Christian doctrine, unlearned men were chosen to the apostolate by him to superintend the planting and founding of the primitive church. The New Testament abounds in manifold representations of the scorn which the Gospel encountered at the hands of the lofty and philosophic, and of its triumphs among the people. It was to the "Jews a stumbling-block, and unto the Greeks foolishness, but unto them which are called, both Jews and Greeks, Christ the power of God, and the wisdom of God; because the foolishness of God is wiser than men, and the weakness of God is stronger than men." Then, as now, the greatest intellectual pretension and pride often went athwart the track of heavenly wisdom. "Professing to be wise, φάσκοντες εἶναὶ σοφοὶ, they became fools." To this grade does all "cultivated conscience" which chafes against the Gospel come.

We now pass to notice the views on these subjects contained in an article in this REVIEW from one tinctured with decided antipathy to Calvinism and evangelicalism, but of a vastly higher tone than that thus far under consideration. We refer to the paper of Dr. Ellicott, Lord Bishop of Gloucester and Bristol,[1] on "The Anglo-Catholic Movement, Past and Future." He says the "shadows of Calvinism were resting on well-nigh one half of the Church of England," *i.e.*, the half made up of the evangelical party, prior to the publication of the Oxford Tracts and the consequent Anglo-Catholic movement growing out of

[1] PRINCETON REVIEW, September, 1878, beginning p. 612.

it. The religious books put in the hands of youth were, says his Lordship, "tinged with a sub-Calvinistic teaching which chilled and antagonized. There was no sunshine. . . . Nay, no genial teaching of that ever-fresh and ever-quickening gospel story. . . . Religion was sombre and unattractive." Yet, on the same page, the venerable prelate assures us that "of the two great schools of thought, only the evangelical had any degree of vitality," and speaks of its "love for souls," its "enthusiasm and glowing devotion which had breathed again the breath of life into the Church of England in the closing decades of the preceding century." True, he says that all this was dying out in what he calls "those dull and dreary days" (p. 616). But the best evidence we can find satisfies us that this, if not wholly a mistake, is greatly overcolored through the learned bishop's prepossessions.[1] Still he is candid enough to say, while invoking the union of the evangelical party with the Anglo-Catholic in the English Church, to arrest the Romanizing movement so portentous in his eyes, "We do not forget the other great party to which the Church of the Reformation already owes so deep a debt of lasting gratitude. If the great evangelical party had not quickened the Church, there could have been no Oxford movement five-and-forty years ago. Nay, those who most influenced the movement were themselves originally of evangelical prin-

[1] Austerity is no way essential to Calvanism or Arminianism. It is simply characteristic of earnest Christianity, when confronted with abounding iniquity, frivolity, and vice, against which it raises an emphatic testimony by proportionately rigid self-denial. So a kind of Puritanism has been apt to attend every great religious reformation from prevalent worldliness, self-indulgence, and licentiousness. Against precisely this state of things the evangelicals raised the standard, and sounded aloud the trumpet-call to repentance. While severely simple and pure in life, they had more than earthly joys. But no Christians, as a class, are more glad and cheerful than Calvinists. Contrariwise, the austerity of the Arminian Wesley was in some respects extreme. We remember that in our youthful days it was an Arminian congregation that adopted the Quaker costume in contrast to the more fashionable attire of Calvinistic congregations on the same town-square. Says Canon Wilberforce: "Cowardice in the service of Jesus is the most insidious of all evils, because it so soon takes to itself some fair name and aspect, calling itself freedom from prejudice, emancipation from prudery, reaction from Puritanism; because when it inspires the fashionable world, it gains fresh might and power every day, until it eats at last the whole heart and life out of religion, leaving only its husk and its mask."

ciples, and owed perhaps all their future influence to that depth of personal religion, and that adoring love of a personal Redeemer, which they had attained to when under the teaching of a very different school of Christian thought. The great evangelical party can never be overlooked in any estimate of the vicissitudes of the church of the future" (p. 638). "The High Church party, on the other hand, has begun to appreciate and to apply that warm, personal, and individualizing ministry of Christ crucified to each sin-laden soul, which has so long and so blessedly characterized the teaching of the best days of the evangelical movement" (p. 640). "The evangelical party, by the blessing of the Holy Ghost, had almost exclusively in the past fifty years sustained the holy and blessed work of the revivification of the Church of England. They had brought back life; they had made salvation to be felt as something real and individual; they had rendered the Redeemer's own vital words as to personal conversion a deep subjective conviction and reality; they had been as the life-bearing wind that had swept over the dry bones of the valley—all this they had been, and may they be forever blessed and honored for this work" (p. 618). The bishop's "shadows of Calvinism," which darken the beginning of his vivid picture of the evangelical movement, vanish under the glow of Christian life and fruitfulness, in which his candor leads him to set forth its actual workings. We shall notice Dr. Ellicott's High Church sacramentarianism in connection with Dr. Irons' views of that subject. Meanwhile, we propose to corroborate our estimate of that type of religion, by decisive testimony of witnesses who are not its adherents, against which the Prebendary has hurled the poisoned shafts of Clifford and Huxley.

In an article on the evangelical movement in the *British Quarterly Review* for July, 1879, Mr. Gladstone, after finding its originators in Wesley, Whitefield, Hervey, Berridge, Romaine, and Toplady, who, unlike Wesley, had decided leanings towards Calvinism, says, not untruly: "The points in which the evangelical school permanently differed from the older and traditional Anglicanism were those of the Church, the Sacraments, and the forensic idea of justification. They are not, in my view, its strong points. . . . That the preaching of the Gospel a

hundred years ago had disappeared, not by denial, but by lapse, from the majority of Anglican pulpits, is, I fear, in large measure, an historic truth. To bring it back again was the aim and work of the evangelical reformers in the sphere of the teaching function. Whether they preached Christ in the best manner may be another question; but of this there is now and can be little question that they preached Christ; they preached Christ largely and fervently where, as a rule, he was but little and but coldly preached before. And who is there that will not say from his heart, 'I therein do rejoice, yea, and will rejoice'?"[1] Again, although Mr. Gladstone is trying to prove Mr. Lecky's estimate of their influence exaggerated, he concedes that in activity and moral influence they counted for a good deal more than their numbers. "The vessels of zeal and fervor, taken man for man, far outweighed the heroes of the ball-room and the hunting-field, or the inert, half-animated minds, and perfunctory performers of a minimum of stipulated duty, who supplied so considerable a number of the clerical host."[2] Again, "it was common, in my early days, for morality to be taught without direct derivation from, or reference to, the Person of Christ."[3] He declares that "the pith and life of the evangelical teaching, as it consists in the reintroduction of Christ our Lord to be the woof and warp of preaching, was the great gift of the movement to the teaching Church, and has now penetrated and possessed it on a scale so general that it may be considered as pervading the whole mass."[4] Whatever its faults, he declares evangelicalism to have been "born to do a noble work, and that the men, to whose hands the work was committed, were men worthy of this high election. Further, in respect to its vivifying and restoring influences, that work is one as permanent as the Gospel; for it is no more or less than an effective inception, if not a full development, of the restoring agency by which the Gospel restores our weak and defaced humanity to more than its ancient beauty. . . . It may also be that a more or less pronounced evangelical school is still required for the general religious welfare of the Anglican Church, in order to maintain, if only by an emulation as between

[1] *British Quarterly Review*, July, 1879, Am. ed., p. 3.
[2] Id., p. 4. [3] Id., p. 8. [4] Id., p. 9.

the men of Apollos and of Paul, the vigor and activity in the Anglican body of those 'doctrines of grace' without which the salt of Christianity soon loses all its savor." [1]

Mr. Lecky, in an article in the *Nineteenth Century* (August, 1879), defends still stronger statements, which he had made in his History, of the power of the evangelical movement, against certain criticisms of Mr. Gladstone in the article from which we have already quoted. He is well known to be far enough from any evangelical bias or sympathy. The reader will please note that by evangelicalism he understands that sort of religion, in and out of the Anglican Church, which is earnest in bringing men to faith and newness of life, through the blood of Christ, and regeneration by his Spirit, whether Calvinists, Arminians, or neither. He speaks of it as the "religious revival which began with the writings of Law, found its first exponents in the Wesleys and Whitefields, and which Grimshaw, Berridge, Newton, Romaine, Joy, Venn, and the other leaders of the evangelical party carried over the length and breadth of England. These men and their colleagues gradually changed the whole spirit of the English Church. They infused into it a new fire and passion of devotion, kindled a spirit of fervent philanthropy, raised the standard of clerical duty, and completely altered the tone and tendency of the preaching of its ministers. Before the close of the century the evangelical movement had become dominant in England, and it continued the almost undisputed centre of religious life till the rise of the Tractarian movement in 1830." [2] While Mr. Lecky concedes, in response to the criticisms of Mr. Gladstone, that the word dominant is not happily chosen, and adds that "the ascendancy of evangelicalism in the Nonconformist bodies Mr. Gladstone has not disputed, . . . I must still maintain that at the close of the eighteenth century the evangelical movement had not only fully developed its principles and its powers, but had become, both in Nonconformity and in the Church, the chief centre of religious activity in England. . . . By the end of the eighteenth century the evangelical party had attracted to itself nearly all the fervor, the activity, the spirit of relig-

[1] *British Quarterly Review*, July, 1879, Am. ed., p. 13.
[2] *Nineteenth Century*, August, 1879, p. 280.

ious propagandism and of religious enthusiasm that was circulating in the community" (pp. 280, 281).

He proceeds to prove this by a variety of incontestable facts, such as the prodigious growth of a religious literature from the pens of evangelical authors, which superseded the works previously in vogue, and became the "chief religious reading of the middle and lower, if not of the higher, classes in England." The figures and facts on this subject, produced by him, are simply prodigious.

He justly observes that "few things reflect more clearly the deeper devotional feelings of an age than its hymns, and in hymns the last part of the eighteenth century in England was peculiarly rich. The names of Toplady, Cowper, Madan, Newton, and Charles Wesley will at once occur to the reader. All these were ardent evangelicals; all of them were members of the Anglican Church" (p. 282).

This view of the hymns in favor with bodies of Christians is equally just and profound. It has a much wider reach than he has given it in regard to some charges against the popular religion, whether formulated in Arminian or Calvinistic theological dogmas, with which we have had to deal in this article. The favorite hymns of a communion, and not the strained inferences and imputations of angry polemics, most truly express the manner in which their respective creeds are practically accepted and made operative in the inner life of their adherents. Tried by this test, how are the dismal "shadows," which the supporters of different types of evangelical theology sometimes see in their own distortions of opposing systems, swept away by those hymns of faith, hope, love, resignation, adoration, exultation, which voice the inmost thought and feeling of all true Christians of whatever name? And what a comment is this on all exclusiveness *a priori* and *a posteriori*, when we find the hymns composed by those against whom they vent their bitterest prejudices eagerly appropriated, to express the glad outpourings of their own souls to God, and their most vivid and delighted conceptions of divine truth! Herein we find the strongest proof of the real unity of all the people of God, the whole communion of saints, no matter into how many folds divided, or by what bars of exclusion hindered from visible fellowship with

each other. In this matter no church can say to any other, "I have no need of thee." No satisfactory hymnal can be made up for any one Christian denomination that excludes the choice hymns produced in other communions. We have seen a Roman Catholic book of devotion enriched by Protestant hymns. The collections of the most sacramentarian and ritualistic religionists are always enriched with hymns by evangelicals and dissenters, and *vice versa*. We attended three successive funeral services in Protestant Episcopal churches in which the hymn of Toplady, a great Calvinistic polemic, "Rock of Ages, cleft for me," was most appropriately sung. What collection can do without that sweet song of Muhlenburg, "I would not live alway, I ask not to stay," or that of Dwight, "I love thy kingdom, Lord," or the hymns of Doddridge, Watts, and others of all ages and communions, of Churchmen High and Low, and of evangelical dissenters? We quite agree with Mr. Gladstone when he says: "This very remarkable 'communion of hymns,' so to call it, which now prevails throughout the land, is in truth one among the consolatory signs of the great amount of religious unity still subsisting, though amidst many and even important differences, in this nation" (p. 13). It is along the line of experimental and devotional feelings and utterances, and not of dogmatic controversy (although we are the last to undervalue dogma in its proper place and function), that, in the words of one of the inimitable hymns just referred to, "The saints of all ages in harmony meet."

Mr. Lecky proceeds to prove his position, by citing the great Societies for the Propagation of the Gospel and the Reformation of Morals and Manners originated and supported by the evangelical party. The need of the restoration of the religion embodied in the Articles and with slight exceptions, the Liturgy and Homilies of the Church of England, effected through the evangelical movement, is evident enough from the prevalence of frigid scepticism indicated by Bishop Butler, in his advertisement prefixed to his Analogy, and, making every allowance for possible misunderstanding and exaggeration, from the following statement of Mr. Lecky (p. 284):

"Blackstone relates that early in the reign of George the Third he went from church to church to hear every clergyman of note in London,

and did not hear a single discourse which had more Christianity in it than the writings of Cicero, and that it would be impossible for him to discover from what he heard whether the preacher was a follower of Confucius, of Mahomet, or Christ."

All this is confirmed by equivalent testimonies from Addison, Montesquieu, Sir James Stephen, and Canon Ryle, which want of space compels us to omit. (See "The Later Evangelical Fathers," by M. Seelye, p. 12.)

Further vindication of what has been stigmatized by one—we must hope exceptional—dignitary of the English Church as a "popular substitute for our religion" is superfluous. We must now pass from what he denounces to what he espouses as an "enlargement of the *a priori*."

In the article under review he uses the following language:

"The great advancing power of Christianity lay at first in baptism, which demanded moral preparation, and in the sacrament of Christ's body and blood binding men together for 'eternal life.' The intellectual distinction, or 'belief,' of the Christian community came from these two rites; which again issued in the 'Creeds,' and the same faith was educated by the Peschito Scriptures in the East, and by the Itala in the West; supplemented by the care of Origen and Jerome. Having these—the divine sacraments, creeds, and scriptures—a threefold supernatural growth, the Church, of course, asserted herself outwardly the 'pillar and ground of the truth.' But there was also the work of the interior life, which went on in individual moral agents, and constituted everywhere the indestructible essence of Christianity in man. Ages moved on, but with no definition of the canon, or of its inspiration, or of the atonement of Christ, or of the work of God's grace in man's moral nature, or of other and more numerous points, the correct confession of which men often consider 'necessary to salvation'" (pp. 93, 94).

Elsewhere he tells us that "to the authority of the historical creeds, sacraments, hierarchy, and scriptures, a true return must first be moral."[1] "We received it from our fathers, when they accepted that pre-Reformation Christianity to which I would now ask attention. Our reformers did not affect to proclaim a new Gospel. They took, as I may say, even the organized framework of existing Christianity—Bible, hierarchy, sacra-

[1] "Church of All Ages," p. 201.

ments, creeds." [1] "No theory, however, can evade the conclusion that we have in the creeds, the sacraments, and the hierarchy of Christendom the actual historical 'outcome' of the 'Word made flesh and dwelling among us.'" [2] "AND NOW, and in my last hour, I would cast my lot with the saints of the 'church of all ages'—their creeds, their sacraments, their worship, their hierarchy, their 'GOD with us.'" [3] In the title-page of "The Church of All Ages," he describes its contents as "Four Addresses on the Christian Revelation." His dedication of it reads: "To his Grace the Most Reverend Archibald Campbell, Lord Archbishop of Canterbury and Primate of all England, this volume is dedicated with his permission—not as implying his Grace's approval in all things, but his recognizing the always acknowledged place in the Church of England of those who loyally adhere to the historic Creeds and Hierarchy of Christianity." The Primate of all England will take good care, we are sure, not to give his imprimatur to the Prebendary's *a priori organum*. But from the foregoing passages, as well as many others, in which he strives to minimize the legitimate scope of the Reformation, and the extent of the change from the "pre-Reformation" basis wrought by it in the English Church, we infer that he maintains the highest views of the efficacy of the sacraments, with the limitation of that efficacy to the hierarchy descended by unbroken, actual succession from the apostles—a hierarchy which constitutes the only lawful ministry ever dreamed of by the Oxford Tractarians, or the Anglo-Catholic party in the English Church which has grown out of it; has furnished such large recruits to the Romish Church; and which, according to Bishop Ellicott's article, unless present tendencies are arrested, will continue to furnish them in alarming abundance. In truth, the impression given us by such of the Prebendary's writings as we have seen, is that he has a hundred points of sympathy with the historic Romish Hierarchy and Church to one with Protestant bodies outside of the Anglo-Catholic party, of the Church of England, and that his strongest repulsion from Rome springs from its recent dogma of Papal Infallibility, which leaves no place for *a priori* Chris-

[1] "Church of All Ages," p. 248. [2] Id., p. 308. [3] Id., p. 315.

tianity. Submission to this seems to him a crime no whit less or greater than submission to the Scriptures as infallible. Scriptures, creeds, sacraments, hierarchy, are apparently placed in the same category as constituting revelations from God, of like authority—at least when duly interpreted, and sanctioned by the requisite *a priori* tribunals. We, too, cast in our "lot with the saints of the 'church of all ages,' their creeds," not as of co-ordinate authority with the Scripture, but because, according to the Eighth of the Thirty-nine Articles, "they may be proved by most certain warrants of holy Scripture;" with "the sacraments," also, because (according to Articles XXVII. and XXVIII.) they are full of spiritual benefit to those who receive them "rightly, worthily, and with faith;" their worship, too, when "in spirit and in truth." But we do not see our way to submission to any "hierarchy" which does not teach the truth of God and administer discipline in accordance with it. Dr. Irons' idea of the efficacy of baptism is intimated when he speaks of the "saints who baptized to the Trinity whole nations, 'born in a day'" (Id., p. 317).

Bishop Ellicott, in the article already referred to, in sharp contrast to Dr. Irons, lifts up the Bible as "speaking to all hearts, telling clearly its divine truths to all that had ears to hear—the Bible of Protestant Christendom to which all might confidently appeal, the blessed, fresh, and living Word that to the humble spirit was its own best and truest interpreter." He rebukes those who made it "rather the book of the Church," which "could only be profitably read and truly understood under that specially accredited guidance" (pp. 627, 628). In this and various respects his article is of a much higher tone than that of Dr. Irons. But his Lordship warmly approves the Oxford Tract movement in respect to three features which he contends originally characterized it: 1. "That sacraments, and not preaching, are the sources of the divine grace. 2. That the true efficacy of the sacraments depends on the rightfulness of the commission of those that administer them, or . . . the 'apostolic succession'—the apostolic commission of the bishops, and under them of the presbyters of the church. . . . 3. Fixed and unwavering opposition to the teaching of the Church of Rome. 'No peace with Rome' was at first the watchword of the party"

(p. 622). Of the two first principles he observes "that they are liable to, and now suffering under, great exaggeration."

Of the last principle, in the bishop's estimation so necessary to balance and render safe the other two, he says: "In a few years it had become utterly obscured, and had given way to the sinister influences which from the very first had mingled with the Tractarian theology. . . . The influences to which we allude were all essentially anti-Protestant. . . . Their true representative was Hurrell Froude. . . . His opinions, says Dr. Newman, arrested and *influenced me*, even when they did not gain my assent. He professed openly his admiration of the Church of Rome, and his hatred of the Reformers. He delighted in the notion of an hierarchical system, of sacerdotal power, and of full ecclesiastical liberty [*i.e.*, freedom from state control]. He felt scorn of the maxim, 'The Bible, and the Bible only, is the religion of Protestants;' and he gloried in accepting tradition as a main instrument of religious teaching. . . . He had a deep devotion to the real Real Presence, in which he had a firm faith. He made me to look with admiration to the Church of Rome, and in the same degree to dislike the Reformation. He fixed deep in me the idea of devotion to the blessed Virgin, and he led me gradually to believe in the Real Presence" (pp. 623, 624). Dr. Irons refers to this Mr. Froude and his modes of thinking in Oxford in terms of great respect as being "very suggestive."[1] Mr. Gladstone says, in the article already referred to: "The disposition of the Tractarians—may it not be said their besetting sin—was to undervalue and disparage these same reformers: a disposition of which, in the case of the 'Remains' of R. H. Froude, published by two of the authors of the Tracts, we have a glaring if not almost a scandalous instance" (p. 9).

We sympathize profoundly with the learned and pious prelate in his desire to eliminate Anglo-Romanism from the Anglo-Catholicism which took impulse and shape from the Oxford Tracts. But we should be uncandid if we disguised the fear, that the two first doctrines of the Oxford Tract school

[1] "First Hundred Years of Christianity," by Rev. Prebendary Irons, D.D., pp. 7, 8.

which he espouses, viz., that grace comes not from preaching but from the sacraments, and these only when administered by a clergy deriving their commission in the line of uninterrupted official succession from the apostles through the hierarchy of the Latin Church, will sooner or later part company with the third—opposition to Rome. They have about as much affinity for it as materialism has for idealism. There is a momentum in the first two principles which is constantly counter-working and severing in the English Church all the ties, hereditary, social, domestic, which so strongly bind men to the church of their nativity and nurture.

We here pause while unuttered thoughts still crowd upon us. We could not say less without being derelict in duty to the faith by which we live, the Saviour we trust, the God we adore, his Word to which we bow, and that vast portion of the communion of saints whose holy living and dying are the best refutation of all charges against them or their religion.

LYMAN H. ATWATER.

BIMETALLISM.

IT has been made a ground of reproach against the professional economists that they have not exerted themselves sufficiently to expose the fallacies of bimetallism, but have been contented to pass it by in contempt. Especial point has been given to this reproach by the observation that a great many persons have only resisted bimetallism by a kind of sound instinct. This instinct does not furnish rational ground for conviction, and many such persons have therefore either wavered or been disturbed in their allegiance to sound doctrine. It belongs to the scientific economists, it is said, to show, upon due analysis of the question, wherein the fallacy lies, and to give rational grounds for sound doctrine.

It is not worth while to mention the reasons or the excuses for the neglect to which this complaint refers. If an economist should undertake to expose and combat all the fallacies which gain more or less acceptance, he would not have time for anything else. In the present instance there are more narrow and peculiar difficulties. If one attempts to refute the whole silver doctrine in all its forms, one must demonstrate a sweeping and general negative. If one attempts to select and refute a single form of the error, he will find that no writer on that side of the subject has stated his opinions and doctrines in a form upon which issues can be joined, and a scientific discussion carried on with any prospect of satisfactory results. He will be compelled to argue both sides at once, to put the adversary's case in shape for him before discussing it, and, if he attempts this, he is sure to be entangled in endless charges of misrepresentation and misapprehension. For instance, one writer adopted the term "concurrent circulation," and gave it frequent and current use to

express his doctrine and aim. I thought the term well chosen to express the writer's idea as I understood it, and it seemed to me that here was an idea so clear and precise that we could join issue upon it, make an analysis, undertake verification, and so refute or demonstrate, which is what I understand by discussion, and not the heaping together of statistics, historical facts, and authorities. In a later publication, however, the same writer says: "The concurrent use of the two metals, side by side, in the same market is a matter wholly of indifference." We have then this proposition: The bimetallists want a concurrent circulation, but it is matter of indifference whether it be concurrent. There is here, then, no proposition to discuss, but only an illustration of the vague and loose thinking upon which the whole notion of the bimetallists is constructed.[1]

I. What I propose now to treat is bimetallism as it is popularly, however vaguely, believed in in the United States, as it is partially adopted in our legislation, and as it was expressed in the Act under which the Silver Commission was sent to Paris. The appearance of the Report of this Commission[2] furnishes the occasion and the means for examining this notion.

It was provided in the Act known as the Silver Bill that the President should invite the governments of other nations to join in a conference "to adopt a common ratio between gold and silver, for the purpose of establishing internationally the use of bimetallic money, and securing a fixity of the relative value between those metals." The legislators who enacted this assumed and believed that there was no impossibility, in the nature of things, in uniting two metals in the circulation at a fixed ratio of value; they believed that, this plan being debarred by no natural impossibility or absurdity, its expediency could be resolved upon in a conference, and that the means by which it could be realized was an international agreement of the chief commercial nations. I understand that these opinions are held more or less distinctly by all those who are popularly called silver men amongst us. I take issue upon both the points involved.

[1] Mr. Horton uses the term "concurrent circulation" constantly in his essay appended to the Report mentioned below.

[2] Senate Executive Document No. 58, Forty-fifth Congress, Third Session. References to "Report" refer to this document.

1. The first raises a scientific question: Is the notion that two metals can be joined in the coinage at a fixed ratio, by any human device or artifice whatever, true in science? I answer, No; it is just as false as the proposition, A perpetual motion is possible, would be in mechanics. This is certainly the first issue to be settled in regard to the silver controversy as between educated men; but the bimetallists have always slurred it over. At Paris, Count Rusconi did indeed recognize the primary importance of this question in the first session, but much contempt was expressed for the "academic" question, and there was great eagerness to be "practical" and to go on to the "practical" question. This is, indeed, the course of the "practical men," so called. They are impatient of the dogmatism of the professors, who say a perpetual motion is impossible, and insist on going on to consider the great practical advantages which would accrue *if* a perpetual motion were possible, and then, because they think they see such advantages, they go to work to construct the machine. The answer is, that if a perpetual motion, or a bimetallic circulation, were possible, this would not be the same world it is now. It might be a better one, but surely any practical man, in the correct sense of the word, will inquire whether there is any insuperable obstacle, in the nature of things, to the object he wishes to accomplish, before wasting his time upon it. If this is not so, what we call education is a pure waste of time. I had supposed that it was understood and agreed, amongst educated men, that the chief end of studying the sciences was to acquire that training by virtue of which we recognize the relations of man to nature, and the limits of human action.

The inference to be drawn from the importance and true position of the scientific question is not that that question ought to have been discussed in the Conference. Far from it. That was no place for such a discussion. The inference is that the Conference was *ab initio* an absurd and senseless undertaking. The requisite antecedents of any joint action of nations are, (1) that all scientific questions involved shall have been maturely discussed by scientific men until a substantial unanimity of conviction has been reached as to what is true; (2) that these convictions shall have been dogmatically taught in books and

periodicals until they have become interwoven with the stock of convictions and faiths of the mass of civilized men; (3) that general opinions as to what it is expedient to do should, by necessary inference, have come to be held by all civilized men. When these conditions are fulfilled it is, of course, found that, for almost all cases, private contract, custom, or the independent legislation of individual states, concurring because proceeding from commonly accepted principles, answers all the purpose. The field for international conventions has therefore hitherto been restricted to postal conventions (common regulations for conducting a form of business which is monopolized by governments, but in which they act like the managers of any other business), or conventions on points of international law (in which the aim is to do justice to humanitarian sentiments wnich have become universal). The difficulty of these latter conventions, even, is instructive for the nature and limits of international conventions, and the history of the Latin Union, as an isolated effort towards international action for other purposes, is certainly a warning and not an encouraging precedent. When, however, the action proposed involves scientific truth, and yet all the necessary conditions precedent are passed over unfulfilled, the proceeding is devoid of sense. It could only have the form of sense if the object were to supersede scientific discussion by action and force—the fallacy of the ecclesiastical councils. The scientific question belongs where I now undertake it: in the forum of academic discussion.

We have then one issue joined; I propose to show that a bimetallic circulation is as absurd and impossible as perpetual motion, so that a convention of the whole human race could not realize it.

2. The second assumption in the Act above quoted relates not to a scientific truth, but to a point of expediency and practicability. It is assumed that an international coinage union, combining and binding the members to a certain programme of action, is a practicable scheme, and needs only a certain degree of consultation to be realized. I shall maintain that such a coinage union is absolutely impracticable. The bearing of this is not directly upon bimetallism, for that is disposed of when it is shown to be absurd, but the coinage union is an element in the

scheme properly known as the alternate or alternative standard. These two schemes, when tested and weighed from the scientific standpoint, are of totally different character and value, as I shall show further on. The question about the alternate standard is a question of expediency and practicability in the main, although it also involves considerations of rights and justice. The difference is that between a perpetual-motion machine and an ordinary machine invented to meet a certain purpose. As to the latter, the questions may be raised whether it will work so as to do what it is made to do, whether it will pay, whether it is dangerous, etc., but if one or all of these questions were decided adversely to the machine, it would still not be an abomination in mechanics like a pretended perpetual motion. The parallel holds in the case before us. The alternate standard is inexpedient for a variety of reasons, and it is impracticable because it involves the necessity of an international coinage union, prescribing regulations and dictating action to its members, and such a union is impracticable. Still the alternate standard involves no scientific absurdity. I therefore join issue, secondly, on the question of the practicability of the coinage union.

II. Before entering upon the subject-matter, a word of explanation is necessary on a certain point. If a monometallist means a man who urges that all nations ought to use gold money, I know of no such person in the world. It is one great error of the bimetallists that they assume to know and judge what money all the world ought to use. No one can reach any such judgment, on the one side or the other, who uses correct processes in the investigation of economic truth. Every nation ought to use just that money which, in its own judgment, its interests and convenience dictate. The economist has to note what course nations pursue under this motive, to study the consequences, interpret the phenomena, and deduce the inferences which are presented to him by the facts themselves. For myself, therefore, I have always repudiated the name Monometallist as a sectarian name, which no scientific economist would be willing to bear.

III. The historical facts bearing on bimetallism and kindred topics have been collected with great zeal during the last few years, but they have rarely been interpreted with the simple

fidelity and loyalty just described. Let us recapitulate as briefly as possible, in their chronological order, the facts which are here of importance.

A. The attempt to use two metals together has been kept up from the earliest use of money to the present time, and has constituted a problem in money. It was deemed necessary to use two metals, but no means has ever been devised for using two which has not failed, besides producing confusion, loss, injustice, and commercial distress. In 1717, still essaying to solve the same problem, the English guinea was rated at 21 silver shillings. It was not worth that amount, and so became the cheaper medium, and the standard of prices and credits. The good silver coins were melted, and those which remained were clipped so as to be worth less than $\frac{1}{21}$ of a guinea. After the clipping once began, it went on from worse to worse, as always under the same circumstances, but the need for "change" kept the silver coins afloat. After the middle of the century the depreciation became so great that it led to a clipping of the gold coins also. In 1773 silver coins were made legal tender for no sums over £25, by weight, at 5*s.* 2*d.* per oz. In 1785 France adopted the ratio of 1 to $15\frac{1}{2}$ in a reformation of the coinage, as another attempt to hit the true ratio and keep the two metals in circulation. In 1803 the same ratio was ratified. The French law of 1785–1803 was therefore no new or special solution of the coinage problem, but only another attempt such as those which had been made before. Under the operation of this law, France used silver as a standard until the middle of the century. In 1816 a new coinage system was adopted in England which really accepted and put into a system the state of things which had grown up by custom during the last century—single gold standard, with silver subsidiary depreciated coins, limited in amount, and limited legal tender. It was from a study of the phenomena produced during the previous century by the operation of the laws of trade upon the legal system that the English statesmen were led to this system. The law, therefore, followed custom and the laws of trade, and did not attempt to coerce them. The sovereign now became a money of moneys, *i.e.*, other moneys and currencies were common denominators of value within certain local limits. When a sec-

ond common denominator was wanted to connect the operations of these local areas with each other, the sovereign met the need. That English money and English commerce thus mutually sustained each other was only an illustration of the principle that good institutions support prosperity and prosperity supports the utility of good institutions. The connection between them is organic, not mechanical. In 1834 the United States passed a new law for a coinage of two metals, but purposely rated the metals so as to get gold. In 1853, having obtained a gold standard by the operation of the law of 1834, they reduced all the silver coins except the dollar to a subsidiary condition, and introduced the English system. In 1853–4, by the fall in gold, France, under the operation of her law, became a gold country. She was burdened with the expense of the change from silver to gold, but this was regarded as a slight price to pay for a change which was opportune to her interests. In 1865 the Latin Union was formed. The nations composing it adopted the French law, and became like France, by the operation of that law, gold countries. In 1867 an International Monetary Conference was held, at which it was proposed to establish, by agreement, what existed in fact—the use of gold as a standard amongst the nations represented. After the formation of the North German Confederation in 1867, an event which to a certain extent met the German aspirations for political unity and national standing, it was felt that one of the greatest obstacles to the realization of the further hopes of commercial and industrial greatness lay in the currency of the country. The standard was silver. The coins were cumbersome. The small coin was, much of it, base billon. The bank-note currency also required reformation. After the war of 1870 and the formation of the empire, all the motives for a currency reform were increased in force, and when such reform was undertaken, all the considerations which had weight dictated that it should be carried through to the adoption of the gold standard. The Scandinavian nations followed the example of Germany. In 1873 the United States codified and simplified their coinage laws according to the existing laws and customs of the country, and according to what would best serve the interests of the country when specie payments should be resumed. They struck the silver dollar from the list of coins

which the mint was permitted to coin, on which list it had stood as an idle and unused permission, and brought the United States to the simple gold standard with subsidiary silver. In 1873 silver began to fall by important steps. The operation of the French law would now have taken away gold and given silver to the Latin Union. The movement in this direction, however, was far differently welcomed from the contrary movement of 1853. The Latin Union refused to give up a gold currency and take silver, and undergo the loss of sustaining silver besides. It closed its mints against silver, and the "double standard" ceased to be.

1. Any one now who reviews this series of historical facts, not in order to interpret them by some ulterior design assumed to have existed,[1] but for just what they are, will see that there was no ulterior design, no set purpose, no agreement or combination, but that each nation acted as its own interests dictated, and that the concord of action and general tendency towards the adoption of gold on the part of all the great commercial nations, substantially in the order of their commercial importance, constitutes one of those great historical movements which are not to be criticised or corrected, but which impose upon the student the convictions which he is to adopt.

2. It is plain from a correct statement of the facts that the action of Germany in demonetizing silver was by no means arbitrary. It had the fullest motives and occasion in the state of that nation, and its interest and convenience.[2]

3. The action of the Scandinavian nations was not arbitrary or destitute of motive. The movement towards gold was now so far advanced that the small nations were forced to join it in self-defence. The last to join it would be loaded with the discarded silver, and would have to endure a large part of the total loss upon it. This is only an illustration of the rapid impulse with which such movements finally complete themselves, when the forces have acquired momentum.

4. The action of the United States in 1873 was guided by

[1] Mr. Horton (Report, p. 240). Mr. Horton speaks (p. 745) of the "partisans of gold and persecutors of silver."

[2] The argument of Gen. Walker before the Conference was based upon the assertion that Germany's action was arbitrary. See Report, p. 74.

previous legislation, custom, fact, convenience, and the interests of the country, as they then appeared, and, so far as any evidence has ever been brought forward, by nothing else.

B. We come now to the latest incident in this historical development—a case of action which was indeed arbitrary and destitute of motive. The United States were in currency trouble of their own, serious enough and difficult enough, in itself considered, but they enjoyed, from the suspension of specie payments, one incidental advantage. They had no part or lot in the silver difficulty.[1] They had no stock of silver on which to suffer loss. Their laws were in proper shape to secure resumption on the best system of coinage yet devised. They had time before them. They could wait for developments and take advantage of any state of affairs which might arise, without taking any speculative risks at all. Mr. Horton thinks the United States had a great interest because the demonetization of silver made resumption harder. Resumption on silver would have been easier than resumption on gold, just as resumption would have been easier if the gold dollar had been reduced ten per cent in weight, and not otherwise. In this state of things, then, the United States wilfully plunged into the silver difficulty, and, moreover, came forward to tell those who were in silver difficulty how to get out, and volunteered to lead the way. All the other nations represented at the Conference had an interest in the silver problem, but all refused to act, with the possible exception of Italy. The United States had no interest, but nevertheless took action. As a consequence, this nation now has thirty million dollars of capital invested in silver, which is lying idle and cannot be disposed of without loss. This sum and a large amount in trade dollars have been retained at home as a new element of disorder in our currency, instead of following their natural course to the East. If the advocates of free coinage for silver had had their way, we should also have received thirty or forty millions in silver instead of the same amount in gold received this Fall. Mr. Horton is of opinion that this was a noble ac-

[1] I suppose it is necessary to say that the interest of American silver producers was no interest of the United States. The iron producers were in worse trouble than the silver producers, but no one proposed that the nation should expend capital to "bull" iron.

tion, on the part of the United States on behalf of mankind in general, which has rarely been paralleled. It was, in fact, a piece of national Quixotism which has no parallel in history. The same writer quotes this action as an exception or offset to the uniform tendency of the historical events above cited, but its arbitrary and unfounded character rob it of any force for such a deduction.

IV. It is impossible that I should, within the limits of the present article, review and criticise the points raised at the Conference. Two or three of the chief of them here demand brief attention.

1. The American delegates began by slandering the legislation of their country, and it was left for a foreigner to show (1) that the historical facts about the legislation of 1873 were incorrectly stated by the American delegates, and (2) that the United States are a constitutional country, not ruled by plebiscites, and that we cannot plead ignorance on the part of "the people" against legislation constitutionally adopted. Gen. Walker endeavored to sustain the allegations of his colleague by saying that he, although a professor of political economy, engaged, at the time, in lecturing on money, did not know what was going on. It does not appear that this argument elicited any reply. Perhaps it was thought that its force all lay in the recoil, and some wonder may have been excited whether all American economists would have been obliged to say the same. The fact is that the Act of 1873 so simply enacted the existing law and facts that no one attributed any importance to it.

2. The chief reasons adduced for the action proposed by the United States were vague and undefined terrors of consequences from the historical movement we have described. It was alleged that half the money in the world has been cancelled. This assertion has no foundation in fact. The amount demonetized is just exactly what has been demonetized, viz., the amount of silver held by Germany and the Scandinavian States, and to this there have been important offsets. In the first place, there has been the production of gold since 1873, which, according to Soetbeer's calculations,[1] must have averaged one hundred and

[1] *Edelmetall-Production* (*Petermann's Mittheilungen, Erg. Heft* No. 57, p. 112).

twenty million dollars per annum. In the second place, all the silver five-franc pieces in existence have been added to the stock of "money." Before the fall in silver they were worth more than gold and were merchandise. Since they fell to an equality with gold (below it in value; held equal by limitation[1]), they have been available as money. It would be very difficult to show that, comparing 1879 with 1873, there has been any contraction whatever of the metallic money of Europe and the United States. The expansions and contractions of paper money in Europe and North and South America, within twenty years, have had far greater influence on credit and prices the world over than the changes connected with silver.

3. The fear was also expressed that the adoption of gold would destroy the par of exchange with silver countries, and it was urged that the bimetallic system would furnish a "normal" par. What is the "par" of exchange? Exchange is a ratio between two quantities. How can the ratio between two quantities be "destroyed" so long as the quantities exist? The par of exchange is an entirely imaginary mean-line between fluctuations which are constant, and it has no importance except for the academic explanation of phenomena. We can make a "normal" par any minute; $4.44=£1 is as good a par as any. The sovereign and the dollar may then each of them be gold, silver, or anything else; their values will have a ratio to each other, and may be stated in percentages of $4.44.

V. I proposed, however, to examine the bimetallic notion in its essence, and to proceed with that task it is necessary to consider the relation of legislation to value.[2] For the exposition of the bimetallic fallacy, as well as a number of others which are now widely held and even taught, it is necessary to show that legislation cannot affect value at all. If it could, the text-books of political economy are very faulty in their analysis of value, since no one of them specifies legislation amongst the forces by which value is controlled.

[1] The Bank of France in September charged one tenth of one per cent premium on gold over silver.—*Economist*, Sept. 6, p. 1026.

[2] "Let me dwell upon the fundamental error which suggests the measure which has been proposed. That error is the belief that it appertains to governments to call value into existence." (Mr. Pirmez. Report, p. 121.)

1. The value of a thing is controlled by supply and demand and by nothing else. Supply and demand are natural forces and act under natural laws. By this we mean that supply and demand spring into action from the presence, in certain relations to each other, of certain natural facts. The natural facts, in this case, are (1) a society of men having certain needs, and (2) material goods fit to satisfy those needs. The needs of the men for the goods do not exist because the men so choose, but because they are men. The goods are not supply for the needs because the men so decide, but by virtue of natural qualities. Supply and demand are therefore complementary parts of a force which is natural in the same sense that any physical force is natural. This force must arise when its natural conditions exist; it cannot arise unless they exist; when it arises it acts under natural law—that is, produces a regular succession of phenomena in a determined sequence—and the statement of the law in human language must be made by describing the conditions of equilibrium between the complementary parts, since it is by their equilibrium that the supply performs its function, and the needs receive satisfaction, and the economic force is merged in the vital force of man. The action of man on natural forces is restricted to dividing, combining, and diverting them. He can neither create nor destroy them. The forces may be divided, but the sum of the effects must always be perfectly proportioned to the force, neither less nor more. If any portion of the force is missing in the effect, our task is not complete until we have followed it, ascertained its incidence and effect, and united it to the rest.

2. Gold has its own conditions of supply and demand, and silver has its own conditions of supply and demand, and they are both independent of each other. Those conditions are facts in regard to the actual existence of the metals within the reach of man on the one side, and the increasing, decreasing, or changing needs of the human race, as it lives its life on earth, upon the other. Legislation can affect these conditions in no respect whatever. It cannot increase or decrease the amount of the metals within the reach of man, or his willingness to labor to produce them according to the profit of such production. It cannot make men want what they do not want, or cease to want

what they do want. Economic phenomena are due to economic forces, and one of the first lessons the student has to learn is not to rest from his analysis until he has reduced economic phenomena to economic forces and laws.

One might as well tell a physiologist that his science is false because no man ever existed whose organs were all perfectly normal in their functions, as to contradict an economist because no man ever acted from purely economic motives. Indeed the absurdity is far greater in the latter case, since the economist deals with societies, not individuals; so that not only is the inference unfounded, but the fact alleged is untrue of societies. One might as well object against a physiologist, when he states physiological laws, that moral forces (or, rather, more or less immoral forces, for that is what we mean) affect the bodily functions, as to interpose the objection against economic laws that immoral forces affect economic phenomena. The fact in both cases is undeniable; the inference—that these external interferences alter natural forces and laws, and therefore ought to be taken into account in the statement of scientific principles—is equally unfounded in both. One might as well tell a physiologist that a knife thrust into an organ alters physiological forces and laws, as to tell an economist that legislation controls the laws of value. It is because the physiological laws are not altered that the victim dies. The hygiene, pathology, and therapeutics of society are mixed with its physiology in our text-books, but the scientific distinctions must be maintained intact if we would reason correctly. Value belongs to the physiology of society, legislation almost always to its pathology. Legislation creates the conditions of disease, leads to distorted organs, disordered functions, deceptive phenomena (§ 4 below), and taxes the sagacity and clear-headedness of the student to find again the normal forces in their distorted action; but we have to guard ourselves well against the delusion that it changes forces or laws. To adopt that delusion is to lose perception of the difference between social health and social disease. We are struggling here for the introduction into political economy of universal canons of science which are recognized in all other departments which enjoy authority and are making real progress.

3. One chief cause of the notion amongst us that legislation

can regulate the value of money is, no doubt, the provision in the Constitution of the United States that Congress shall have power so to do. Why was it not also provided, in connection with the cognate power "to fix the standard of weights and measures," that Congress might regulate the length and weight of things? Here is a table. It is so long. How long? Just the quantity of extension in one dimension which it has as a physical fact. If you were here, you would see it. As you are not, I have recourse to ratios to other extensions which you do know. It has the same length as the distance from a man's nose to the end of his middle finger. The Congress of the United States, however, has provided an arbitrary standard of length, now grown familiar by use, and if I write that this table is a yard long, it will be a far more convenient and accurate designation, because it will refer to a more accurate length, equally familiar. If Congress had adopted a standard yard as long as what we now call a foot, that would have become familiar, I should then have written three yards instead of one, and the knowledge conveyed would have been the same. Now how large a Congressional majority would it take to make this table one thousandth of an inch longer or shorter than it actually is? The parallel with the case of money is complete. The Constitution of the United States could not confer powers which nature has never given to mankind. Congress cannot regulate the value of money until it can make a man give for a gold dollar one grain of wheat more than supply and demand force him to give, or yield a gold dollar for one grain less than supply and demand will give him for it. To regulate the value of money is to fix prices, and Congress has never tried that since it has existed. Congress can determine how heavy a piece of metal of a certain fineness shall be the standard of value, just as it determines how long a bar shall be the standard of length; but it cannot regulate the value of a coin any more than it can regulate a physical object to make it longer or shorter than it is.

4. The cases of apparent interference with supply and demand by individuals, combinations, and governments are all cases of monopoly, which is only a special case of supply and demand. An artificial monopoly is possible whenever the supply is capable of comprehension and limitation, and the ma-

nipulation of a monopoly consists in so limiting the supply and adjusting it to the demand as to make the market take some amount at some price. If the monopolist wants to sell more, he must yield on his price. If he wants a higher price, he must be content to sell less. It would be a great mistake, however, to say that a monopolist controls value. It is just because he does not control value that he makes anything. There is still a true point of equilibrium which supply and demand would reach, if free, and it is out of the margin between that point and the point at which the monopolist fixes the market price that his gains, as monopolist, come. There is no other scientific explanation of those gains. A "corner" is a modified case of monopoly, in which the first action is exerted upon the demand. All offered is bought at a price above what any other buyer will pay. This operation, however, is only preliminary to the formation of a monopoly, and a monopoly sale. It would be senseless unless there was a demand foreseen, which would, for some reason, be so strong as to ensure the monopolists a sale at a price above what they pay. What the monopolist does, then, in either case, is to fix the ratio at which the exchange actually takes place at a different ratio from that which value would establish. He thereby transfers other men's goods to himself without giving any equivalent, and it is precisely because value gives us a second point of comparison that we are able to say that the action of the monopolist is unjust and oppressive, and that monopolies are justly odious.

5. The apparent cases of legislative interference with value are cases in point. Subsidiary coins are a case of monopoly, and the problem of their management is to limit the supply to the demand of the community for said coins at their nominal value. Paper money is a case of monopoly. The problem of its value, which has troubled so many writers, is to hold the supply at or below the demand of the community for money to do its business with at par with coin. If the supply of paper dollars is made to exceed the number of gold dollars which the country would need, they will no longer hold a value equal to the value of a gold dollar each. The tariff is a case of monopoly. The protected producers can get the market price plus the tariff, only by selling less than the community would take

at the market price. If they increase the supply, they may run down the price in the home market below the price in the world's market. Hence paper money transfers property from its just possessors to the issuers of the paper, without equivalent, and tariffs transfer property from the unprotected owners to the protected producers without an equivalent. The extent to which this takes place depends on the manipulation of the monopoly; the effect of legislation is limited to the creation of the opportunity for a monopoly.

6. Legal-tender laws, when they are what they ought to be, simply enactments of what is the universal custom and understanding, are rarely if ever called into action at all. It seems to be forgotten that this is their original and only proper character, and whenever such laws are proposed or referred to, laws are always meant which involve some coercion, or distortiom of the terms of a contract. Legal-tender laws of this character do not alter truth, justice, or value. They only transfer property. A legal-tender law does not make 90 paid = 100 due a true equation. The only true equation is 90 paid + 10 retained = 100 due. Legal-tender laws alter the line between mine and thine so that something which was on one side is now on the other, but they do not affect the validity of the venerable distinction. The legal-tender law simply provides that the courts which administer justice under the Constitution and laws of the country in question shall not listen, in certain cases, to the plea of the citizen who complains of injustice; in other words, it withdraws the protection of the courts of justice, in certain cases, from citizens who complain of injustice. Some decisions even seem to go so far as to interpret the law so that A may demand B's property and discharge B's claim with an arbitrary allowance to which B never consented. In all cases it is because the forces of nature act in perfect fidelity to their laws that we can see and define the injustice of this legislation. It is because the legislation has not affected the law of value that we can have another state of things in mind as right and just, and can often measure the degree to which legislation has transferred the products of one man's labor and economy to another man's use and enjoyment. It would be difficult indeed to prove that the value of a man's property or his right to it

was affected by stealing it from him. Value is one form of truth, and truth is not affected by majorities. The notion that legislation affects value must therefore be positively condemned as the root-error of a dozen mischievous fallacies. Legislation transfers property, and that is all it ever does.

7. It is necessary to notice also the law which governs all combinations. If a single individual undertakes, for instance, to establish a corner, he may be reasonably sure of his own will, intention, and plan, and may carry it out if he does not lose his head and prove inconsistent with himself—which indeed sometimes occurs. If he finds it necessary to associate another with himself, there arises the need of selecting a congenial comrade and of securing consent, co-operation, loyalty, and good faith between two separate wills. The difficulty of such combination is not double that of an individual operation; it may be twenty-fold greater. If three, five, ten, twenty persons must be combined, the difficulty advances in a tremendous ratio until it becomes a practical impossibility. Hence the manipulation of a corner or a monopoly does not gain force or become easier as the task is widened and the number of participants is increased, but the force decreases in an enormous ratio to the extension of the party, and the practical chances of success diminish in an equally rapid ratio to the number of participants.

VI. Having elucidated these points, which, by the way, show the need, in economic discussions, of firm grasp of elementary notions and principles, we may, in a brief space, bring them to bear on the thesis with which we started.

1. Inasmuch as gold and silver have independent conditions of supply and demand in natural facts, their relative value may remain the same through a long period, or one or the other may grow dearer, and the fluctuations may be rare or frequent, wide or narrow, sudden or gradual, in all possible combinations and sequences. It has been proposed to form an international union, to establish a fixed ratio for the mints of all members of the union, and to make either metal legal tender. By this plan it is proposed to change from one metal to the other as fluctuations take place, and it is expected that the fluctuations will be limited in their range, but it is not expected that a concurrent circulation will be produced, or that the whole

stock of both metals will be brought to act on credit and prices. Reserving for the present the question of the practicability of the coinage union, it may be admitted that, under some circumstances, the fluctuations would be limited, but they would be more frequent and sudden, and the system would be at the sport of chance, as the Latin Union was. These, however, are minor difficulties. The legal-tender law, by which all this is to be accomplished, would simply, as above shown, transfer property. The gain, if any, would be a gain to some at the expense of others. In plain language, the project is one for uniting the debtor classes of all civilized nations in a "corner" on the falling metal. Such a project has no parallel save in some of the wildest plans of the International Society. The profits of the corner would come out of the creditor class and the holders of the rising metal. It would be establishing on a world-wide scale, and by force of law, an injustice by which some men would throw the risks and loss of their business on other men, who already have the risks and losses of their own business to carry. For instance, some Liverpool merchants interested in the South American and East Indian trade have suffered loss by the fall in silver. They are eager for the "double standard" to save them from their losses, and no doubt it would do so, but only by throwing those losses on the whole creditor class of England. Now, the creditor class of England is scattered, unorganized, and unknown, but it is safe to say that it has its own troubles from business and investments, and is suffering from loss of dividends, failure of banks, fall in prices, fall in rents, fire, shipwreck, and all the other chances and accidents of life. The advocates of the "alternate standard" have contented themselves with dilating upon the effect of their scheme in narrowing the fluctuations of the market rate of the metals, without reflecting that no such effect could be attained without an expenditure of force, at somebody's expense, elsewhere.

2. But the coinage union is a practical impossibility. France, a country with a free mint for both metals, standing between Germany, a silver country, and England, a gold country, was able to work a compensatory action between them. There is an obvious fallacy, however, in reasoning that the same action would go on, on a larger scale and with greater efficiency, if the differ-

entiation upon which the interaction depended were obliterated in a coinage union having a uniform system.

There is a further fallacy, and a far more serious one from a scientific point of view, in supposing that the coinage union, if extended, would gain proportionate increments of force to restrain fluctuations until they were reduced to a minimum or to nothing. The law above stated here comes into operation, by virtue of which a combination becomes not stronger, but weaker, as it is extended, and the attempt of all nations to form a corner upon the falling metal would dissipate itself like a corner which united all the buyers—that is, it would become simply identical with demand as we ordinarily use the term. Instead, therefore, of marching towards a realization of bimetallism or a concurrent circulation, the coinage union would work towards the simple free play of natural forces, in which each metal would obey its own conditions of supply and demand. Nor is this all. The coinage union is either unnecessary, or else it is needed in order to impose a set line of action and to enforce co-operation where voluntary co-operation would not be given. How can any one believe that sovereign nations will enter into any such combination, or that, if they did enter into it, they would stay in and obey mandates which conflicted with their interest and will? We are not left to speculation as to the probability that they would so act. We have two facts to which to refer: (1) When the fall in silver took place, the Latin Union would have been disrupted by the secession of Belgium and Switzerland if the coinage of silver had not been suspended. (2) The commissioners of the Latin Union, at their last meeting, agreed that Italy should withdraw her small notes to make room for the return of her small coin with which the other states, especially France, were burdened. I do not understand that Italy has refused to do this, but the remonstrances which were made in the Italian Parliament against this dictation as to what Italy should do with her own currency were just what must be expected in such a case, and they show that an international coinage union would prove a rope of sand so soon as the attempt was made to make it efficient at all. An international coinage union, therefore, to accomplish a definite and set purpose in turning back a movement which all recognize,

whether they deplore it or not, is an absolutely impracticable scheme.

3. I have never seen any argument for the feasibility of bimetallism, or a concurrent circulation, in which the whole of both metals would act on prices and credit, except the facile inference that the coinage union as it grew larger would or might restrain fluctuations more and more, to a minimum or to nothing. As I have broken down every assumption here involved, the inference falls to the ground. It appears that this reasoning follows neither a true relation of facts nor any logical sequence. The coinage union as it grew larger and larger would grow less and less effective, and when it was complete it would have no effect at all. The notion of a concurrent circulation is therefore entirely baseless—snatched from the air. So long as the natural conditions of supply and demand of gold and silver remained the same, whether for a longer or shorter period, so long the forces would remain the same, and the effects would remain the same. So soon, whether sooner or later, as the conditions varied, the forces would vary, and the proportionate effects would vary. To secure a concurrent circulation, then, at a fixed ratio, it is necessary to suppress the effects, which can only be done by suppressing the forces, so that a concurrent circulation could never be realized until we could extinguish economic forces by human agency. But we can no more extinguish a force than we can create one, so that this scheme is in economics what perpetual motion is in mechanics. Every analysis that is attempted of the idea will only issue in new proof that it is an absurdity which cannot be thought, and it is no longer strange that its advocates have never been able to state their notion in intelligible language. It must remain vague, shadowy, and popular, stated at best in symbols, metaphors, and analogies, to exist at all.[1]

VII. If the amount of space which would be required were not out of all proportion to the results for our purpose, I should

[1] "As for the desire which has been expressed that the hope be left open that some day a fixed relation may be established between gold and silver and an international value given to them, the English delegate (Mr. Goschen) declared that, in his view, it was impossible to realize this, impossible to maintain it in theory, and that it was contrary to the principles of science." (Report, p. 166.)

like to analyze some of the analogies which have been employed in this discussion. Some of them deserve to be put into the text-books on logic as classical examples of the mischief of reasoning by analogy. An analogy proves nothing whatever. It only serves to state a theorem in a form to be more easily apprehended. The theorem, then, needs to be proven by its appropriate demonstration. After showing the mischievous character of the notions imported into this discussion by the analogies of tubs of water joined by a tube, and horses driven in span, I should not have advanced the discussion in which I am engaged. The bimetallist says: A concurrent circulation seems to me like driving two horses in span. I answer: To me it seems like yoking the sun and moon together to facilitate the reckoning of time by men by making the lunar month a simple fraction of the solar year. Nothing is accomplished by these statements towards testing the truth of either opinion. I therefore pass by all the analogies which have been offered by the bimetallists with the simple remark that they are all untrue and misleading.

The advocates of the goloid dollar, who think they can give greater fixity to the ratio of the metals by mixing them in the same coin, advocate a more grotesque absurdity, but not a greater one, than the other advocates of a "concurrent circulation."

VIII. We must infér, then, that gold and silver will both be used as components in the world's money, by the adoption by some nations of one and by other nations of the other, as their convenience and interest dictate. The United States, by its legislation so far, has put itself on the way to become one of the silver countries. It is not a dogmatic judgment; it is inference from observation of the course adopted by nations, that gold is more convenient for the purpose of the leading commercial nations, and silver for those which are yet behind.[1] The United States is one of those whose interests require the use of gold, and the way back over the path we are now treading will have to be won by trouble, loss, and inconvenience. Our children, instead of admiring our Quixotic devotion to mankind

[1] Feer-Herzog. Report, p. 60.

in general, will ask us how we could ever commit the folly of plunging into a difficulty which everybody else was trying to escape, and from which our children will have to extricate themselves at heavy expense. I am far from denying that the change from silver to gold is attended by loss and inconvenience, but I do not know of any step of social or economic advance which has ever been made without temporary loss and inconvenience both to capital and labor, and the United States were not exposed to any of this loss at all. Mr. Seyd has just published a book, "The Decline of Prosperity, and its Insidious Cause," in which, as the title indicates, he takes a very lugubrious view of things, and ascribes the mischief to the demonetization of silver. This fear that prosperity was declining has come up every fifteen or twenty years for a century or two, especially in England, and yet prosperity and civilization advance. In 1872 coal and meat were dear, and the newspapers were filled with essays about the sufferings of the people on fixed incomes. Then the woes of the agricultural laborers came up, and the farmers were represented as selfish men, gorged with wealth and prosperity. Now meat is too cheap, the turn has come to the landowners, and the farmers are the objects of public concern. Such changes are the inevitable effects of the continual changes in the conditions of industry and the relations of commerce. It is from and by means of such changes that the prosperity of mankind advances. Every great improvement involves changes and readjustments. They are not welcome, but they are unavoidable. It is not at all improbable that the number and variety of the great improvements of the last twenty years, following so rapidly on each other, crossing and combining with each other, necessitating quick and complicated adjustments, may go for a great deal in the present reaction. It is very probable that the next twenty-five years are to see massive migrations of population, and great transfers of capital, from the old to the new countries, which will not be made until suffering has enforced them. It is probable that the value and rent of land will decline in the old countries and rise in the new. It is possible that social, economic, and political changes are to be accomplished such as we cannot yet guess at. It is certain to

my mind, however, that those years are to be years of unprecedented prosperity.

The fall in silver has its share in the temporary disorder, loss, and suffering; but the use of the single gold standard will be one of the strongest supports of the new prosperity. If this were not so, it would be idle to lament over a movement which comes along in the natural evolution of things. To try to stem that movement and turn it back to the old system of repeated empirical struggles for a bimetallic circulation, it would be necessary for us to be sure of three things: (1) that we understand present phenomena thoroughly,[1] (2) that we can foresee the results of the movement towards gold, if it goes on, and (3) that we are sure of the working of the gigantic experiment involved in the attempt to secure bimetallism, or the alternate standard, by a coinage union. These conditions are absolutely unfulfilled. On the contrary, it seems that international banking is just at the point where its further development, and the transfer of capital from old to new countries, above alluded to, require an international standard of value amongst the great commercial nations such as gold alone can supply. The development of international banking, in its turn, will economize the use of gold, and thus again defeat the fears of those who think there is not gold enough. The movement, therefore, bears all the marks of a true organic development, in which all the parts contribute to and support each other in advancement to a higher stage. It also seems to me that the fall in silver is precisely adapted to favor those extensions of commerce and civilization which lie in the near future. South America is still in the lowest stage of economic development, and will find silver its best money for a long time to come. Asia is scarcely yet upon a monetary system, except where Europeans have penetrated, and can use nothing but silver to advantage for an indefinite future. Africa is an almost untouched continent, which, within fifty years, will probably come into new

[1] The authorities are by no means agreed as to the causes of the fall of silver. This question came up at Paris, and Mr. Feer-Herzog maintained that the key to the phenomenon lay in the state of the East Indian exchanges. (Report, p. 58.) This is the view which I took before the U. S. Silver Committee in 1876, but I have never seen any other confirmation of it.

relations to the civilized world. Silver is the only suitable medium for this extension of commerce. As far, then, as we can foresee, the cheapening of the tool of exchange by which these extensions of trade and civilization must be carried on will only facilitate them; and if bimetallism were not an absurdity, and the alternate standard either an injustice or a delusion, and if either of them were practicable, the adoption of either would now be the grandest mistake the civilized world could commit. I attribute no weight to these prognostications of mine. It is contrary to my opinion of sound procedure in such matters to make them at all. I should consider it the most vicious procedure to make such prognostications the basis of argument that any nation or that all civilized nations "ought" to use the single gold standard. The economic development of human society must go on its way and work out its results, and the human race must make the best of them. The race, however, does not make mistakes, and so long as, in all its parts, it obeys the dictates of its interests, it will push on a true evolution which cannot but serve to enhance the prosperity of the race as a whole. It is only when nations allow their action to be dictated by speculations about the future of civilization and humanity that they may wreck the natural development. It is because these terrors about the future, and prophecies of disaster, have been introduced to play so great a *rôle* on the other side of this question that I venture to set against them the best speculations I can make as to the probable course of affairs.

POSTSCRIPT.—After the above was in type my attention was called, by an editorial in the New York *Tribune*, to a recantation by Mr. Gibbs of the opinions maintained by him at the Conference at Paris. The plan of my article was to make an independent discussion, and not to examine the literature of bimetallism beyond the Report of the Monetary Commission. When, however, a journal which has sustained a uniformly sound and strong position on monetary questions referred to Mr. Gibbs' pamphlet in the terms used by the *Tribune*, it seemed that here perhaps a bimetallist might at last be found

who had some clear ideas, and could state them so as to bear examination. I therefore hastened to secure a copy of Mr. Gibbs' pamphlet,[1] and also a copy of his letter to Cernuschi announcing his conversion, and Cernuschi's reply to the same.[2] My hopes of finding something in these pamphlets solid enough to bear examination for purposes of discussion are all disappointed.

Mr. Gibbs has simply gone over to the bimetallic fallacy, and accepted it in its grossest and crudest form. He has produced no new arguments for it and refuted no objections against it. Incidentally he has shown that the ex-Governor of the Bank of England holds, in regard to money, all the fallacies which constitute the premises of our soft-money men; and if he does not agree with them in their conclusions, it is only because he is less logical and consistent. This, however, might be said of all bimetallists. The *Tribune's* estimate of this pamphlet adds the greatest possible weight to the motive for my article as stated in the first paragraph thereof. I am therefore led to counteract that estimate by amplifying one or two points which I had passed over briefly, and by inserting one or two which I had judged better to omit, in order to show the real significance and value of what Mr. Gibbs has contributed to this controversy.

1. Mr. Gibbs' conversion to bimetallism is due to observation of the losses incurred in Indian finances and Indian trade. He assumes that these losses are due to the fall in silver, and he attributes the fall in silver to demonetization. Hence he argues: Remonetize; that will restore silver; that will stop the losses. It is a pity that the matter is not so simple. I consider it an error to attribute the losses in the India trade to the fall in silver. The fall in silver is not a cause, but a consequence. The financial relations between England and India after 1870 took such shape that the "tribute," as it is called, had to be paid by an excess of exports over imports of India. This could only be accomplished by a fall in prices in India. Nevertheless Europe desired to continue to sell silver to India, while the relation just mentioned would have led

[1] "Silver and Gold," by Henry H. Gibbs, London, 1879.

[2] "Bimetallism in England and Abroad," by Henri Cernuschi, London, 1879.

India to desist from buying it. Instead of a *fall* in prices (silver remaining stable) there therefore has occurred the exactly equivalent phenomenon of a fall in silver *without any rise* in prices. In countries which have a depreciated paper currency prices rise as the medium falls, and so the foreign trade quickly adjusts itself. If prices had risen in India there would have been no trouble; but the forces which would have forced a fall in prices if silver had held firm have prevented a rise in prices while forcing a fall in the medium. A crisis in the Indian exchanges was therefore inevitable in some form or other. Instead of taking place through prices, it has taken place through the medium—silver—and the fall in silver is a consequence and not a cause. This relation of facts accounts for the fall in silver, and nothing else does. The silver thrown on the market by demonetization and by a somewhat increased production (which has been greatly exaggerated) by no means account for the fall. The increased supply fell on a weak market, and had accessory influence, but it does not suffice to account for the principal effect. It follows that it is a great error for those who suffer from losses in the India trade to ascribe their troubles to the fall in silver, and that their troubles cannot be cured by any currency devices. While India has so much interest to pay in England on borrowed capital, to which she has not yet grown up, and while she has to pay in England for an expensive government, to which also she has not yet grown up, she will be a worse country to sell in and a better one to buy in than formerly. However, if English merchants and bankers interested in the India trade could sell their silver to somebody for the old price, it is obvious that they could save themselves from the effect of these changed circumstances in the relations of the two countries.

2. This last observation leads me to amplify what I have said under VI., 1. I have shown there that the alternate standard would only transfer risks and losses from those to whom they belong to somebody else. *A fortiori* bimetallism, if it were practicable, would throw all risks and losses, all the time, on the creditor classes. Gibbs and Cernuschi seem to be entirely blind to this character in their propositions, and they do not see that whatever they gain for some must either be won out of others

or *out of nothing*, as I have shown in my main argument. To show this more fully, let us observe the difference for different classes between the significance of a fall in gold and the significance of a fall in silver. The effect of a fall in gold (rise in prices) would fall on annuitants, pensioners, owners of bonds, etc., beneficiaries of trusts and life assurances, salaried and professional men, wage-receivers, and, generally, on all who have either temporarily or permanently fixed incomes. These are the persons whom I designate as the creditor classes. A fall in silver, as things stood in 1873, affected producers, exchangers, and bankers in certain great lines of business. A fall in gold would therefore affect a large number of small, weak, and scattered recipients of money incomes, belonging to different classes and having no co-operation or even acquaintance with each other. A fall in silver affects great "interests," each of which is marked by very strong cohesion of its parts within itself, and all of which are capable of sudden and easy combination. The former have little power or chance to defend themselves; the latter are powerful and influential in speech, writing, and legislation. The former never attract public attention; the latter fill the public eye and are thought of whenever money, capital, trade, or industry are thought of. The losses of the latter make up appalling figures in the statistics of bankruptcy. The losses of the former figure in no statistics, since they consist in privation, misery, disease, and earlier death for those affected directly and for their dependants. The losses to producers, exchangers, and bankers are what govern the opinions of Mr. Seyd, and now, too, have converted Mr. Gibbs. It is indeed cause for great regret that such losses should occur, and if there were any means of averting the loss altogether, the matter would bear a very different aspect. But there is no such means. There is nothing possible but an alternative, either to leave the losses where they fall by the circumstances of the case, or to throw them on somebody else; and nothing is proposed in these monetary schemes save to throw the losses on those who would have suffered if the fall had been in gold instead of in silver. Now when gold has fallen (prices have risen), notably in 1870–1873, the classes who were affected had to make the best of it without aid from those interested in silver, and so the proposition that

England shall now adopt bimetallism, when stripped of all disguises, is simply another case of the old abuse whereby a few strong, well-organized interests, acting through currency legislation, play at "heads I win, tails you lose" with the large, scattered, unorganized mass of the nation. English statesmen may possibly upset the monetary basis on which all relations of property and credit in England rest, in order to alleviate a temporary strain on some branches of foreign trade, and on the finances of India; but those who have to rely on American newspapers for their information and impressions of what is likely to be done in this matter in Europe will do well to nourish an active incredulousness. Those Americans who have to rely on the Hon. W. D. Kelly's reports of interviews between himself and Bismarck for judgments as to the probable course of Germany will do well to allow for other elements in the report than the probable power of Mr. Kelly to inspire the Prince with expansive and familiar confidence. Mr. Kelly is a man of enthusiastic imagination, and it appears probable that he and Mr. George Walker are just the kind of men to excite the well-known propensity of the German Chancellor to befool people by an ostentatious and effusive frankness while laughing at them in his sleeve. A great deal has been said about the zeal, dogmatism, and fanaticism of the advocates of the single universal gold standard. I do not know who these persons are, nor what they have done. The only persons who, in regard to this monetary question, have organized a sect, adopted a creed, undertaken a propaganda, and sent out missionaries, so far as I know, are the bimetallists. It is charitable to believe that they do not see the political and social significance of their propositions, but that statesmen will not see this long before action is adopted is very improbable.

Now Mr. Gibbs has just found out that the trade between India and England is barter. He is astonished and alarmed at this. He thinks this kind of trade uncivilized and attended by loss to England. He attributes the evil to English gold monometallism, and thinks that the evil effects have been counteracted until recent years by the French law. If it be true, however, as Mr. Gibbs and the other bimetallists argue, that France has done this service by her law, now to gold-using Englishmen

and now to silver-using Germans, then France, through her creditor class, has borne burdens and losses which belonged to other people. Such being the case, we could see why Englishmen and Germans should want the French law to continue, but we should also see why Frenchmen, so soon as they understood it, would certainly want it to stop; and, if universal bimetallism could be or should be established, the next question would be, What class, under the new system, is to take the place formerly filled by the French creditor class and bear the burdens formerly borne by them?

Such is the inference from Mr. Gibbs' premisses, but the premisses are false. Trade with India is barter, but so is all trade, and foreign trade most plainly. The trade for silver has involved inconveniences which will exist until all the world uses a single and universal standard of value. This inconvenience has been paid for, as all other hindrances and difficulties of trade are paid for, in prices. The French mint law has had nothing to do with it. Finally, the French creditors have lost whenever the ratio of the metals has varied so as to change the metal of the French coinage. This loss, however, has been borne once for all; it has not continued after prices have been readjusted; and has not therefore been constant under the operation of the double standard.

Cernuschi, in his reply to Gibbs, gives far more gross expression to the same fallacy about the operation of the French law to prevent losses; for he attaches it not to English traders, but to all metal producers. "At the time of the French $15\frac{1}{2}$, the position of the producers of gold and silver was this: all their produce had by law an unfailing and insatiable customer —the *mint*. No price to haggle about, no competition possible." A customer by law! The mint a customer!? In some large establishments, as a check on salesmen, one person is stationed at a counter to weigh, measure, and count all goods for which the salesmen have made bargains with the customers. It would be as sensible to call this person the "unfailing and insatiable customer" for all the goods sold in the establishment as to call the mint a customer for gold and silver. This gross error, however, is the cloak which covers the fallacy and the injustice of bimetallism. The law does provide a customer, but it is not the

mint. It is the creditor class as above defined. There is "no price to haggle about and no competition to fear" because the law has delivered the victim over helpless, all the more helpless because he is ignorant, the law having concealed the transaction under mysteries of coinage and money. This, however, is the most direct condemnation of the law itself, as well in an economic as a social or political point of view. It is a fallacy to think the mint law has secured the producers of the metals against loss and haggling and competition—that is, against all the inevitable annoyances of industry without hurting anybody else; and it is an injustice to take the annoyances from one industry only to spread them over others. I do not like to say anything which may appear arrogant and unbecoming, but I feel justified in protesting, in the name of all that scholars and scientific men respect, that a man who calls the mint an "unfailing and insatiable customer" does not deserve respectful treatment in the arena of scientific discussion.

Mr. Gibbs sees that bimetallism involves depreciation, but he thinks the evils of it are in this case more nominal than real. The only distinction which men generally make between nominal evils and real evils is that my evils are real and yours are nominal; but that is not a valid distinction which science or justice can recognize. Mr. Gibbs seems to think the evils of depreciation nominal because they would be widely scattered and much concealed, as I have shown above. All evils, however, are real to those who suffer them. If they come from nature, like blight, drought, storms, inundations, and other calamities, they must be borne as philosophically as possible. If they are inflicted by legislation, or are transferred by legislation, nothing can justify or belittle them. Mr. Gibbs wants silver remonetized, not at its present market value, but at the point where it will be when the bimetallic system shall have operated on it. He has not comprehended the full problem which he has to solve. It is this: (1) If in England, for instance, silver is rated at its present market value, all the silver now in England loses 20 per cent of its present value. (2) If silver is rated at the point to which the bimetallic system will bring it up, no one but Cernuschi knows where that will be. If a guess is made, and silver is rated above the market, no debtor will want it, and so

the bimetallic system will never begin. (3) If silver is rated at the market to begin with, and if the mint ratio is advanced as the market ratio advances (assuming that bimetallism would work), then continual recoinage, with heavy expense and endless confusion, will result. I hope that it is plain, then, that the bimetallists of every grade and description are either trying to transfer losses from one group of men to another, or else trying to make something out of nothing.

3. It also seems desirable to notice another error of bimetallism which I had passed over; that is the notion that demand due to a fall in price raises price. This doctrine is essential to the bimetallic theory, and it has been carelessly conceded by some who are not bimetallists. I passed over it in the body of my article because it is the fallacy of that extreme form of bimetallism in which it is believed that the coinage union will lock the two metals so tight together that they will never separate from the legal ratio any more, because there will be no one to whom to sell the rising metal. Every bimetallist would be driven to this doctrine if he followed out his notions consistently; but the bimetallists repudiate it generally when it is ascribed to them. Mr. Gibbs, however, explicitly accepts this notion, and assumes that the bimetallic union would lock the two metals permanently together as such an undoubted fact that it is his chief reliance for refuting objections. Demand due to a fall in price tends to sustain price at the lower level, but not to raise price, since such demand ceases when the price rises. If we have a bimetallic circulation at $15\frac{1}{2}$ to 1, debtors do not want silver *at* or below $15\frac{1}{2}$ to 1, but only below. Their demand will only act on it so long as it stays below; therefore their demand never can lift it again to $15\frac{1}{2}$ to 1. But meanwhile their demand is acting to sustain it only by absorbing any new supply through real purchases. So long, therefore, as there is a new supply, the price must remain below $15\frac{1}{2}$ to 1, and that new supply must be absorbed. But this is destroying the bimetallic and concurrent circulation just so far as it goes on. The bimetallists seem to think that, *if* silver fell, the debtors of the world would all pounce upon it so unanimously and immediately that it would *not* fall. This is absurd in the statement, and it is absurd in every detail of fact. New silver does not rain down in an equal

deposit over the earth. It comes into human society at certain points. Hence the world-wide demand cannot be concentrated on it. Any demand which does act on it can do so only by real transactions under price fluctuations. This fallacy, therefore, reminds us again of perpetual motion, wherein it is believed that we can get effect out of a force without action, reaction, and "escapement."

4. To meet another point somewhat more explicitly than I have done it above, let me say that if any nation which now uses gold finds that its interests are not served thereby, and thinks that silver would serve them better, it has only to make the experiment on its own risk and responsibility. If it succeeds, others will imitate it, and the inferences now made from the past action of nations will have to be modified. So far the nations have always acted as if they knew they were about to commit folly and incur loss whenever they have taken up any projects about silver, and they have insisted on first joining hands so as to all go into the evil together. We wait, then, for the first nation to give up gold and take silver because it thinks silver will serve its interest and convenience better. Mr. Gibbs is as anxious lest England should become a silver nation as any "gold monometallist" possibly could be.

5. If, then, we are asked which nations will take gold and which silver, and why any should take silver, and, if none take silver, where gold enough is to come from, we answer: (1) That it is not possible or necessary to tell *a priori* who will take silver and who gold. (2) All would prefer gold, and the world will probably ultimately come to use only a single universal standard of value, just as it probably will come to use single and universal standards of weights and measures. This, however, is only an anticipation which it must be left to time and the development of civilization to realize. At present it has no importance. If it is a correct anticipation it is fruitless; if it is an incorrect anticipation it is harmless. (3) If it is said that "there is not gold enough," that assertion is senseless unless we add: "to sustain prices and credits at their present level." If, then, there is not enough, in this sense, the nations will compete for gold until those to whom its advantages are worth most get it, because they give most (goods) for it. Others will

drop out of the competition for gold and take silver whenever its comparative cheapness more than counterbalances its inferior utility. So then, if there is not enough gold, we will use silver, and those will take some silver who think it for their interest, all things considered, so to do.

WILLIAM G. SUMNER.

October 25, 1879.

POINTS OF CONTACT BETWEEN SCIENCE AND REVELATION.

INTRODUCTORY.

THE subject of this paper does not lie in the field of that "conflict of science and religion" in which so many theologians and philosophers of our time seem to think that no quarter should be given. It relates to those points, not few or unimportant, in which modern scientific investigation has come into peaceful contact with the revealed Word of God as held by Christians, and has proved itself in harmony therewith, or has illustrated points previously obscure to reason, if held as dogmas by faith. There is perhaps the more necessity to refer to such points of contact, that many of them lie out of the way of ordinary students of nature or of the Bible, and that they are so likely to be overlooked amid the noise and struggle that arise from seeming contradictions.

That profound thinkers should sometimes arrive at truths, as matters of speculation, which others may reach by the slower processes of observation, experiment or calculation, is not surprising, and has often been realized. Nor is it more wonderful that men raised to a high degree of inspiration and of prophetic insight should, in some degree, anticipate our scientific discoveries, more especially in points where natural things present analogies with the supernatural or spiritual. In illustration of such coincidences, I may first refer to a question which perhaps rather relates to the sagacious insight of men in general in very ancient times than to anything properly of the nature of revelation.

A subject at present of considerable scientific interest is the connection of spots on the surface of the sun with famines and

other calamities. Observation has shown that in the course of every period of about eleven years the sun's surface is affected by what has been called "a wave of sun-spots." When these spots are at a minimum, for a year or so the sun may show scarcely any dark spots. In the course of four or five years they increase in number until they attain a maximum, and then diminish, returning to their minimum in about eleven years. The intensity of the maxima and minima are not quite the same in succeeding cycles, appearing to culminate in periods of about fifty-five years.

Now it seems that the more the spots increase the hotter the sun becomes, and the fewer the spots the cooler. The difference is sufficient to cause a perceptible rise and fall in the waters of our great lakes, and notable differences in the dryness or wetness of successive seasons, though the precise effects vary much with local conditions. Thus in 1879, a year of minimum sun-spots, the summer has been disastrously wet and cold in Western Europe, cooler and more moist than usual in Eastern America, and characterized by severe drought in some southern climates, all this apparently depending upon a diminished supply of solar heat. But floods and droughts bring failures of crops and famines, and thus bring diminished trade and financial crises, while these last in turn produce political and social revolutions. Of course all these influences may locally be counteracted in whole or in part by other causes; but it would seem that about every eleventh year we are to anticipate some aggravation of the general struggle for existence, owing to a diminution of the power of the great central heater and lighter of our system.

But again, there is good reason to believe that the periodicity of sun-spots is determined by the attraction of the planets, and more especially of the greatest of them, Jupiter, whose nearest approach to the sun in his annual revolutions of between eleven and twelve years coincides with the maximum of sun-spots, but may be influenced in this by the positions of the other planets. Thus the planets, and more particularly Jupiter, exercise an important influence on human affairs. That they have this power seems to have been discovered so long ago that the astrological ideas based upon the fact can be traced back to the oldest Chaldean literary monuments, of a date nearly as far back as that of

the deluge of Noah. Indications of this belief are thought by some to exist even in the Bible, as in the expression in the Song of Deborah, "The stars in their courses fought against Sisera." It must, however, be admitted that the Bible decidedly opposes astrological divination, as connected with idolatry; and justly so, since the observed facts do not yet warrant any very definite predictions, and they were at a very early period made subservient to imposture and superstition. Still, when we see that such men as Lockyer, Piazzi Smith, Meldrum, and many other astronomers and physicists, repose faith in the connection of sun-spots with sublunary events, we cannot any longer laugh at the Chaldean astrology, or even at the poetical fancy of the old "Mother in Israel," which might be literally true, if Sisera's campaign was in any way determined either by the attitude of the planets or by his belief in their influence, or even if the flood of the Kishon, which cut off his retreat, was aggravated by planetary influence.

Such a fact as that above referred to may have other bearings. It is obvious that by relegating changes of the seasons to cycles determined by natural law, it cuts away the ground from certain astrological superstitions and Sabean idolatries of the ancient world. On the other hand, it seems to remove famines or droughts or floods from the domain of special providence or of direct divine intervention. Yet it is remarkable that it still leaves scope even for miracle. Our knowledge of these cycles is too limited to enable us to predict their precise effects, while their complication with longer cycles on the one hand, and with local causes on the other, makes the result for any one year or place too complex to be certainly worked out, and gives infinite variety to their operation. If, for example, we should discover that the three years of drought in the time of Ahab coincided with a period of minimum or maximum of sun-spots, though this would enable us better to understand the method employed to punish the idolatrous Israelites through the agency of their adopted sun-god, it would not account for the special local aggravation of the calamity and its coincidence with a certain condition of the nation. It would not, therefore, deprive the visitation of its character of a predetermined punishment wrought by the hand of God.

This is, however, but a very slender point of contact, both because we know as yet little from science as to the matter referred to, and because the Bible does not deal in astrology. There are others more marked, and we may now proceed to consider a few of them, more especially some of those which relate to the earlier periods treated of in the record of divine revelation.

EDEN.

Perhaps no portion of Bible history seems to have been more thoroughly set at naught by modern scientific speculations than the golden age of Eden, so dear to the imagination of the poet, so interwoven with the past condition and future prospects of man, as held by all religions. We are now invited to regard as our first ancestors certain dumb and semi-brutal descendants of apes, slowly rising amidst a struggle for existence, through successive stages of filth, savagery, bloodshed, and misery, into the condition of such humanity as we see today in the lowest tribes of men. So much the worse, probably, for the speculations in question; because they not only outrage our feelings, but contravene all natural probability in their fancied pedigree of man. On the other hand, it can easily be shown that there are important points of agreement between the simple story of Eden, as we have it in Genesis, and scientific probabilities as to the origin of man. Let us glance at these probabilities.

It seems plain that the condition of our earth, in all those long periods when it was inhabited by inferior animals only, was unsuitable for man. We do not expect to find remains of men in the formations of the Palæozoic, Mesozoic, or early Tertiary ages. Man is thus a recent animal in our world. Now, under any hypothesis as to his origin, the external conditions must have been suitable to him before he could appear. If, to use the language of evolutionary philosophy, he was himself the product of the environment acting on the nature of a lower animal, this would be all the more necessary. Further, it would be altogether improbable that these favorable conditions should prevail at one time over the whole world. They must, in the nature of things, have prevailed only in some particular region, the special

"centre of creation" of man, and this, whether its conditions arose by chance, as certain theorists would have us believe, or were divinely ordained, must have been to the first men the Eden where they could subsist safely when few, and whence they could extend themselves as they increased in numbers. There is, therefore, in science nothing inconsistent with the Scripture statement that God "prepared a place for man."

Further, no one supposes that man appeared at first with weapons, armor, and arts full-blown. He must have commenced his career naked, destitute of weapons and clothing, and with only such capacities for obtaining food as his hands and feet could give him. For such a being it was absolutely necessary that the region of his *début* should furnish him with suitable food, and should not task his resources as to shelter from cold or as to defence from wild animals. The statements in Genesis that it was a "garden," that is, a locality separated in some way from the uninhabited wilderness around; that it was stocked with trees pleasant to the sight and good for food; and that man was placed therein naked and destitute of all the arts of life, to subsist on the spontaneous fruits of the earth, are thus perfectly in accordance with the requirements of the case.

If we inquire as to the portion of the world in which man at first appeared, the theory of evolution advises us to look at those regions of the world in which the lowest types of men now exist or recently existed, as Tasmania, Tierra del Fuego, and the Cape of Good Hope, or it assures us that those tropical jungles which now afford congenial haunts for anthropoid apes, but are most unsuitable for the higher races of men, are the regions most likely to have witnessed the origin of man. But this is manifestly absurd, since, in the case of any species, we should expect that it would originate where the conditions are most favorable to the existence of that species, and not in those regions where, as shown by the result, it can scarcely exist when introduced. We should look for the centre whence men have spread, to those regions in which they can most easily live and in which they have most multiplied and prospered. In historical times these indications, and also those of tradition, archæology, and affiliation of languages and races, point to Western Asia as the cradle of man. Even Haeckel in his "History of Creation," though it is conve-

nient, in connection with his theoretical views, to assume the origin of man in a region somewhere in the Indian Ocean and now submerged, traces all his lines of affiliation back to the vicinity of the Persian Gulf, in the neighborhood of the districts to which the Bible history restricts the site of Eden.

Again, there is reason to believe that, at the fall of man, climatic or other changes, expressed by the "cursing of the ground," occurred, and that in the Edenic system of things very large portions of the earth were to be or become suitable to the happy residence of man. Geology makes us familiar with the fact that such changes have occurred in the later half of the Tertiary period, to such an extent that at one time the plants of warm temperate regions could flourish in Spitzbergen, and at another ice and snow covered the land far into temperate latitudes. Farther, it would seem that the oldest men known to us by archæological discoveries, probably equivalent to the Antediluvians, lived at a time of somewhat rough and rigorous climate, and which probably succeeded a more favorable period in which man appeared.

Thus it would seem that we are not under any scientific necessity to give up the old and beautiful story of Eden, and that, on the contrary, this better accords with the probabilities as to the origin of man than do those hypotheses of his derivation which have been avowedly founded on scientific considerations.

TIME-WORLDS.

When we speak of the world or the universe, the ordinary hearer perhaps has before his mind merely the idea of bodies occurring in space, and the vast discoveries of modern times as to the distances and magnitudes of the heavenly bodies have contributed to fill the minds of men with conceptions of the immensity of space, perhaps to the exclusion of another direction of thought equally important. Worlds must exist in time as well as in space. This idea is very familiar to the mind of the geologist, who traces the long history of the earth through successive periods, and also knows that each succeeding day has seen it different from the previous ones. This consideration is also before the mind of the physical astronomer, who thinks of suns and

planets as passing through different successive conditions, and as actually presenting different stages in the present.

This point is curiously illustrated by a controversy which raged some time ago as to whether the planets and other heavenly bodies may be inhabited worlds, and especially whether they may be inhabited by rational beings.

If we look at this question with reference to our own world, we shall find that its existence as a vaporous mass, as a heated molten globe, as the abode of merely inferior animals, has been of vast duration as compared with the time in which it has been inhabited by man. Farther, it is gradually approaching to a condition in which it will no longer be habitable, and unless some renovating process shall be applied to it, this desolate condition may be of indefinite duration. Thus, if we imagine ourselves to be beings not limited by time, and that we could visit the earth by chance at any period of its history, the chances would be vastly against our seeing it at that precise period of its existence in which it is fitted for the residence of rational beings. On the other hand, if we were capable of taking in its whole duration, we would comprehend that it has its particular stage for being the abode of intelligence, and that it has a definite and intelligible history as a world in time, which may be more or less parallel to that of all other worlds.

This truth also appears if we consider other planetary bodies. The moon may have been inhabited at a time when our earth was luminous and incandescent, but it has passed into a state of senility and desolation. The planet Mars, which seems physically not unlike the earth, may be in a condition similar to that of our world in the older geological periods. Jupiter and Saturn are probably still intensely heated and encompassed with a vaporous "deep," and may perhaps aid in supporting life on their satellites, while untold ages must elapse before these magnificent orbs can arrive at a stage suitable for maintaining life like that on the earth. But after all these ages have passed, and when all the planets have grown old and lifeless, the sun itself, now a fiery mass, may have arrived at a condition suited for living and rational beings.

Thus the physical conditions of our planetary system teach that if we suppose all worlds capable of supporting life, all are

not so at one time, and that, as ages pass, each may successfully take up this *rôle*, of which in greater or less degree all may at some time or other be capable. So when we ascend to the starry orbs, these suns may have attendant worlds, some in one stage, some in another. There may also be stars and nebulæ still scarcely formed, and others which have passed far beyond the present state of our sun and its planets. Thus the universe is a vastly varied and progressive scene. At no one time can all worlds be seats of life, but of the countless suns and worlds that exist, thousands or millions may at any one time be in this state, while thousands of times as many may be gradually arriving at it or passing from it. Such are the thoughts which necessarily arise in our minds when we consider the existence of worlds in time.

Now these ideas are very old, and they impressed themselves on the mind of antiquity before men could measure the vastness of the universe in space; and it is necessary to have them before our minds if we would enter into the thoughts of the writers of the Old and New Testaments, when they treat of time and eternity. The several stages of the earth in its progress from chaos, the prophetic pictures of its changes in the future, alike embody the idea of time-worlds. It is in this aspect that the universe is compared to a vesture of God, which he can change as a garment, while he himself remains ever the same. It is in contrast to the eternity of truth that the heavens and earth are said to be passing away, but the words of the Redeemer shall never pass away. It is with the same reference that we are told that "the things which are seen are temporal, the things which are unseen are eternal."

The use made of the Hebrew word *olam* and the Greek *aiòn* in the sense of age, or even of eternity, brings before us still more clearly the biblical idea of time-worlds. In that sublime "prayer of Moses the man of God" which we have in the 90th Psalm, God, who is the "dwelling-place of man in generation to generation," who existed before the mountains were brought forth, with whom a thousand years are "as a watch in the night," is said to be from "olam to olam," from "everlasting to everlasting" as the authorized version has it, but more properly from age to age of those long cosmic ages in which he

creates and furnishes successive worlds. So when God is said to "inhabit eternity," [1] it is not abstract eternity but these successive olams, or time-worlds, which are his habitation. In the Old Testament, God, as revealed to us in his works, dwells in the grand succession of worlds in time, thus continuously and variously manifesting his power, a much more living and attractive view of divinity than the mere abstract affirmation of eternity.

The same thought is taken up and amplified in the New Testament. The writer of the Epistle to the Hebrews, who is most deeply imbued with the Old Testament lore, speaks of Christ as God's Son, "whom he hath appointed heir of all things, by whom also he made the worlds," more literally "constituted the aions." He does not refer, as one might conceive from the English translation, to different worlds in space, but to the successive ages of this world, in which it was being gradually prepared and fitted up for man. So Paul, in his doxology at the end of the third chapter of the Epistle to the Ephesians, ascribes to the Redeemer glory in "all generations of the time-worlds," and in the earlier part of the same chapter he speaks of "God's mystery, hid from the beginning of the ages or time-worlds, and now made known in Christ, by whom also he created all things." So, also, in the eleventh chapter of Hebrews we are told that by faith we understand that "the ages or time-worlds were constituted by the word of God." Another fine illustration of this idea is in Paul's familiar and business-like letter to Titus, where he says that he lives "in hope of eternal life, which God, who cannot lie, promised before the world began, but hath in due time manifested his word." The expression "the world began" here represents the "ages of time," and the "eternal life" is the "life of the ages." Thus, what the apostle hopes for is life through the unlimited ages of God's working, and this life has been promised, before the beginning of the time-worlds of creation. So the whole past, present, and future of God's working has its relation to us, is included under this remarkable idea of ages or time-worlds, and is appropriated by faith and hope as the possession of God's people. God, who cannot lie, has pledged himself to us from the beginning of those

[1] Isaiah 56 : 15.

long geologic ages in which he founded the earth; he has promised us his favor in all the course of his subsequent work; he has sealed this promise in the mission of his Son, that same glorious Being through whom he arranged all those vast ages of creation and providence, and in the strength of this promise we can look forward by faith to an endless life with him in all the future ages of his boundless working.

CREATIVE DAYS AND THE SABBATH.

It has long appeared to me, and I have elsewhere endeavored to illustrate this idea,[1] that the long creative days of geology throw a most important light on the institution of the weekly Sabbath and its continuance as the Lord's day. If it is true that the seventh or Sabbath day of creation still continues, and was intended to be a day of rest for the creator and his intelligent creature man, we find in this a substantial reason for the place of the Sabbath in the Decalogue, and through our Lord's declaration in reply to the Pharisees, "My Father worketh hitherto and I work," and the argument in the fourth chapter of the Hebrews, can carry it forward into the Christian dispensation.

At first sight the place of the fourth commandment in the Decalogue, and the vast importance attached to this law by the Hebrew writers, strikes us as strange and anomalous. The Sabbath stands as the sole example of a ritual observance, in those "ten words," which otherwise mark the most general moral relations of man to God and to his fellow-men. Farther, the reason given seems trivial. If it is meant that God worked on six natural days and rested on the seventh, the question arises, what is he doing on subsequent days? Does he keep up this alternation of six days' work and one day's rest, and if not, how is this an example to us? If it is argued that the whole reason of God's six days' work and seventh day's rest was to give an example, this conveys the absurdity of doing what is infinitely great for an end comparatively insignificant, and which might have been attained by a command, without any reason assigned. But let us now suppose that when God rested on the

[1] "Origin of the World," chap. vi.

seventh day he entered into an æon of vast duration, intended to be distinguished by the happy Sabbatism of man in an Edenic world, and in which every day would have been a Sabbath; or if there was a weekly Sabbath, it would have been but a memorial of a work leading to a perpetual Sabbath then enjoyed. Let us farther suppose that at the fall of man the Sabbath-day was instituted, or obtained a new significance as a memorial of an Edenic Sabbatism lost, and also as a memorial of God's promise that through a redeemer it would be restored. Then the Sabbath becomes the central point of all religion, the standing and perpetual memorial of an Eden lost and a paradise to be restored by the coming seed of the woman. The commandment "Remember the Sabbath-day" called upon the Israelite to remember the fall of man, to remember the promise of a Saviour, to look forward to a future Sabbatism in the reign of the Redeemer. It is thus the gospel in the Decalogue, giving vitality to the whole, and is most appropriately placed, and with a more full explanation than any other command, between the laws that relate to God and the laws that relate to man. I have elsewhere attempted to show that in this light the Sabbath was regarded by Moses himself, by succeeding prophets, by our Lord, the apostles, and the primitive church,[1] and that the loss of this great truth belongs to the many losses of the church in passing through the dim ages before the reformation. If the investigations of science into the long æons of the pre-adamite earth helps us to regain it now, let us not be ungrateful.

The argument in the Epistle to the Hebrews[2] may help us to understand this, and it is the more valuable that it is not an argument about the Sabbath, but introduces it incidentally, and that it seems to take for granted the belief in a long or olamic Sabbath on the part of those to whom it is addressed. It may be freely rendered as follows:

"'For God hath spoken in a certain place (Gen. 2:2) of the seventh day in this wise—"And God did rest on the seventh day from all his works;" and in this place again—"They shall not enter into my rest" (Ps. 95:11). Seeing, therefore, it still remaineth that some enter therein, and they to whom it (God's Sabbatism) was first proclaimed entered not in, because of disobedience (in the fall, and afterward in the sin of the Israel-

[1] Op. cit. [2] Chap. iv.

ites in the desert), again he fixes a certain day, saying in David's writings, long after the time of Joshua—"To-day, if ye hear his voice, harden not your hearts." For if Joshua had given them rest in Canaan, he would not afterward have spoken of another day. There is therefore yet reserved a keeping of a Sabbath for the people of God. For he that is entered into his rest (that is, Jesus Christ, who has finished his work and entered into his rest in heaven), he himself also rested from his own works, as God did from his own. Let us therefore earnestly strive to enter into that rest.'

"It is evident that in this passage God's Sabbatism, the rest intended for man in Eden and for Israel in Canaan, Christ's rest in heaven after finishing his work, and the final heavenly rest of Christ's people, are all indefinite periods mutually related, and cannot possibly be natural days."

This passage farther aids us in comprehending the connection of the Lord's day with the Jewish Sabbath. If the latter had a reference to a Sabbatism lost by the fall and restored by the Redeemer, the Son of man must be "Lord of the Sabbath" in the sense of fulfilling and realizing its prophetic import. Therefore, the day on which he finished his work and entered into his rest must of necessity be that to be commemorated by Christians, until the time when the return of Christ shall inaugurate that final and eternal Sabbatism which remains to his people. Thus the Lord's day comes to occupy the same important place formerly occupied by the Jewish Sabbath. It links together God's creative work and Christ's work of redemption; the Sabbatism lost in the fall and restored in the Saviour; the imperfect state of the militant church, still having only a memorial of a rest to come, and the church triumphant, which will enjoy this rest forever. If the Sabbath that carried with it the mournful memory of the first sin was holy, much more that which points forward to a heavenly paradise. If the obligation to remember it was to the Hebrew equal to that of the most binding moral duties, still more must the Lord's day be a day to be remembered by the Christian, as the memorial of Christ's finished work, and of our heirship of all the divine ages, past, present, and to come. Thus we see that the moral and spiritual dignity and obligation of the Lord's day rise far above those of the Jewish Sabbath, and we can understand how naturally the apostles and primitive Christians, almost without note of the change, transferred their allegiance from the seventh to the first day of the week.

ANTEDILUVIANS.

The deluge of Noah has ceased to be a matter solely theological or dependent on the veracity of Genesis. It has now become a fact of ancient Assyrian history, a tradition preserved by many and various races, a pluvial or diluvial age, or time of subsidence, intervening between the oldest race of men known to geology and modern times. We are at least entitled, conjecturally, to identify these things, and through means of these identifications to arrive at some definite conceptions of the condition and character of the earliest men, whether we call them the Antediluvians of the Bible or the Palæocosmic or Palæolithic men of geology.

The Book of Genesis traces man back to Eden, whose characteristics we have already considered, and which certainly is placed by that old record, as by the Assyrian genesis, in the Euphratean valley, whether in its upper table-lands or in its delta. From this Eden man was expelled, the old Aryan traditions say by physical deterioration—the incoming, perhaps, of a glacial age. The Semitic traditions, on the other hand, refer it to a moral fall and a judicial visitation of God. In any case it was a very real evil, involving a change from that condition of happy abundance and freedom from physical toil, which all histories and hypotheses as to human origin must assign to the earliest state of our species, to a condition of privation, exposure, labor, struggle for existence against the uncongenial environment of a wilderness world. Such new conditions of existence must have tended to try the capabilities and endowments of men. Under certain circumstances, and when not too severe, they must have developed energy, inventiveness, and sagacity, and thus must have produced a physical and mental improvement. Under other circumstances they must have had a deteriorating influence, degrading the physical powers and reducing the mental nature almost to a bestial condition. The experience of our modern world, and even of civilized communities, enables us too well to comprehend these opposite effects. In any case, such struggle was, on the whole, better for man when in an imperfect state. Only a creature perfectly simple and harmless morally, could enjoy with advantage the privileges of an Eden.

The Bible story, however, gives us a glimpse of still another and unexpected vicissitude. The human family at a very early period split into two tribes. One of these, the Sethidæ, simple, God-fearing, conservative, shepherds and soil-tillers; the other, the Cainidæ, active, energetic, godless, city-builders and inventors. Among the Cainidæ sprang up another division into citizen peoples, dwelling in dense communities, practising metallurgy and other arts, inventing musical instruments, and otherwise advancing in material civilization; and wandering Jabalites—nomads with beasts of burden and movable tents, migrating widely over the earth, and perhaps locally descending to the rudest forms of human life. Thus from the centre of Eden and the fall sprang three diverse lines of human development.

But a time came when these lines reacted on each other. The artisans and inventors intermarried with the simple country folk. The nomadic tribes threw themselves in invading swarms on the settled communities. Mixed races arose, and wars, conquests, and disturbances, tending to limit more and more the areas of peace and simple plenty, and to make more and more difficult the lives of those who sought to adhere to the old Edenic simplicity; until this was well-nigh rooted out, and the earth was filled with violence. In the midst of this grew up a mixed race of men, strong physically, with fierce passions, daring, adventurous, and cruel, who lorded it over the earth and deprived others of their natural rights and liberties—the giants and men of renown of antediluvian times.

Such, according to the Bible, was the condition of the later antediluvians, and in this was the reason why they were swept away with a flood. Before this catastrophe, we can gather from the story, there must have been great progress in the arts. Intellects of gigantic power, acting through the course of exceedingly long lives, had gained great mastery over nature, and had turned this to practical uses. There must have been antediluvian metallurgists as skilled as any of those in early post-diluvian times; engineers and architects capable of building cities, pyramids, and palaces, and artisans who could have built triremes equal to those of the Carthaginians. At the same time there must have been wild outlying tribes, fierce and barbarous. Farther, the state of society must have been such that there was great pressure for

the means of subsistence in the more densely peopled districts; and as agricultural labor was probably principally manual, and little aided by machines or animals, and as the primitive fertility of the soil must, over large regions, have been much exhausted, we can understand that lament of Lamech as to the hardness of subsistence with which he precedes his hopeful prophecy of better times in the days of Noah.[1]

Another feature of the antediluvian time was its godless and materialistic character. This is quaintly represented in some of the American legends of the deluge by the idea that the antediluvian men were incapable of thanking the gods for the benefits they received. They had, in short, lost the beliefs in a ruling divinity and a promised Saviour, and had thrown themselves wholly into a materialistic struggle for existence, and this was the reason why they were morally and spiritually hopeless and had to be destroyed. We do not hear of any idolatry or superstition in antediluvian times, nor of the lower vices of the more corrupt and degraded races. The vices of the antediluvians were those of a superior race, self-reliant, ambitious, and selfish. Devoting themselves wholly to worldly aims and to the promotion of the arts of life, and utilizing to the utmost the bounties of nature, their motto was "let us eat and drink," not for to-morrow we die, but because we shall live long in our enjoyments. The inevitable result in the tyranny of the strong over the weak, and the rebellion of the weak against the strong, in the accumulation of wealth and luxury in favored spots, and in the desolation of these spots by the violence and rapacity of rude and warlike tribes, came upon them to the full, but brought no repentance. Such a race, to whom God and the spiritual world had become unthinkable, to whom nothing but the material goods of life had any reality, who probably scoffed at the simple beliefs of their ancestors as the dreams of a rude age, had become morally irredeemable, and there was nothing in store for it but a physical destruction.

It is easy to see that these evils must have been greatly aggravated if the life of antediluvian man was prolonged through centuries, and if his physical and mental organization were of a

[1] Genesis 5 : 29.

correspondingly powerful and enduring character. The hardness of heart of a materialist who cannot hope to survive threescore and ten years must be as nothing compared with that of a Methuselah.

The cataclysm by which these men were swept away may have been one of those submersions of our continents which, locally or generally, have occurred over and over again, almost countless times, in the geological history of the earth, and which, though often slow and gradual, must in other cases have been rapid, perhaps much more so than the hundred and fifty years which the Bible record allows us to assign to the whole period of the Noachic catastrophe.

It is an interesting fact that those ancient cave-men whose bones testify to the existence of man in Europe before the last physical changes of the post-glacial age, and while many mammals now locally or wholly extinct still lived in Europe, present characters such as we might expect to find at least in the ruder nomadic tribes of the antediluvian men. Their large brains, great stature, and strong bones point to just such characters as would befit the giants that were in those days. It is farther of interest that the early appearance of skill in the arts of life in the valleys of the Euphrates and Nile in post-diluvian times, points to an inheritance of antediluvian arts by the early Hametic or Turanian nations, and is scarcely explicable on any other hypothesis.[1]

It is a question, raised by certain expressions of Scripture, whether the world will again fall into the condition in which it was before the flood. "As it was in the days of Noah," we are told, so shall it be when the Son of man comes to judgment. To bring the world into such a state it would require that it should shake off all the superstitions, fears, and religious hopes which now affect it; that it should practically cast aside all belief in God, in morality, and in the spiritual nature and higher destiny of man; that it should devote itself wholly to the things that belong to the present life, and in the pursuit of these should

[1] Tyler, in his address to the anthropological section of the British Association, represents me as holding that the Palæocosmic men and the deluge which swept them away were contemporaneous with a continuous and undisturbed civilization in Chaldea and Egypt. This is, of course, an error on his part.

be influenced by nothing higher than a selfish expediency. Then would the earth again be filled with violence, and again would it cry unto God for punishment, and again would he say that "his spirit should no longer strive with men," and that it "repented him that he had made man upon the earth." Who shall say that this is impossible? On the contrary, do we not see in the materialistic philosophy, in the cold, calculating policy, the profound selfishness, and the proud self-confidence of the more civilized races in our times, indications of the same spirit which was in the antediluvians? Should it come to pass that this spirit should again altogether prevail, it might happen that God, who has so long patience with the follies, the superstitions, and the baser appetites of humanity, might again direct his judgments against this higher and more stupendous form of iniquity, and as the earth that then was perished by water, so that which is now might, in consideration of the clearer light it has abused and the greater privileges it has despised, be visited with fire reserved against "the day of judgment and perdition of ungodly men," and which nature can in many ways provide.

I have said that such a catastrophe as the deluge of Noah is in no respect incomprehensible as a geological phenomenon, and were we bound to explain it by natural causes, these would not be hard to find. The terms of the narrative in Genesis well accord with a movement of the earth's crust, bringing the waters of the ocean over the land, and at the same time producing great atmospheric disturbances. Such movements seem to have occurred at the close of the post-glacial or palæocosmic age, and were probably connected with the extinction of the palæocosmic or cave men of Europe and of the larger land animals their contemporaries; and these movements closed the later continental period of Lyell, and left the European land permanently at a lower level than formerly. Movements of this kind have been supposed by geologists to be very slow and gradual; but there is no certain evidence of this, since such movements of the land as have occurred in historical times have sometimes been rapid; and there are many geological reasons tending to prove that this was the case with that which closed the post-glacial age. It is to be observed, also, that the narrative in Genesis does not appear to imply a very sudden catastrophe.

There is nothing to prevent us from supposing that the submergence of the land was proceeding during all the period of Noah's preaching, and the actual time in which the deluge covered the district occupied by the narrative was more than a year. It is also to be observed that the narrative in Genesis purports to be that of an eye-witness. He notes the going into the ark, the closing of its door, the first floating of the large ship; then its drifting, then the disappearance of visible land, and the minimum depth of fifteen cubits, probably representing the draft of water of the ark. Then we have the abating of the waters with an intermittent action, going and returning, the grounding of the ark, the gradual appearance of the surrounding hills, the disappearance of the water, and finally the drying of the ground. All this, if historical in any degree, must consist of the notes of an eye-witness, and if understood in this sense, the narrative can raise no question as to the absolute universality of the catastrophe, since the whole earth of the narrator was simply his visible horizon. This will also remove much of the discussion as to the animals taken into the ark, since these must have been limited to the fauna of the district of the narrator, and even within this the lists actually given could exclude the larger carnivorous animals. Thus there would be nothing to prevent our supposing, on the one hand, that some species of animals became altogether extinct, and that the whole faunæ of vast regions not reached by the deluge remained intact. It is further curious that the narrative of the deluge preserved in the Assyrian tablets, like that of Genesis, purports to be the testimony of a witness, and indeed of the Assyrian equivalent of Noah himself.

The "waters of Noah" are thus coming more and more within the cognizance of geology and archæology, and it is more than probable that other points of contact than those above referred to may erelong develop themselves.

NATURAL THEOLOGY.

There are certain schools of modern science and philosophy which affect contempt for the doctrine of final causes, and profess to see nothing in nature that points to an unseen Creator. On

the other hand, we find Mill, in one of his last essays, after rejecting every other argument for the existence of a God, admitting that the argument from design in the universe is irresistible, and that nature does testify of its Maker. There can be no question that in this Mill is right, if for no other reason than that old and well-known one that mere blind chance cannot be conceived of as capable of producing an orderly system of things. Farther, there can be no question that the one argument for a God which is convincing to Mill is also the one, and the only one, which the Holy Scriptures condescend to refer to. They habitually take the existence of God for granted, as something not needing to be proven to reasonable minds, but they reason from nature, as, for instance, in that remarkable passage of the apostle Paul where he affirms that to the heathen the "power and divinity" of God are apparent from the things which he has made. But perhaps there is no part of the Bible in which the teaching of nature with reference to divine things is more fully presented than in the Book of Job, and I am inclined to think that not a few even of religious men fail to see precisely the significance of the address of the Almighty to Job, in the concluding chapter of that book.

Job is tortured and brought near to death by severe bodily disease. His friends have exhausted all their divinity and philosophy upon him, in the vain effort to convince him that he deserves this infliction for his special and aggravated sins. At length the Almighty intervenes and gives the final decision. But instead of discussing the ethical and theological difficulties of the case, he enters into a sublime and poetical description of nature. He speaks of the heaven above, of the atmosphere, its vapors and its storms, and of the habits and powers of animals. In short, Job is treated to a lecture on natural history. Yet this instantaneously effects what the arguments of the friends have altogether failed to produce, and Job humbles himself before God in contrition and repentance. His words are very remarkable (Job 42 : 1–12):

"I know that thou canst do all things,
From thee no purpose is withheld ;
(Thou hast said) 'Who is this that obscures counsel without knowledge?'[1]

[1] Ch. 38 : 2.

(And I confess that) I have uttered what I understood not,
Things too hard for me which I know not,
But hear me now and I will speak.
(Thou hast said) 'I will demand of thee
And inform thou me.'[1]
I have heard of thee with the hearing of the ear,
But now mine eye seeth thee;
Therefore do I abhor myself,
And repent in dust and ashes."

What does this import? Simply that, through the presentation to him of God's works, Job had attained a new view of God and of himself. He had not considered or fairly weighed the world around him in its grandeur, its complexity, its unaccountable relations, and contrasted it with his own little sphere of thought and work. Had he done so, he would, like Paul in later times, have said, "Hath not the potter power over the clay?" God, if really the architect of nature, must have thoughts and plans altogether beyond our comprehension. He must be absolute sovereign of all. It is our part to submit with patience to his dealing with us, to lean upon him by faith, and thus to carry this almighty power with us. So Job can now be vindicated against his friends who have taken upon them to explain God's plans and have misrepresented them, as many good men like them are constantly doing; against Satan, who cannot comprehend Job's piety, but believes it to be mere self-interest, and who now sees himself foiled and Job brought into still greater prosperity, which can now be safely granted to him; while by the result and the explanation of it handed down to our time, Satan's kingdom has been severely shaken.

I would put this case of Job before modern Christians in three aspects. (1) Do we attach enough of importance to the Gospel in nature, as vindicating God's sovereignty and fatherhood, and preaching submission, humility, and faith? Might we not here take a lesson from the Bible itself? (2) May there not be many in our own time who, like Job, have "heard of God with the hearing of the ear" but have not seen him with the eye in his works; and on the other hand, are there not many who have seen the works without seeing the Maker, who can even

[1] Ch. 38 : 3 and 40 : 7.

"magnify God's works which men behold" without knowing the author of them? Would it not be well to bring more together in friendly discussion and comparison of notes those who thus look on only one side of the shield? (3) Should we not beware of the error of Job's friends in misrepresenting God's plans, and thereby denouncing those who differ from us? These three wise and well-meaning men had nature all around them, yet they disregarded its teachings, and dwelt on old saws and philosophic dogmas, until God himself had to bring out the whirlwind and the thunder-storm, the ostrich, the horse and the hippopotamus, to teach a better theology. The Book of Job no doubt belongs to a very ancient time, when men had little divine revelation, perhaps none at all in a definite and dogmatic form, yet there are in our time many minds even cultured minds, as ignorant of revelation as Job's contemporaries, or who, if not ignorant of it, will not receive it. To them the same elementary teaching may afford the training which they need.

THE EXODUS.

Modern geographical exploration has gone over the ground traversed by ancient expeditions, or famous from wars and sieges, with various results as to the historical credibility of the narrators of these events. Bible history has often and in many places been subjected to this test, and has certainly been remarkably vindicated by the spade and the measuring-line. But perhaps no instance of this is more remarkable than that afforded by the magnificent report of the Ordnance Survey of Sinai, both because of the positive and clear character of its results, and of the antiquity and obscurity of the events to which it relates.

Some three thousand years ago, according to a history professedly written by contemporaries, the Hebrew people, migrating from Egypt, sojourned in this inhospitable region for forty years on their way to Palestine. No one in the intervening ages is known to have followed their precise route. Arab and Christian traditions have, it is true, ventured to fix the sites of some of the leading events of the march. Travellers have passed hastily over portions of the ground, and have given to the world the impressions produced on their minds by crude ob-

servation without accurate measurements. The results arrived at were so various and discordant that any one of half a dozen theories might be held as to the actual route and its more important station, and sceptics might be pardoned for supposing that the writer of the history knew less of the ground than many of the subsequent visitors. But now science intervenes with its special methods. A corps of trained surveyors, armed with all the appliances of their art, and prepared to make observations as to climate, geology, and natural history, enter the peninsula at the point where Moses is represented to have entered it, and prepare to follow in his footsteps. They first settle by exhaustive investigation the crossing-place of the fugitives near the present town of Suez, and inform us of the precise circumstances which must have attended that event, not omitting the strong east wind which still sometimes blows with terrific force down the gulf. They examine the wells of Moses and test their water, and describe the structure of that remarkable *Shur*, or wall of rock, from which the locality derives its Bible name, and which barred the way of the Israelites toward the east and caused them to make a long *détour* to the south. They proceed southward from station to station and well to well, noting remarkable coincidences heretofore overlooked, with reference to the characteristics of the terrible wilderness of Sin, the various ways by which the table-land may be penetrated from the coast, the apparently devious course of the Israelites, and their "encampment by the sea." They show how the host must have turned abruptly to the east by Wady Feiran, and how this brought them into conflict with the Amalekites. They explain the tactics of the battle of Rephidim, with the effect of the victory in opening the way to a junction with Jethro and the Midianites, and to the great and well-watered plain of Er Rahah in front of Mount Sinai. They show how this plain and mountain fulfil all the conditions of the narrative of the giving of the Law, and explain the necessity for the miraculous supply of water before the fight with the Amalekites, and the supplies of water and pasture to which that battle gave access.

As we follow the laborious investigations of the surveying party, and note the number and complexity of the undesigned agreements between their observations and the narrative in

Exodus and Numbers, as we study their account of the geology, productions, and antiquities of the country, trace its topography on their beautiful maps and photographs, and weigh their calculations as to the supplies of water, food, and pasturage at different stages of the journey, we feel that the venerable narrative of the Pentateuch must be the testimony of a veracious eye-witness, and all the learned theories as to a late authorship and different documents disappear like mist. The writer of Exodus and Numbers had no idea that after thirty centuries his veracity was to be subjected to the test of a scientific survey; but he has, nevertheless, so provided for this that even his obscurities, imperfect explanations, and omissions now tend to his vindication.

All this would be of extreme interest were the Exodus merely an old story, like the Siege of Troy or the tragical history of Mycenæ. But it is much more than this, much more than even a national movement in assertion of the rights of the oppressed and of the sacredness of freedom. The Exodus was a new departure in the higher life of humanity. It was a great revival of monotheistic religion at a time when it seemed likely to perish. It restored the hopes of a coming Saviour. It initiated a religious literature which reached back to the creation, and which culminated in the New Testament. The roots of all that is most valuable in religion to-day lie in the Exodus. Therefore, it is of the highest importance to know whether the history of this event preserved to us in the Hebrew Scriptures is accurate and trustworthy. If it is a myth or a historical novel, or even a well-meant compilation of traditions and documents by an editor living long after the event, we might feel that its authority in all respects was shaken. As it is, we may rejoice in the possession of at least one true and carefully written history, however we may regret that so many volumes of learned historical criticism have been reduced to waste paper. The authors of the report on the Sinai Survey make no pretensions to be either critics or expositors of the Bible, and they are prepared to state what they see, independently of the consequences to any one. Hence it is most instructive to observe how, as they unsparingly sweep away old traditions, and the conjectures of travellers and historians ancient and modern, the

original record stands in all its integrity, like the great stones of some cromlech from which men have dug away the earth under which it had been buried.

To those who have placed reliance on such theories of the Pentateuch as those of Kalisch, Kuenen, or Colenso, the disclosures of the Survey of Sinai must come like a new revelation. Henceforth the only rational theory as to the composition of the books of Exodus, Leviticus, and Numbers, is that they are contemporary journals of the events to which they relate, and that they have not been subsequently revised or altered even to such an extent as to explain facts obscure to any one except a contemporary, or to remove seeming contradictions requiring knowledge of the ground for their solution. It is even startling to find that the apparent omissions, repetitions, and inconsistencies which have been ingeniously employed to sustain theories of a composite and late authorship become, when studied on the ground, the most convincing proofs of contemporary authorship and the absence of any subsequent revision. Had these writings been subjected to any considerable revision between the date of the Exodus and that of the Ordnance Survey, they could scarcely have failed to present less of a photographic truthfulness than that which at present characterizes them. This must at least be the theory which will commend itself to every intelligent student of the report of the Sinai Survey; and it is to be observed that the facts of this report are final in a scientific point of view, and cannot be invalidated by any critical process, so that, in so far as the central books of the Pentateuch are concerned, the occupation of the disintegrating and destructive critics is absolutely gone, or can be valued only by those bookworms and pedants who are determined to shut their eyes against scientific evidence.

BODY, SOUL, AND SPIRIT.

To any thoughtful reader of the New Testament the peculiar use of the words (σάρξ) "flesh," (ψυχη) "soul or life," (πνευμα) "spirit," and the adjectives derived from them, must have formed a subject of attention, and he will have perceived that the uses of these terms are somewhat constant, though

there are of course some exceptional and figurative employments of them, and cases where one of the terms implies another not mentioned.[1] He may have regarded this classification as expressing definite ideas of the writers as to a three-fold constitution of human nature, as merely arbitrary and accidental, or as conforming to a classification current at the time. In either of these cases he may have felt some interest in comparing them with the arrangements of modern psychology. Yet in such comparison he will have found little satisfaction, unless he turns to that reaction of physiology upon mental science which is so influential in our day; but here, if I mistake not, he will find some curious points of contact between modern science and the biblical view of humanity. In making this comparison, we must refer, for the biblical distinction of body, soul, and spirit, and for the conditions under which an eternal life is affirmed to be possible for all three, to the New Testament itself, and to the numerous theological writers who have discussed the subject.

Hitherto it has been somewhat difficult to bring this biblical psychology, if it may be so called, into harmony with the mental science of the schools. But any one who has read the article by Ferrier in a late number of the PRINCETON REVIEW, or Calderwood's recent work, "The Relations of Mind and Brain,"[2] must be aware that physiological facts relating to the organism, the "flesh" of the New Testament, are beginning very seriously to modify our views. We now know that the gray cellular matter of the brain constitutes a reservoir of sensory and motor energy, which supplies the power necessary to place us in relation with things without, and to impress, by means of muscular effort, our own power on the outer world. Further, there seems the best reason to believe that the mass of the brain is directly connected with sensation and motion, though there seem to be means of regulation and co-operation of sensations and actions in connection with the front and back portions of the cerebral hemispheres. There are facts indicating that the anterior portions of the hemispheres are the organs of a certain determin-

[1] We have also the formula, "Body (σωμα), soul, and spirit" (1 Thess. 5 : 23).
[2] London, 1879.

ing and combining property of the nature of animal intelligence, and that the posterior portions, in association with the sympathetic nerve, are connected with the affections and passions.[1] Now all this belongs, in the first instance, to living nerve-matter, and is possessed by man in common with animals. They, like us, can perform reflex or automatic actions, altogether or partially involuntary. They, like us, can perceive and reflect, and have affections, passions, and appetites. Even in animals this supposes something beyond the mere organism, and which can combine and compare sensations and actions. This is the animal or psychical life, which, whatever its essential nature, is something above and beyond mere nerve-power, though connected with it and acting by means of it. But in man there are other and higher powers, determining his conscious personality, his formation of general principles, his rational and moral volitions and self-restraints. These are manifestations of a higher spiritual nature, which constitutes in man the "image and shadow of God."

Thus the physiologist may fairly claim, not for protoplasm as such, but for the living organism, all the merely reflex actions, as well as the appetites and desires, and much that belongs to perception and ordinary intelligence. These may be regarded as bodily and psychical in the narrow sense. But the higher regulating powers belong to a spiritual domain into which he cannot enter.

It is interesting to observe here that even those who seem most desirous to limit the powers of man to mere properties of the living organism are prevented by their own consciousness, as well as by scientific facts, from fully committing themselves to this. Tyndall admits a "chasm" "intellectually impassable" between physical facts and human consciousness. Huxley's human automaton is a "conscious automaton," and in some sense "endowed with free will," and he declines to admit that he will ever be proved to be only "the cunningest of nature's clocks." Spencer has made similar admissions. Allman, in his British

[1] It is a very old and in some respects well-founded notion that the viscera are connected with the affections. We now know something of the relation of this to the sympathetic nerve system and to the posterior portion of the cerebral lobes. Ferrier, Calderwood, and very recently Bucke, have discussed these points.

Association address, distinctly denies that consciousness can be physiologically explained. There are, it is true, extreme writers like Buchner, with whom matter is the origin and essence of all that exists, but their strong assertions of this, being destitute of proof, can scarcely be held to be scientific.

At present no doubt this whole subject is as a department of science somewhat crude and rudimentary, and it becomes us to speak with some reserve respecting it, but the drift of opinion is in the direction above indicated. It has become evident that the more recent discoveries as to the functions of brain will not warrant the extreme views of materialists, while on the other hand they serve to correct the doctrines of those who have run into the opposite extreme of attaching no importance to the fleshly organism and its endowment of animal life. In like manner, these discoveries are tending to establish definite boundaries between the domain of mere automatism and that of rational will.[1] In so far as these results are attained, we are drawn more closely to that middle ground occupied by the New Testament writers, and which, without requiring us to commit ourselves to any new hypotheses or technical distinctions, gives a fair valuation to all the parts of the composite nature of man. The practical value of this Bible philosophy is well known. It relegates to their proper place the merely somatic and psychical elements of our nature, admits their value in that place, and condemns them only when they usurp the position of the higher determining powers. It seeks to place these last in their true relation to our fellow-men and to God, and to provide for their regulation under God's law and the guidance of his Spirit, with the object of securing a true and perfect equilibrium of all the parts of our nature. It is thus enabled to hold forth a prospect of peace and happiness to body, soul, and spirit, and to point out the meaning and value of the conflicts which rage within the man in our present imperfect state. This practical object,

[1] This is ably argued by Calderwood in the September number of the PRINCETON; and while writing this I have received the address of Prof. St. George Mivart before the Biological Section of the British Association, in which he advocates a threefold distinction into Rational, Animal, and Vegetable, as held by Aristotle, and under the "rational" would apparently recognize a higher and lower grade of psychosis, the former peculiar to man.

in connection with the mission of the Saviour, is what the New Testament has in view; but in arriving at this, it has undoubtedly pointed to solutions of the mysteries of our nature at which science and philosophy are beginning to arrive by their own paths; just as, in another department, the Bible has shadowed forth the great principles and process of creation in advance of the discoveries of geology.

There is at present in many minds a strong indisposition to acknowledge facts of this class, and even a tendency to disparage and treat with contempt the position of revelation relatively to science. It is, however, not difficult to see that this proceeds partly from narrow and prejudiced views, and partly from antagonism to superstition and ecclesiastical practices and assumptions supposed to be supported by the Bible. These prejudices it is to be hoped may disappear before greater light, and in any case it is much to be desired that there should be more of friendly discussion and comparison between the theology of the Bible and other departments of scientific inquiry; for we must not forget that theology is itself a science, and that the doctrines of the Bible admit of a scientific treatment, different on the one hand from captious criticism, and on the other from unreasoning dogmatism.

I have selected a few examples from various departments of scientific investigation to show that, in many respects not usually considered, modern scientific results approach to doctrines of revelation. Such examples might be very much multiplied, and others might be found more striking than some of those above referred to. Enough has, however, been said to show that the paths of science and revelation are at least not divergent, to suggest the necessity of removing from the reading of the Bible that veil of mediævalism which remains on so many minds, to indicate the utility of fairly comparing the new science with the old revelation, and above all to vindicate the fundamental unity and harmony of all truth, whether natural or spiritual, whether discovered by man or revealed by God.

JOHN W. DAWSON.

HERBERT SPENCER'S "DATA OF ETHICS."

HERBERT SPENCER commands our respect by his terrible earnestness. He has an end to live for and he lives for it. For it he has given up professional pursuits and profits (he was an engineer), and for many years immediate fame and popularity. For at least thirty years a grand system of speculative physics, founded on the recent discoveries in biology, has been developing in his brain, and he must unfold it and give it forth in spite of obstacles, with or without encouragement from surroundings in the world. He is to a large extent the author, and is certainly the organizer, and the very embodiment, personification, and expression of development; and he evolves it in the confidence that it, as the fittest, will survive, and as a force will persist till it brings all the environments into accordance with it. It must be towards forty years since he began his literary work in articles chiefly in the dissenting organs of Britain, such as the *Nonconformist* and *British Quarterly*, which early discovered his talents; and since 1850 he has been combining his views into a system in a series of elaborate volumes, which will in the end amount to ten, of which seven have been published entire and the others in part.

All his previous speculations are regarded by him as leading toward the end of finding "for the principles of right and wrong a scientific basis." I am sorry to find him obliged to say that he has intimations that "health may permanently fail even if life does not end;" so he anticipates the proper evolution of his scheme and publishes the work before us, "Data of Ethics," instead of others which should have come before it in logical order, that the world may know, even though he should be laid aside from labor, what has all along been his end, and to which

all the preceding parts are subsidiary. I am happy to find that later accounts speak more favorably of his health, and encourage us in hoping that he may live to finish his structure, of which we will be better able to judge when we see it standing before us complete.

We have now presented to us the basis of his ethics. Bacon has shown that science is to be tried by (not valued for) its fruits; and the English-speaking race have a keen disposition to inquire of every theory what is its moral tendency. It was at this point that the weakness of Locke's theory of the origin of our ideas, which he derived from sensation and reflection, was first detected, and this by the grandson of his patron, Lord Shaftesbury, who showed that our ideas of moral good cannot thus be drawn. Many inclined to follow so far Spencer's development, as containing (as Locke's theory of the origin of ideas did) much truth, are anxious to know what morality it has left us. Thinking men see that if development cannot meet the requirements of ethics, which are quite as valid and certain as heredity or any other laws of physiology, evolutionists will have to modify their theory, and allow that, while it can do much, it cannot accomplish everything, and that it leaves many important facts to be explained by other, and I may add higher, laws.

Our author is sensitively aware that there is great danger in a period of transition from an old faith to a new one. "Few things can happen more disastrous than the decay and death of a regulative system no longer fit before another and fitter regulative system has grown up to replace it." He assumes and asserts, without deigning to give any proof, that "moral injunctions are losing the authority given them by their supposed sacred origin." This is no doubt true of the school of which Mr. Spencer is the head, and of the *set* associated with him in London, and of his correspondents in various countries. But it may be doubted whether it is true of men in general, even educated men, or of Americans in particular, who I believe have as firm a faith in a morality prompted by an inward power and sanctioned by a Divine Power as they ever had, and are not likely to part with it readily. But there is a danger—not, it may be, to our old men whose beliefs and habits are formed, but to the youth in our colleges, and especially in our scientific schools

and reading only evolutionary books and magazines, and who are told that all things proceed from evolution, which needs no God to guide it—that in throwing off their religion they also throw off their morality, which has been so intimately joined with it. Mr. Spencer will help them to part with their religion, which he consigns to a region unknown and unknowable, which has attractions to nobody; but he would not have them part with their morality. He would not have them part with their religion too speedily; but if positive religion, that is religion with a God, be found untrue, as he tells them, then intelligent youths cannot any longer believe in it, and must by a necessity of their nature part with it, whether evil follows or not. Mr. Spencer is evidently alarmed about this transition period when the old has lost authority and there is no one to take the place of the deposed king. So he hastens, ere he is rendered unfit for the task, to give a new and scientific basis to morality, and this independent of God and of any inward law, both of which have been set aside. I have now to examine this new ethical theory, I trust candidly and impartially, and this, in the first instance, not upon its supposed tendency, which may be looked at subsequently, but upon the evidence advanced in its behalf.

It is now many years ago, and at a time when Mr. Spencer was not appreciated as he now is, I had occasion to give my estimate of him ("Intuitions of the Mind," Part III., b. i., § 8): "His bold generalizations are always instructive, and some of them may in the end be established as the profoundest laws of the knowable universe." I find that the American publishers of his works have been using this testimony of mine in their advertisements, and I have no objections that they continue to do so. But it is proper to state that I represented Mr. Spencer as a Titan making war against the gods that rule in Olympus, to which he seeks to rise not by slow and gradual steps, but by heaping Pelion on Pindos. His system of science and philosophy is a vast structure, professedly and really, with broad if not deep foundations in natural, especially biological, science, and towering into jurisprudence and ethics. This is its excellence, this is its defect.

His method is deductive rather than inductive. He sets out

with an hypothesis—that of development—containing much truth, but it may be guilty of some omissions and requiring to be limited on all sides. He then gathers facts to verify his hypothesis, and sets them forth in order. He examines these facts by the old Greek methods of analysis and synthesis, very sharp instruments, but somewhat perilous because they are so sharp. A great part of his work is described by him as synthetic, the synthesis being facts cut, joined, compressed, and compacted by his own comprehensive mind. His method is not just that enjoined by Bacon, who recommends us not to anticipate but follow nature, to let the facts suggest the laws (axioms, he calls them), and not to neglect noticing the apparent exceptions, which are to be entertained as Abraham entertained the strangers who turned out unawares to be angels. "We shall have good hope of the sciences," he says, "when by a true ladder and steps not broken or gaping we rise from particulars to minor axioms, and thence to middle axioms, rising higher and higher, and thence to the highest of all." Bacon shrewdly remarks that "a cripple on the right road will beat a racer on the wrong," adding language which might at times be applied to Spencer: "This is farther evident that he who is not on the right road will go the farther wrong the greater his fleetness and ability." In his eagerness of thought, our author is not very much inclined to submit to this slow but sure procedure. Possessed of great speculative ability, he is apt to leap from mountain-top to mountain-top without even looking upon the plains or examining the valleys below, in which, after all, are to be found the connections of these lofty ranges which he is so fond of tracing. We may have occasion to call attention to some of these lower facts, obvious to the common observer, but which he has overlooked. He feels that he has a special aptitude to interpret facts. Give him facts and he will explain them. Others, however, without denying his facts, will feel themselves justified in interpreting them otherwise.

At this present time Spencer occupies much the same place among the English-speaking peoples as Hegel did among the pan-Germanics an age ago. Both are characterized by speculative abilities of the very highest order. Both would bring all nature, mind and matter, under their all-embracing systems,

which are as wide as the horizon and as undefined. Both have their minds so filled with their own grand views that they are not inclined to look at the views taken by others, or at the facts which seem inconsistent with their generalizations. Both have had mighty influence over young men bent on having everything explained, by the dogmatism of their assertions and the comprehensiveness of their theories, which seem to explain what cannot otherwise be accounted for. In other respects they widely differ. Hegel had an extensive, though by no means an accurate, acquaintance with the philosophies of ancient Greece and modern Germany; but when he criticised Sir Isaac Newton's discoveries, he simply made himself ridiculous. Spencer, on the other hand, has a large knowledge of the late discoveries which are bringing organisms under the dominion of law — more, however, as an amateur than a practical experimenter; but has not, so it appears to me, studied the actings of the human mind as revealed to consciousness. His apprehension of these and his account of them are commonly given under conceptions and in language derived from matter and motion. Hegel's sun has now set, leaving behind only the glow of a mighty reputation. I believe that you could now count all the thoroughgoing Hegelians in Germany on your ten fingers, and all the eminent Hegelians out of Germany, including those in Naples, Oxford, Glasgow, and St. Louis, on your ten toes. Some do not scruple to call him a pretender and a charlatan. Spencer's sun is now at its zenith. What may be the estimate of his philosophy at the end of this century I will not take upon myself to predict. As embracing so many established facts, I believe that there is much in his system which will abide, and I adhere to the opinion that "his bold generalizations are always instructive, and that some of them may, in the end, be established as the profoundest laws of the knowable universe." It is one of the offices of thinking men in this age carefully to examine the structure which he is rearing, and while they admire its massive walls they may come to discover rents in it, indicating an unsettled and unsettling foundation.

His ethics is professedly an evolution from his development theory. It will be necessary, therefore, to begin with taking a brief survey of the present state of this question. The word

"development" has become one of the most universally employed, and one of the vaguest terms of our language. We hear not only of the development of plants and animals, but of what is considerably different, the development of worlds out of star-dust. Both applications may be legitimate, but taken to embrace both processes, all that the term denotes is that both worlds and animated beings come out of previously-existing materials. We read now of the development of science, of the development of literature, of the development of art, and of the development of trade and commerce. I believe we will soon hear of the development of the tin trade and the oil trade, and I suppose also of our manufactured articles, of our temples, our ships, our houses, our shirts and shoes and toys. The like vagueness attaches to the term "evolution." The looseness of the language tempts confused thinkers to attribute anything and everything to development and evolution. Now the one common truth involved in the language is that one thing comes out of another, and that all things come out of pre-existing materials. It implies, what has been known for ages, the universal reign of causation. I have said in an earlier number of this REVIEW that "since Mr. J. S. Mill showed that there are always two agents in causes, and especially since the discovery of the conservation of energy, or of the *persistence* of energy as Spencer calls it, the whole subject of causation (objective) needs to be carefully reviewed by some one combining scientific knowledge with philosophic comprehension." But it is not necessary for our present purpose to enter farther into this tempting subject. I have said this much simply to show that many are glibly using the phrases development and causation without knowing precisely what is contained in them.

Confining the phrase to the production of plants and animals, it is clear that development or evolution is not a single agent, property, or cause. It implies a combination of a number of forces, mechanical, chemical, electric, magnetic, vital as they used to be called, cosmic as they are now called, the panzoism of Spencer and the physiological units of Darwin; in fact, so many, so varied and complicated, that science at its present stage cannot specify them or determine their nature. When we describe a plant or animal as developed, we mean that it comes from a

combination—I believe a prearranged and adjusted combination —of forces, which cannot as yet be untwined and exposed separately to the view. The grand business of science in the age to which we have now come is not to satisfy itself with loose general processes, but to determine the exact nature of the powers involved in heredity and the evolution of plants and animals. This will clear the way for settling the question of what development can do and what it cannot do.

No one has shown more clearly and conclusively than Mr. Spencer that animate nature has risen from a lower to a higher state. But neither he nor any one else has been able to specify the causes by which this has been produced. If it is said to be by heredity, this is only avoiding the question; for we ask, What are the causes acting in heredity which ever improve the races, which make the streams rise higher than the fountains?

The vulgar account of development is that it starts with atoms and rises to molecules, and masses, and plants, and animals with sensation, and thence to higher and higher intelligences; and now it is supposed to moral agents. Mr. Wallace, the co-discoverer with Darwin of the doctrine of natural selection, has been obliged in a late paper to refer this rise in a crude manner to spiritual agency. For this he has been exposed to ridicule by his school, perhaps justly. But his desire is somehow to fill the gap. Mr. Spencer, marching on with his seven-leagued boots, can step over these chasms without noticing them. Any one may see some of these fallen stitches (fa'en steeks, as Hugh Miller used to call them) in the fabric. The latest science has not been able to find that the inanimate can produce the animate, that there can be a *vivum* without an *ovum* or some kind of protoplasm. Huxley and Tyndall have honestly avowed this; Spencer, so far as I know, has uttered no sound on the subject.

Other chasms lie gaping before us. Can the unsentient produce the sentient? Can the unconscious develop the conscious? Spencer's attempt to explain the origin of consciousness in his "Principles of Psychology" is about the greatest philosophic abortion of our day. He first describes the nervous system in a very elaborate manner. Then he brings in consciousness in the stealthiest manner, without even attempting to explain how

this mental quality can arise out of the soft pulpy substance, the nerves. He speaks of separate impressions received by the senses, and of the need of some centre of communication, "so that as the external phenomena become greater in number and more complicated in kind the variety and rapidity of the changes to which the common centre of communication is subject must increase—there result an unbroken series of these changes—there must arise a consciousness" (vol. ii. p. 403). *There must arise a consciousness!!* From changes and a centre which has no consciousness!! He does not even acknowledge the difficulty, apparently does not see it in the eagerness of his march. He fails to notice the like difficulty as it presents itself in the rise of consciousness into the higher attributes of mind, such as judgment and reasoning, emotion and will. As might be expected, he now in the work before us sees no difficulty in developing morality from accumulated experiences of sensations become hereditary.

Those who would account for the rise of the lower natures into the higher, say the ascidians into the fish, of the fish into the monkey, and the monkey into man, are shut up between the horns of a dilemma if they follow the acknowledged principles of causation. This power to rise from the original molecules up to man was either in the original molecules or it was not. If it was in the molecules, then there must have been in it all the mechanical, the chemical, the cosmic forces; in fact, it must be a power only a little lower than the infinite,—of all of which we have no evidence whatsoever. If the other alternative be taken, and it is supposed that in order to produce the higher qualities and beings new powers have always to be introduced, the question arises, Whence did these powers come? If it be said by constant small increments, it removes the difficulty only in appearance. For the increments could only give what they have, and which they have got from the original powers. In fact, the law of development with heredity is after all merely a wide empirical law. A law, as I understand, does not rise beyond the empirical state and become a rational law till the causes operating have been determined. For the present there might be a truce in the war between religion and science as to development. The religious man believes that all the operations of nature, whether coming

by development or otherwise, are from God. Let both the religionist and the scientist acknowledge that at present we do not know what are the causes which have brought in these higher powers, such as sensation, consciousness, intelligence, that have appeared as the ages advance.

Mr. Spencer calls his work the "Data of Ethics." He does not look on himself, and does not wish others to regard him, as a sceptic; on the contrary, his philosophy demands a large amount of faith. In particular he admits, as all profound men do, certain truths as incapable of being proved, but which must be accepted by all. He started as a speculator when Hamilton and Mansel were the reigning metaphysicians of Britain, and he takes his views of the character and marks of first truths largely from them, modifying but not improving them. "The inconceivableness of its negation is that which shows a cognition to possess the highest rank—is the criterion by which its unsurpassable validity is known." "If its negation is inconceivable, the discovery of this is the discovery that we are obliged to accept it. And a cognition which we are thus obliged to accept is one which we class as having the highest possible certainty."

This criterion of first principles is so far a sound one, and may serve some good purposes. But it is mutilated, and has not been put in the proper form. I cannot give in to the maxim that a man should believe a proposition simply because he cannot conceive or act otherwise. This is a kind of fatalism against which the heart if not the head is apt to rebel. I hold in opposition to the prevailing agnosticism, founded by Hume and favored without their intending it by Kant and Hamilton, that man can so far know things and the relations of things. He knows self as thinking and feeling. He knows body as extended and resisting his energy. He perceives at once certain relations in things thus known, as, for example, that these two straight lines cannot enclose a space, and that these two things *plus* other two things make four things. He knows all this because he perceives things and what is in things. This gives us a criterion not only of "unsurpassable validity," which "we are obliged to accept," not only of the "highest class" and the "highest possible certainty" *to us*, which is avowedly all that is

done by Spencer's test, which might not hold good or apply in different circumstances; but as we know the thing, a certainty which cannot be set aside in any state of things. The primary mark of primitive truth thus comes to be, not necessity, as Kant maintains and as Spencer, following Hamilton, maintains, but self-evidence: we perceive things to exist and to be what they are by looking at them. Necessity follows from self-evidence, and is the secondary and not the primary criterion of first truths. Universality that is of the conviction follows as a tertiary test, because all men are so constituted as to know so much of things by barely perceiving them. It is most perverse to argue as Spencer does in answering Mill, that the external world exists because we cannot conceive the opposite; whereas the simpler and true statement is that we know the external world as existing, and so cannot conceive it not to exist. I call this "intuition," because it is looking immediately into things. It is not a form imposed on things by the mind out of its own furniture, as Kant maintains, but a perception of things. I perceive objects in space, and in looking at them I perceive and decide that the shortest distance between two points is a straight line.

This may be the most appropriate place for doing what, so far as I know, has never yet been done—that is. narrowly sifting Spencer's famous theory of the formation of what metaphysicians call first or fundamental truths, such as the axioms of Euclid, the principle of universal causation, and moral maxims. From the time of David Hume down to that of Mr. John S. Mill, it was the fashion of the sensational school to account for the formation of these by the principle of association of ideas. We have seen cause and effect associated in our experience from our earliest years, and so when we see an effect we are led irresistibly to look for its usual concomitant. I have done my best to expose this theory, which has now fallen to pieces from its own instability. These principles appear so early that there is not time for their being produced in the mind of the individual. And so Spencer has introduced a new theory which has superseded that of Hume and Mill. It is that these primordial or fundamental principles are the result of all the ancestral experiences which have accumulated from age to age, these experiences beginning, it is supposed, with the ascidian and coming

down to man. This is an hypothesis which supports itself on agencies which are very much unknown. We know nothing of the processes by which the virtue has come down from one individual and one race to another. The mystery of the virtue supposed to descend in apostolic succession is nothing to this. We cannot tell what was the experience laid up by the ascidian and descending down through the fish to the ape and early man. Was it conscious or unconscious in the ascidian? If not, when did it become conscious? What form did it take? It is an hypothesis which it is impossible to refute because it is an hypothesis which cannot spread out its proof. As an hypothesis it does not explain the whole phenomenon. We have in fact no anticipation of mathematical or metaphysical or moral truth among the lower animals.

I admit that heredity may explain so much: it may account for the formation and the action of the nervous system. But some of us deny that nervous action is mental action. I deny that mere nervous action can become moral action. The great body of our scientific men are proclaiming that bodily action and mental action are entirely different. The brain and nerves are not the mind, they are merely the organ of the mind. It is altogether gratuitous to assume that the heredity which can fashion our nervous structure can also form our fundamental laws of knowledge and belief. In an earlier number of this REVIEW (March, 1878), I asserted that it would be difficult to prove that the brain is anything more to the mind than an organ of sensation and locomotion.[1]

Supposing that the cerebro-spinal mass is the organ of the mind, it may be able in a great variety of ways to modify mental actions. It may constrain them to go in certain ways, and restrain them in others. The mind may be led to act in a particular manner by the ready concurrence of the nerves. On the other hand, when the organism does not co-operate, the thoughts and feelings may be greatly hindered. In this way a nervous structure may give tendencies which become hereditary. But this does not prove that the primary principles of reason are the product of brain or nervous action.

[1] Prof. Calderwood's recently published work, "The Relations of Mind and Brain," is clear, judicious, and free from hypotheses and fancies.

All this is the more evident when we consider what is the nature of our intuitions. They are of the nature of perceptions, of perceptions of things and the relations of things. We perceive that if two straight lines go on for an inch without coming nearer each other, they will go on forever without doing so; and that from the very nature of a breach of trust, it must be evil. There is no proof whatever that there is any apprehension of such truths or any approximation towards them on the part of the dog, the horse, or the highest of the animals.

Even on the supposition that these cognitions and beliefs and judgments have been generated by the experiences of ancestral races, it might be argued that they are valid, and this on the principles of Spencer. They have all the authority of the lengthened and uniform experience. They can stand his criterion of truth. We cannot conceive that hypocrisy should be good, and so we argue that this truth has "unsurpassable validity," and is of "the highest possible rank." I claim for it another validity. These truths, however generated, have the authority of the God who produced them, whether by development or otherwise. So in this article I feel myself at liberty to appeal to these first truths of our reason, whether speculative or moral.

When I found Spencer calling his work "Data of Ethics," I fondly wished (though I scarcely expected) that he would have exhibited and expounded what we see when we look directly on moral or immoral actions, say on mercy or cruelty. I half expected that, using his own test of necessity or inconceivability, he would show us what "we must accept as true" as to certain voluntary acts, as, for example, that we cannot conceive deceit to be good or benevolence evil. This would have formed a good basis to ethics, and thereon a goodly structure might have been reared. But instead of this he reaches his data by a long process, in which he takes in the conduct of "all living creatures," including the brutes, lower and higher, from the earliest monad up to man.

He opens his work with declaring that moral good is a relation of means and end. I simply put in a caveat here. By our higher moralists virtue is represented as an end rather than a mere means. It is commonly spoken of as consisting in an

affection of the mind, which is good in itself, say love or benevolence, and not a mere means towards something else, say happiness, which is with Mr. Spencer the only good. But let this pass for the present, that we may consider his account of moral good as a means.

"Morality," he says, "has to do with conduct," which he defines as "acts adjusted to ends, or else the adjustment of acts to ends." Conduct is good which accomplishes its end. "Always acts are called good or bad as they are well or ill adjusted to ends." A weapon is good when it inflicts an effective blow or wards off a blow. I have simply to interpose here that according to this view a robber's pistol, or a burglar's key, or a draught of poison, or a forged bank-note is good. There is certainly nothing morally good in the mere adjustment of means to end. We have not yet got a scientific basis to ethics.

"If from lifeless things and actions we pass to living ones, we similarly find that these words, in their current applications, refer to efficient subservience. The goodness and badness of a pointer or a hunter, of a sheep or an ox, ignoring all other attributes of these creatures, refer in the one case to the fitness of their actions for effecting the ends men use them for, and in the other case to the qualities of their flesh as adapting it to support life." Surely we have not yet come to ethics. But he proceeds to show that from this initial adjustment, "having intrinsically no moral character, we pass *by degrees*" (mark the language) "to the most complex adjustments," which are moral.

Looking to sentient life, he shows that it is good or bad according as it does or does not "bring a surplus of agreeable feelings;" that "conduct is good or bad according as its total effects are pleasurable or painful;" and concludes that, "taking into account immediate effects on all persons, the good is universally the pleasurable." By these gradual steps he has led us up to ethics, declaring "that conduct with which morality is not concerned passes into conduct which is moral or immoral by small degrees and in countless ways."

The non-moral conduct is now developed into moral, and we see what his ethical theory is. He does not make moral good an affection or a voluntary act, or even, so far as I can see, a mental operation or state; it is whatever as a means on the

whole promotes pleasure. We are not yet prepared to criticise this doctrine. It is enough for the present to indicate the objections that may be taken to it. I maintain moral good is a mental act or state, and that it implies intention. I admit that pleasure is a good, and that it is to be promoted as an end, but I deny that it is the only good, or even the highest end. In particular I deny that whatever as a means promotes happiness is necessarily a virtue. In order to be morally good it must be intended to promote happiness by an agent. A machine, such as a telescope, or electric telegraph, or a telephone, may greatly increase the resources and the happiness of the race. But surely we do not regard it as a virtue like honesty, and temperance, and righteousness, and self-sacrifice. But instead of pursuing this farther at present, let us notice what he makes of the progression of happiness, in regard to which he has established, as I think, a most important truth.

He is successful in showing that as geological ages have run on there is a constant increase in the general amount of happiness. He cannot, indeed, tell us by his development theory how sensations of pleasure were produced; but having got these, he shows by that theory how they have become greater and greater, by the multiplication of the organs, as the animals become more special and more complex. Then there is the lengthening of the life of living creatures and its extension over wider regions. He thus summarizes:

"We saw that evolution, tending ever towards self-preservation, reaches its limit when individual life is the greatest both in length and breadth; and now we see that, leaving other ends aside, we regard as good the conduct furthering self-preservation, and as bad the conduct tending to self-destruction. It was shown that along with increasing power of maintaining individual life, which evolution brings, there goes increasing power of perpetuating the species by fostering progeny, and that in this direction evolution reaches its limit when the needful number of young, preserved to maturity, are then fit for a life which is complete in fulness and duration; and here it turns out that parental conduct is called good or bad as it approaches or falls short of this ideal result. Lastly, we inferred that the establishment of an associated state both makes possible and requires a form of life, such that life may be completed in each and in her offspring, not only without preventing completion of it in others, but with furtherance of it in others, and we have found above that this is the form of conduct most emphatically termed good. Moreover, just as we

there saw that evolution becomes the highest possible when the conduct achieves the greatest totality of life in self, in offspring, and in fellow-men, so here we see that the conduct called good rises to the conduct conceived as best when it fulfils all three classes of ends at the same time."

I have quoted this passage for *two* purposes: one is to show how he is developing his theory of morals, which I am about to examine; and the other and present purpose, to exhibit the process by which he shows, I think successfully, how the means of happiness have been multiplying and intensifying on our earth as the ages roll on. He unfolds in his best manner the provision (he would not use the word) which has been made for securing this end, and also to prepare the way for the introduction of morality.

PHYSICAL operation tends towards this end. "To-day's wanderings of a fish in search of food, though perhaps showing by their adjustments to catching different kinds of prey at different hours a slightly determined order, are unrelated to the wanderings of yesterday and to-morrow. But the higher animals, and especially man, display more coherent combination of motions; and all tends towards the increase of pleasure. There is produced by the advance a balanced combination of external actions in face of external forces tending to overthrow it, and the advance towards a higher state is an acquirement of ability to maintain the balance for a longer period by the successive additions of organic appliances, which counteract more and more fully the disturbing forces." BIOLOGICAL arrangements have the same tendency. There is a pleasure attached to the healthy exercise of the body thus securing an attention to that exercise, which secures an increase of happiness, and with him what promotes happiness is morality.

PSYCHOLOGICAL laws have the same influence. He gives here an epitome of his psychology, making it very much a department, not of the science of mind, as revealed by consciousness, but of the physiology of the nerves. He speaks of the three controls which restrain men—the political, that is government; the religious, or fear of the supernatural; and the social, or the influence of public opinion—and shows successfully that all these lead men to subordinate proximate satisfaction to ultimate good. He here comes in sight for the first time of what is

entitled to be called moral good. "Now we are prepared to see that the restraints properly distinguished as moral are unlike those restraints out of which they evolve and with which they are long confounded; in this they refer not to the extrinsic effects but to their intrinsic effects." If he had said intrinsic character which makes them end in themselves and truly moral, he would have been in the region of ethics. But he merely carries us to the portal of the temple and does not enter. SOCIOLOGY brings the same issue. Here he shows that the universal basis of co-operation is the proportion of benefits received to services rendered. He concludes: "The sociological view of ethics supplements the physical, the biological, and the psychological views, by disclosing those conditions under which associated activities can be so carried on that the complete living of each consists in and conduces to the complete living of all."

I have allowed our author to expound his argument in his own way. I accept his statement of facts as to the progression of nature. I admit that he thus establishes two very important truths. The first is that nature, as it progresses, makes for happiness. The means of enjoyment become higher as animated nature advances; is higher in the period of fishes than in that of mollusks, in the period of mammals than in that of fishes, and in that of man than in the times of the lower animals. This is a very interesting point, though it is not an ethical one. But he, so I think, establishes another point equally if not more important. It is that nature prepares for the introduction of morality. I hold, indeed, that till man appears with a conscience pointing to a moral law, there is and can be nothing either moral or immoral. We do not morally approve or condemn the acts of the reptile or the bird, of the dog or the cow. But there is a preparation made for man and for morality; a scene in which man can live, with the food needful for him, and in which he has opportunities of doing good, encouragements to do good, machinery to shut him up to good, and checks laid on the commission of evil.

I believe he has done good service by establishing these two truths. But he has not in all this entered the proper domain of morality, and least of all found a scientific foundation for the principles of right and wrong; he has merely constructed a

basement and has not laid a basis. Proceeding on his statement of facts, and interpreting them after the same manner, I discover other truths which furnish a foundation on which ethical science may rest securely.

First, I discover design in these arrangements made to promote happiness and moral good. The tendency which he has so acutely detected implies very many and very varied adjustments of one thing to another, and of all things to a beneficent end. To what are we to ascribe these? Mr. Spencer is too much of a philosopher to attribute them to such meaningless things as chance and fate. He is ready to admit that beyond the known phenomena there must be an unknown power to produce them. At this point I close in with him. This combination of adjustments producing a tendency towards an end, being an effect, implies a cause. From the effect we can argue, and so far know the cause. These arrangements towards an end point to an arranging and therefore an intelligent cause. Not only so, but as the end is happiness, they give evidence of a benevolent cause. As the effect is a reality, so must the cause, the intelligent and benevolent cause of an effect implying intelligence and benevolence. These grand laws of beneficent progress revealed in biology seem to me to argue as clearly as the special adaptations of bones, joints, and sinew adduced by Paley, that there is an intelligence organizing and guarding them towards discoverable ends. The circumstance that God proceeds by development in so many of his ways does not entitle us to shut him out from his works. It has been shown again and again, as by M. Janet in his work on "Final Cause," that in development as an organic process there is as clear proof of design as in the frame of the animal. I see purpose in the arrangements which produce the beneficent tendency which Spencer has traced quite as much as I see it in the constitution of a good society or a good government. I carry this truth with me as I explore the various compartments of nature, always keeping it in its own place, and I find it as a torch illuminating many places which would otherwise be dark.

Second. I discover another end in nature. I discover a moral end, or rather I discover that moral good is an end. I admit that the promotion of happiness is one end, the highest among

the lower creatures incapable of appreciating anything higher. But when a certain stage is reached I discover this other end, like happiness, a good in itself and an end in itself. Mr. Spencer mixes up the two ends, and they are often mixed together in the economy of nature; nevertheless they are distinct, and should be seen to be separate. The one end, happiness, is visible from the beginning. There seem to be anticipations of the other end, preparations for it in the animal reign, just as there were preparations for man in the cattle and cereals which preceded him and made it possible for him to appear. But the other end does not actually come forth till a morally endowed agent appears on the scene. The adjustment of means to end is a good thing, but before we regard it as morally good we have to see that the end is good, and that morally. A sword may be fitted to slay an enemy, but in order that the man be good who uses the sword he must employ it in a good cause. Happiness is good, but is there not also another good, and that is the love that promotes happiness, and the justice that guides and guards happiness and secures an equal means of happiness to all and each? Misery is an evil, but so also is the cruelty or deceit that produces evil. Benevolence is good, but is there not also a right and a wrong, and a justice which demands that every one has his due?

Third. At a certain stage there is the appearance of a being to know and appreciate the moral end. We have here an advance on what has gone before: an advance on the brutes, which had a love of pleasure, but not, therefore, a love of good; an aversion to pain, but not, therefore, an aversion to sin.

For our present purpose, which is not historical but ethical, it is not needful to determine how man appeared on the scene, and how he came to have a conscience to know the good and discern between it and evil. The advance is of the same kind as that which took place in the earlier ages from the inanimate to the animate, from the insentient to the sentient, from the unconscious to the conscious, from the uninstinctive to the instinctive. Spencer and his school will no doubt account for this by development. The old alternative immediately steps in and requires us to make our choice between the horns. If it be answered that the morality was potentially in the original matter,

I answer that there is really no proof that the moral power which led to the martyrdom of Socrates and the labors of Howard or Livingston was originally in the primitive molecules and thence passed through the flaccid mollusk and the chattering monkey. I add, for argument's sake, that even on this supposition we might infer that all this must have been arranged by a prearranging and therefore an intelligent power foreseeing, or rather planning, the end from the beginning, which power must be a moral power lending its sanction to the whole results, and so to the moral monitor with its precepts and prohibitions. If the other horn is preferred, and it is asserted that man and his moral nature have come from a superinduced power, then I claim for that power the sanction of that Higher Power who has superinduced it. Some of our savans seem to be very anxious to prove their descent from the brutes. I admit and maintain that man's body is formed of the dust of the ground, and that he is so far after the image of the lower animals, or rather that the lower animals and he are after the same type. "My substance was not hid from thee when I was made in secret and curiously wrought in the lowest parts of the earth. Thine eyes did see my substance, yet being unperfect; and in thy book all my members were written, which in continuance were fashioned when as yet there was none of them." But I am anxious to claim for man in general and for our profound thinkers in particular another ancestry. I claim that in respect of their mind they were made in the image of God. We can discover traces of this even in the most degenerate of mankind, particularly in their capacity to ascend, as in the rise of the Britons from the days of Cæsar to their present state—a rise to which we can produce nothing parallel in any race of animals. Discovering it in the germ even among savages, I see it taking its full form in our poets and philosophers, among our patriots and philanthropists.

It is enough for me that man has a reasonable and moral nature, no matter whence derived. Whatever may have been its historical growth, that conscience is now an essential part of my being. The higher state may have grown out of the lower, as the fruit out of the seed; but the fruit is valued for its own sake, and not because it has come from the seed. Whether

man has come from the fish or no, he is no longer a fish but a man with a moral nature containing certain perceptions and prerogatives, and if he murders a fellow-man I treat him in a way very different from that in which I would treat a fish which had seized and destroyed another fish. That moral nature declares that there is an essential and indelible distinction between good and evil. Its decisions can stand even Spencer's criterion of truth which "must be accepted." We believe that the man who suffers rather than tell a lie, that he who risks his own life to save a neighbor's, is right; and that the man who betrays a cause committed to him, or who murders a fellow-man, is wrong. I am as certain of all this as I am of the existence of an external world, as I am of my own existence; I cannot be made to believe otherwise. I am as certain that I reprobate the cheat and the seducer as I am that there is a cheat and a seducer, and that I live to reprobate him. Let speculators, I may say, wrangle about the historical antecedents of all this as it suits. I know what I perceive, and I follow, and must follow, my conviction, or rather I follow it not because of any external compulsion, but because I perceive it. Having such a moral nature, I inquire into its data and find it declaring that happiness is an end to be aimed at, but also declaring that moral good, love, and reverence for what is good is an end and a higher end.

Fourth. There is an intuitive principle prompting to the performance of moral good. It has been shown again and again that the utilitarianism under all its forms—and Spencer's ethics is a form of utilitarianism—requires an intuitive principle and motive to carry it out. It proceeds on the principle not only that I may but that *I ought* to promote the happiness of others as well as my own, that I am bound to promote the greatest happiness of the greatest number. There is no need of an intuitive moral principle to lead me to look after my own pleasures; though our sense of duty comes in to strengthen my purpose to sacrifice present pleasure for greater ultimate happiness. But why am I bound to promote my neighbor's good as well as my own? So far as I can see, the utilitarian theory, and the development theory as a form of it, has no answer to this question. You may prove to me that, upon the whole, there would be a greater sum of happiness in the universe were I to content myself with being the husband of one wife, but there would be a

greater pleasure to me, so I think, to have another whom I love more: what is there in the theory of development to lead me to lay restraint on myself? But at the stage at which morality comes in there comes in an intuitive conscience which insists that this ought to be done because it is right, and points to a God who sanctions the whole. We have thus and here a motive which leads us to promote the happiness of all, and prompts us to do good as we have opportunity.

Fifth. It should be farther noticed that intuitive morality requires us as a duty to promote the greatest happiness of the greatest number. This is as much a precept of the intuitional as of the utilitarian or hedonist theory of morals, with this very important difference that the former carries within itself and with it a motive to induce us to do good to others.

It should be noticed of this intuitive conscience that it looks to a law above it and to which it is subordinate. This law is, "Do unto others even as ye would that others would do unto you." It follows that love is the grand, the essential virtue. I prefer the phrase "love" to altruism, the Comtean one, which the school is seeking to introduce, inasmuch as the former demands an inward affection, whereas the latter might be satisfied with the outward act. Now, the possession of love is the best, the only certain means of promoting happiness. Being a fountain, it will be flowing out and watering all. It prompts to the promotion of the happiness of all sentient beings, including the lower animals. Being regulated by law, it will flow out in furthering the happiness of those with whom we come in contact, by pleasing manners, by obliging acts, by honoring all men, by sympathy with distress, by relieving the wants of the poor, by securing the education of the young, and the spread of literature and the arts, and the propagating of truth and love all over the world. The greatest-happiness principle is as much a part of intuitive as of utilitarian morals. My inward law and the God who planted it there require me to labor to promote the good of all mankind. But the intuitive theory requires other duties. It enjoins that we love and revere and worship God, and that we promote the moral excellence as well as the felicity of our fellow-men.

Sixth. It is needful to expose a fallacy running through his whole argument that moral good has respect to happiness as its

end. It is that of making the conclusion wider than the premises, that of supposing that he has established the whole when he has proven only a part. He tries hard to show that all theories of virtue imply that happiness is the final end. With this view he examines the theory of perfection, as held in a general way; he says by Plato, and more distinctly by Jonathan Edwards, and argues that the perfection of man, considered as an agent, "means the being constituted for effecting complete adjustment to acts, to ends of every kind," and as the justification for whatever increases life is the reception of more happiness than misery, it follows that conduciveness to happiness is the ultimate test of perfection." Now, I admit that the happiness and the promotion of happiness is one good. But I am sure that the love which prompts to the production of happiness is another good, and perfection aims at both.

He also examines the theory of those moralists who suppose themselves to have conceptions of virtue as an end underived from any other, and who think that virtue is not resolvable into simpler ideas; he thinks that Aristotle held this view. He takes the virtues of courage and chastity, and argues, on the supposition that virtue is primordial and independent, no reason can be given why there should be any correspondence between virtuous conduct and conduct that is pleasurable in its total effects on self or others or both, and if there is not a necessary correspondence, it is conceivable that the conduct classed as virtuous should be paingiving in its total effects. The answer is easy and at hand. Virtue being regulated love, or at least containing love as its highest element, the effect of it as a whole cannot be paingiving. In the case of the two virtues named, courage and chastity, they need more stringent whet than merely the promotion of happiness, and this is to be found in a rule like the Christian one of doing to others as we would that others should do unto us. We thus see that in the end which we should contemplate there is not only happiness but an end in itself which promotes and so secures happiness.

He next examines, with the same view, the intuitional theory of morals. This theory has often been so stated as to make it indefensible. Properly enunciated it contains a truth which must have a place in a true theory of morals. Mind has a power of knowing and discerning things. In particular its

moral sense has a power of perceiving good and evil in certain voluntary acts, good in gratitude and evil in ingratitude. In particular it sees good in love under its various forms. This love does look to the happiness of sentient creation. The law to which the conscience looks guides and guards this love. It announces the objects to which it should flow and those from which it should turn away. It contains within itself a motive to the performance of the act; a compulsion, not a physical but a moral one, to act.

These six propositions can be drawn from the body of facts furnished by Mr. Spencer quite as validly as the two which he draws. With them we are now in a position to examine his own system. He rejects "(1) those theories that look to the character of the agent; (2) to the nature of the motives; (3) the quality of his deeds." In doing this he has set himself against the great body of our moralists in ancient and modern times, who maintain that one or the whole of these should be looked at in approving an action as good. An ethically good action is the act of a good agent (so far) swayed by good motives and doing a good act. If the man is a robber swayed by revenge, and doing a bad deed even of a useful tendency, say murdering another and more malignant robber, we do not give him our approbation. We always, in judging of moral acts, look and feel that we ought to look to the act, the agent, and the motive. We declare that act of charity to be good which is done by a man good at least for the moment with a benevolent motive. However we may admire his talents, we do not regard that man as specially virtuous who from money motives invents a machine which may add immeasurably to the resources and therefore the pleasures of humanity. We do not give credit to one who gives alms to be seen of men. It is the grand defect of this new moral theory that it does not demand a pure motive, and does not require or entitle us to look for one in judging of conduct.

We are now in a position to understand and to judge of this new and considerably pretentious theory which is to give a scientific basis to ethics. Conduct is acts adjusted to ends. Conduct is good when it accomplishes its ends. Conduct is morally good when it promotes the greatest happiness. There are passages which leave upon us the impression that mechani-

cal acts may be regarded as good when, on the whole, they favor the production of pleasure, and this without at all looking to an agent. "Beyond the conduct commonly approved of or reprobated as right or wrong, there is included all conduct which furthers or hinders in either direct or indirect ways the welfare of self and others." There may certainly be good in organic acts, in all vital acts. The lower animals certainly commit good acts when they do deeds which add to happiness. "There is a supposable formula for the activities of each species of animal which, could it be drawn out, would constitute a system of morality for that species"! Surely we have here a new ethical code. It seems the doctrine of the whole school. Darwin speaks deliberately of its being the duty of the hound to hunt. The morality of animals is supposed to rise insensibly and by degrees into that of man.

He makes the biological progression with its controls generate the conscience. "The intuitions of a moral faculty are the slowly-organized results of experience received by the race." In fact, the conscience seems to be merely a nervous structure. "I believe that the experiences of utility organized and consolidated through all past generations of the human race have been producing corresponding nervous modifications which, by continued transmission and accumulation, have become in us certain faculties of moral intuition." *Our moral intuitions are thus nervous modifications become hereditary!* Is this the highest product of development? this the copestone of the new philosophy?

He gives to this conscience a certain impulsive and guiding power. "That the intuitions of a moral faculty should guide our conduct is a proposition in which truth is contained, for these intuitions of a moral faculty are the slowly-organized results received of the race while living in presence of these conditions." The conscience thus generated evidently cannot furnish a standard or an ultimate criterion. In different circumstances and with a different heredity its decisions might have been different. In opposition to all this, I hold that conscience is an intuition looking into certain voluntary acts and declaring them to be good or evil in their very nature. This conscience can stand the tests of intuition, even that of Spencer. It is self-evident, and its negation is inconceivable; we cannot con-

ceive that hypocrisy, say religious hypocrisy, should be good. The culmination of our philosophy is thus Hamilton's favorite maxim: "On earth there is nothing great but man, in man there is nothing great but mind;" and I might add, in mind there is nothing great but love guided by law.

This carries with it Moral Obligation. Spencer takes much the same view of obligation as Bain. He supposes it to arise from a restraint imposed by force, such as a ruler, a government, or supernatural agency—in which Spencer does not believe. Interpreting the revelations of conscience as an intuition, I claim for it a higher place. It is an obligation to obey a law involving, as Kant powerfully argues, a law-giver, being evidently the very governor who has presided over organic development, as it contends with its environments, and causing it to make for happiness. The obligation is laid upon us to do what is right, and in doing so to give every one his due, and as much as within us lies to promote his welfare. This gives the idea of justice, and our obligation to attend to it.

Of the same character is the idea, the sense, and the obligation of Duty. Spencer argues that as morality advances from an act to a habit, the feeling of duty becomes less and less and may disappear. There is some truth here, but it is only partial truth. When the habit of good is completed, the work is done without restraint. But then the felt obligation of duty is necessary to form the habit. It is best when the sense of duty and love go together in the performance of an act. When the feeling of obligation is withdrawn, the feelings will be apt to waver and the conduct to become inconsistent. It is not necessary that people should always be thinking of the restraint; the habits and sentiments will often act best when they follow their own generated nature. But it is important that the law should ever be there, even as the horse will go all the steadier because of the curb in his mouth, though the rider may not always be using it.

His theory is avowedly a form of the utilitarian. But he thinks he can give it a better form than it takes in the systems of Bentham and Mill. He calls his own system rational utilitarianism, as distinguished from empirical. He sees the vagueness of the principles of the common utilitarianism, and the uselessness, for practical purposes, of the precepts derived from

them; it being so difficult to tell as to many acts whether they are or are not, upon the whole, fitted to produce a greater amount of happiness or misery. He tells us, however, "I conceive it to be the business of moral science to deduce from the laws of life and the conditions of existence what kinds of action necessarily tend to produce happiness, and what kinds to produce unhappiness. Having done this, its deductions are to be recognized as laws of conduct." We will look with interest to his promised work, the "Principles of Morality," to see if he is able to accomplish this. If he can he will greatly benefit true ethics, which must always embrace the greatest-happiness principle. Meanwhile he has not done much to relieve the utilitarian or hedonist theory from the objections to which it is obviously liable: such as the difficulty of determining consequences, and its incapacity of supplying a motive to lead the great body of mankind to undertake to promote the greatest happiness of the greatest number. He is evidently in difficulties in gendering benevolence out of self-love, or, as he expresses it, in getting altruism out of egoism. His method of reconciling the self-regarding and the altruistic virtues is very vague and unsatisfactory.

He has an Absolute Ethics, and thinks it of great moment that he should have. But it is like the meeting of the asymptotes of an hyperbola at an infinite distance. It will be reached when the external circumstances are brought into harmony with the internal life. "The coexistence of a perfect man and an imperfect society is impossible." I hold, on the contrary, that it may be, nay, that it has actually been, the work of a perfect man to labor to make society perfect. He tells us, farther, that "conduct which has any concomitant of pain or any painful consequence is partially wrong." With my views of morality I cannot coincide with this. I do not know that it is partially wrong to cut off a limb when by doing so life is preserved, still less to conquer a vice by an exertion which may be painful. "Actions of a kind purely pleasurable in their immediate and remote effects are absolutely right," and "they only." It is allowed that it must be unnumbered ages before there can be such actions. "Ethics has for its subject-matter that form which universal conduct assumes during the last stages of evolution," "these last stages in the evolution of being when man

is forced, by increase of numbers, to live more and more in presence of his fellows." We are told "that the conduct to which we apply the name good is the relatively more evolved conduct; and that bad is the name we apply to conduct which is relatively less evolved." It is clear that his absolute ethics can be reached only when development has advanced hundreds of thousands or millions of years. An old fisherman who lived eighteen hundred years ago knew somehow that this world was to be burned with fire; and it is a part of Spencer's philosophy that this must be so, and I suspect that this conflagration may be kindled before his perfect ethics are reached,—and then will not be reached, for then there will be intolerable pain. And, after all, what interest have the men and women now living, and anxious, it may be, to know what is their present duty, in this inconceivably remote state of things? After all, his perfect ethics do not consist in love, or in any voluntary acts or dispositions, but, to all appearance, simply in an advanced zoological concretion in which there will indeed be no pain (though how it is to be got rid of is not explained), but at the same time no room for heroism, self-sacrifice, and devotion.

He has also a Relative Ethics, but not, so far as I can see, of a high character. "It is the least wrong which is relatively right." His statements on this subject leave morality in a very uncertain and loose state, and might open the door to all sorts of excuses for the neglect of what is, after all, paramount duty.

"Throughout a considerable part of conduct no guiding, no method of estimation enables us to say whether a proposed course is even relatively right as causing proximately and remotely, specially and generally, the greatest surplus of good over evil."

How much room is left here for the crooked casuistry of the heart!

"As now carried on, life hourly sets the claims of present self against the claims of future self, and hourly brings individual interests face to face with the interests of other individuals, taken singly or as associated. In many such cases the *decisions can be nothing more than compromises.*"

What an encouragement in all this to compromises, to favor personal aggrandizement or sensual gratification! He gives the case of a farmer whose political principles prompt him to vote in opposition to his landlord.

"The man in such a case has to balance the evil that may arise to his family against the evil that may arise to his country. In countless such cases no one can decide by which of the alternative courses the least wrong is likely to be done."

Is this safe morality? And yet I believe it is the only morality that can result from the balancings of pleasures and pains. Call in a moral law, and it will decide the question at once and declare that the man ought to follow his principles and leave the issues to God.

Mr. Spencer has an ideal. All great men have. He thinks that there is a development now going on which must produce a better state of things. In this respect his system is, in my view, superior to that still more pretentious one of pessimism which has been gendered in disappointed and diseased minds as in a marsh, and after which some speculative youths are wondering. But I have doubts whether the agencies which he calls in can effect the end he is expecting—the removal of all evil. Hitherto the advance of intelligence and civilization, while it has removed certain evils, has introduced others, and apparently must continue to do so. Amidst all ameliorations of outward estate moral evil abideth—sin which Spencer has never ventured to look at. The happy close to our world's history which so many are looking for will not be brought about except by causes that remove the moral evil. I do expect that "at evening time it will be light." But I believe that it is to be brought about by a higher power superinduced on all that has gone before. Were such a power to appear, it would be in correspondence and analogy with all that has preceded. Just as Agassiz perceived in the lower animals the anticipation of man, so in man's intellectual and moral nature we may discover a prognostic of a spiritual character. At present the moral is very often immoral. I know no power in nature fitted to meet and overcome the moral evil; but I can conceive of such being superadded. I believe all that Spencer has established as to the progression in nature: of the animate being superinduced upon the inanimate, of the sentient upon the insentient, of the conscious upon the unconscious, of the intelligent upon the unintelligent, and of the moral upon the intellectual. But I may and I do cherish the expectation of a higher advancement coming in, as all the others have done, I know not how. "Thou

hearest the sound thereof, but canst not tell whence it cometh nor whither it goeth; so is every one that is born of the spirit" in this coming dispensation.

I have written the article which I am now to close with a deep sense of responsibility, being awed at once by the masterly ability of my opponent and the vast interests, speculative and practical, at stake. I have endeavored to examine Mr. Spencer's philosophy, as in former years I did that of Mr. Mill (when his fame was the highest), fairly and candidly. My labor has been stiff because the book I review is a stiff one and presupposes a number of preparatory elaborate volumes. I see no difficulty in answering our author, provided I understand him. I believe I see his meaning and can estimate the drift of his speculations. I have followed the development of his system from his "FIRST Principles" onward to this the beginning of the consummation of his work. I have cheerfully accepted his scientific statement of facts and some of his interpretations of them, but have superadded others quite as important and quite as certain. I am aware that the little work published does not unfold his full ethical views, and if, in further unfolding his plan, he brings in truth fitted to fill the wide gaps which we see yawning before us, I will have more pleasure in withdrawing the objections I have taken than I have had in advancing them.

I am constrained to conclude that the work does not furnish a scientific basis to ethics. Had it been described as a *Preparatio Ethica*, I might have much to say in its behalf. He does show that in the earlier animal ages there was an advance in happiness, and that there was a preparation for morality to appear, and that there are aids to human virtue in prearrangements to call it forth and sustain it. This is what he has succeeded in. But he has not entered the subject of ethics, which has to look to character and to voluntary acts of human beings.

The system sketched implies a morality without a God, or at least without any God known or knowable. There is no obligation provided requiring us to love, to revere and worship God. The morality recommended has its sanction from a long process of development which has gone on for millions of years, carrying a mysterious power with it, but this not from a guide, governor, or law-giver — of whom, I believe, nature gives evi-

dence as conducting the development orderly and beneficently. It has sanctions from organic agencies working unconsciously, I believe for a purpose, but implying no responsibility to a ruler or a judge. It is not supposed to carry with it, as Kant maintained that the practical reason did, the necessity and certainty of a world to come and of a judgment-day. So far as I comprehend, it does not require or enjoin that virtue should be voluntary. It does not give love or benevolence a place, as I believe it ought to have the highest place, in all good conduct. It declares that morality is that which promotes happiness, but it has no constraining motive, such as the intuitive conscience supplies, for leading men to feel that they ought to labor for the welfare of others.

Our new ethics thus withdraws many of the motives which were supplied by the old morality. And it does not supply others likely to take their place and to sway the great body of mankind — men, women and children, civilized and savage — in joy and in sorrow, in prosperity and in adversity, in the hour of temptation and at death. I can conceive that some persons who have mastered the development theory, who believe in it enthusiastically, may be moved by it to high exertion, as feeling that they are thereby falling in with the whole evolution of nature. But what motive does it supply to the peasant, the laborer, the young man and maiden, to lead them to resist evil and follow the good? And what are we to do with our reading youth entering on life who are told in scientific lectures and journals that the old sanctions of morality are all undermined? What are we to do for them, and what are they to do in that transition period which Mr. Spencer acknowledges to be so perilous? You may say, Read Spencer's elaborate volumes and fill your mind with his system. But this is what the great body of mankind will not and cannot do, and if they did would any one thereby be interested or moved? Our author does not believe that "his conclusions will meet with any considerable acceptance." I believe the deluge of fire will come before they cover the earth. In these circumstances it is surely wisdom to rest on the old foundations, on an inward monitor guaranteed by God, till new ones are supplied on which we and others can rest.

JAMES MCCOSH.

Date Due

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