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SARAH GRAND'S ETHICS.

BY T. BAILEY SAUNDERS.

MR. WILLIAM M. SALTER'S recent article on the ethical tendency of *Trilby* and *The Heavenly Twins* raises quite as many difficult and delicate questions as are, in his opinion, brought up by those novels themselves. It may, for instance, be asked how far it is legitimate to appraise the value of a novel by its ethical tendency; and the answer will of course depend upon the particular kind of value which is meant. It would not be difficult to maintain that from the point of view of the severe literary critic the ethical tendency of a book is a matter of minor interest. Few readers, however, are severe literary critics; and most readers, whether they know it or not, are influenced by the moral character of the books they read. Not, indeed, in any high view of the aim and function of literature as the record of noble thought nobly expressed, can the importance of its ethical tendency be overrated. The greatest books of the world are also, in the best and broadest sense of the word, the most moral; and they are great because they are moral.

Morality, alas! is a much abused word, and with ninety-nine people out of a hundred has reference chiefly to the relations between the sexes; as may at once be seen by reflecting on the meaning usually attached to the contradictory word, immorality. To judge from his article, Mr. Salter appears to be one of the ninety-nine. He finds in *The Heavenly Twins* the evidence of "an honest moral nature," and "positive ideas of right and wrong." It is obvious that this moral nature and these positive ideas are determined solely by the extent to which, in Mr. Salter's judgment, they harmonise with one among the many important kinds of morality, namely, that which governs the sexual relations of men and women. It would be a great mistake to suppose, though the supposition is very common, that morality of this description carries with it morality of every description; for a man may be a second St. Anthony and yet be a bigot, with no sense of honor, no regard for truth, and no charity towards his fellowmen. On the other hand, some of the best that the world has produced—great administrators, great inquirers, great writers—have been notoriously promiscuous in their dealings with

the opposite sex; not, of course, in virtue of their good qualities, but in spite of them. It is absurd to call a man moral, unless on the whole he is scrupulous in the observance of all kinds of morality; nor can a book be said to possess a good moral tone which harps upon a particular form of injustice, and at the same time asks the reader's sympathy for much that is narrow, cruel, and ungenerous.

Of Mr. Salter's remarks on *Trilby* some criticism may be made on another occasion. It will be sufficient at present to draw attention to what he says about *The Heavenly Twins*. There is some satisfaction in observing that he does not take it upon himself to express any high opinion of its literary value. That the popularity of *Trilby*, which has a claim to be called a work of art, should far exceed that of Sarah Grand's extraordinary compound, is a fact highly creditable to the great body of readers in the United States. There are, it is true, bits of *The Heavenly Twins* which show some power of writing. Not only, however, is it, as Mr. Salter observes, of such unpardonable length that no man could in conscience ask a friend to read it all; but the book is a heterogeneous conglomerate of interests which stand in no true or inevitable relation with one another. The characters fall into distinct groups; and the doings of one group have hardly any bearing on the doings of the others. The twins, for whom Mr. Salter justly disclaims any admiration, have little to do with Evadne or her story; and that neurotic young lady stands in no vital connexion with Angelica, whose surprising relations with the tenor are, again, entirely out of keeping with the rest of the book; so that even the authoress is obliged to offer an apology for the awkward construction of her plot by calling them an "Interlude." It is impossible, also, not to agree with Mr. Salter that Sarah Grand is at times rather foolish and one-sided, sarcastic, spiteful, and even peevish; and that her ideas about men and women are often exaggerated and ludicrous. Such defects destroy any claim that might be made on behalf of *The Heavenly Twins* as a work of art; if, indeed, any serious person could be so rash as to make such a claim, except the authoress herself, who in a preface to a later publication goes out of her way to draw attention to her own artistic qualities. Some

persons, with an eye on the twins, profess to admire what they are pleased to call her humor; but it is plain that the antics of children do not constitute humor in the sense in which the word is commonly employed as a quality of literature. In truth, a very small supply of that inestimable virtue would have saved Madame Sarah Grand many a sad mistake.

It is needless, therefore, to ask whether *The Heavenly Twins* is in any way a work remarkable on the score of its literary character. In literature little survives but what is expressed in good form; and it is obvious that the oblivion which is even now overtaking this particular work will at no very distant period be complete and impenetrable. Like many another forgotten book, it has gone up like a rocket, with a rush and a flare; having burst into stars its fate is to be swallowed up in darkness; so that all that remains is a burnt stick. But what title has it to shed, as Mr. Salter would have us believe, a great moral light in the brief period of its existence? He tells Evadne's story from his own point of view, and pronounces that her attitude was straightforward, calm, dignified, and "in the great sense, womanly." This is doubtless the view which the authoress herself would desire us to take, for Evadne is plainly her mouth-piece.

This rebellious spirit is presented to us as a very honorable woman, no less perfect in her personal conduct and demeanor than endowed with a fair knowledge of popular literature and a surprising amount of general information. "She always had a solid book in hand, and some standard work of fiction also; but she read both with the utmost deliberation, and with intellect clear and senses unaffected by anything. After studying anatomy and physiology, she took up pathology as a matter of course, and naturally went on from thence to prophylactics and therapeutics" (Bk. I, Ch. V.) She was not content with reading Barnard Smith's *Arithmetic*, and *The Vicar of Wakefield*, she also read *Tom Jones* and *Roderick Random*, not to mention Lewes's *Life of Goethe*, Mrs. Gaskell's novels, and the essays of Wendell Holmes and Matthew Arnold. She was also a very acute and observant person. She managed to worst her father in an argument; and to a casual spectator must often have made that irritable gentleman look very foolish. She sits up with an aunt till three in the morning, indulging in some very tall talk; and with great precision she lays down the limits of Utilitarianism and mundane philosophy in general. And all this at the mature age of nineteen! Her social position left nothing to be desired. She consorted with the best of the nobility, went to Court, and knew a bishop; and in her own home, if the butler brought a telegram to her father, he handed it, as the authoress is careful to relate, "on a silver salver."

It is really very extraordinary that a young lady so intelligent and well-read, and blessed with so profound an insight into the ways of the world and the character of her relations, should fail to recognise that a person like Colquhoun, who, when he first appeared on the scene, "looked about thirty eight, and was a big blond man with a heavy moustache," was hardly likely to have lived so long without some unmentionable experiences. She ventures timidly to ask her father—the poor old father whose antiquated ideas she had so often corrected—whether there was anything in the past life of her *fiancé* to which she could object; and it is curious that so courageous and independent a young lady could be satisfied with the simple assurance that he would make an excellent husband. So curious is it, that it suggests the question, what she could find in such a man to attract her. Colquhoun was a very ordinary person, well-mannered and affable, but not distinguished. The insistence on the fact that he was a big blond with a heavy moustache, and that he caught Evadne's attention by gazing at her in church, are doubtless meant by the authoress to indicate that this paragon of all the virtues fell a victim to the same physical qualities in Colquhoun which had probably rendered him an easy prey to ladies before.

It will of course be said that it is perfectly right to make Evadne inconsistent; for is she not a woman? Such an objection, however, would come with a very bad grace from any of her admirers; in particular, from those who, like Mr. Salter, regard her as a woman whose purity was no less remarkable than her strength; a pattern, in fact, of the higher morality. The point is a small one, but worth making, since it throws no small light upon the less obvious side of her character. But it is in respect of her action after her marriage that her claim to be considered a pattern of the higher morality must be determined. Mr. Salter describes the situation created by the receipt of a letter informing her of a discreditable incident in her husband's life which her parents had suppressed. Its nature is not disclosed; but apparently it was not so bad as, in their opinion, to form an obstacle to the marriage. The situation thus created is, as Mr. Salter remarks, "a problem in ethics"; and in his judgment Evadne solves it very well; so well, indeed, as to deserve all the complimentary epithets which he has applied to her conduct.

But does she deserve them? She solves the problem by deciding to live in her husband's house, but to be his wife only in name. Her husband, it must be confessed, acts with extraordinary generosity, of which Madame Sarah Grand is apparently unconscious, and for which, at least, she allows him no credit. He treats Evadne with the utmost indulgence and respect, gratifies her every wish, and proves himself to be what

she had at first thought him—a good-natured gentleman. He could have invoked the aid of the law, but he refrained. He gave her his word, and kept it. She had also given him her word in the marriage ceremony, and straightway she broke it. That she had been deceived by her father and mother is no excuse. For in the first place she had seldom been content to accept their opinion, except when it coincided with her own; and, as she is drawn, she is far too clever to allow any one to deceive her on a matter so important to her welfare. In the second place, even had she been so blind as to be deceived, nothing was less defensible than to wreak her vengeance on a man who had just sworn “to forsake all others and cleave only unto her.” But what is to be said of her subsequent action? Two courses were open to her: either to live with her husband, or to leave him. She did neither; not the first, because it was, she declared, repugnant to her moral nature; not the second, as the authoress tells us, because of her mother’s earnest entreaties. But an ardent moral reformer has no business to yield to a mother who has deceived her, if such a course involves gross injustice to a third party. If her conscience forbade her to be her husband’s wife, the straightforward, honorable, dignified course would have been to leave him, and set him free. But Evadne was not so honorable. She refused to live *with* him, it is true; but she did not mind living *on* him. He gave her a social position, and provided her with comfortable apartments in her own house; nay, to please her, he had them arranged and furnished like those in her old home. He did all he could to make her happy; he offered her books, pictures, flowers, music, amusement, and everything she could wish for in the way of luxury. She took them all with greatest complaisance, as if she had a right to them, but she declined to grant the right to which her husband was entitled. How is it honorable in a woman to accept such gifts from one whom she despises? How is it dignified to help a man to ruin and live at his expense? How is it womanly to persist in her spite and revenge, until her husband, from sheer vexation, plunges again into vice and dies at last a miserable death? If this is the higher morality, to cherish an impossible scheme for the reform of mankind, and neglect the salvation of a single soul, the world can well dispense with it.

Mr. Salter hazards the singular statement that Sarah Grand is “evidently a person like her heroine, who loves purity and truth and loathes degradation and vice.” Apparently he arrives at this conclusion from a study of *The Heavenly Twins*; in particular, of Evadne. That an authoress must resemble her heroine is, of course, a very rash supposition, and in general quite unfounded; nor in the present instance is it possible to make such a comparison by way of com-

pliment. Assuredly it is not the purity and truth of *The Heavenly Twins* which have made it so popular; rather is it something very remote from those noble qualities. Its popularity is a fine example of the *succès de scandale*; and, what is still worse, the degrading and prurient suggestions in which it abounds are wholly gratuitous. The story, such as it is, could very well have been told, and might have been told, with a sense of reserve and decency; but then, of course, as the authoress must be perfectly aware, it would have failed to attract such wide notice. It is difficult to believe that any great moral lesson can be drawn from *The Heavenly Twins*, except that nothing is more immoral than the attempt to do a small amount of good by doing at the same time a vast amount of harm.

There is no mention in Mr. Salter’s article of another of this writer’s novels, *Idealta*, which, from a literary point of view, is slightly superior to *The Heavenly Twins*. There we have another ethical problem; and there, too, Sarah Grand contrives to solve it in a way that alienates the admiration which might otherwise have been felt for her heroine. The woman, it is clear, uses the man as a mere peg for her own emotions; she gives him every encouragement; and then, finding herself in a difficulty, abandons him in a very cruel and heartless fashion. Here, too, Sarah Grand evinces no disapproval of the injustice which she describes, and, in spite of Mr. Salter, any resemblance between herself and her heroine would in this case also be matter for regret. Fidelity to an affection reached, and the sense of honor and gratitude, seem to be painfully absent from her conception of womanhood, in spite of her parade of high motives. Nothing is truer than that it is what we feel and do, rather than what we think, that is of the essence of morality.

Nor can a more satisfactory estimate be formed of the ethical tendency which Sarah Grand promotes, by turning from her novels to her miscellaneous articles, or to the methods by which she has sought to extend her reputation. What good, for instance, can she hope to achieve by the tone or the contents of the articles which appeared in the *North American Review* a year ago? Men are not to be reformed by wholesale abuse; nor are women to be raised by the pretentious and silly assertion that it is their business to regard men as infants and to teach them. Mr. Salter endeavors to excuse these ridiculous statements as the venial exaggerations of a youthful writer; but unfortunately for his plea, Sarah Grand is a person of what may civilly be called a certain age. She has been writing, and, according to her own account, has been thinking, for years; and she ought to know better. But Mr. Salter’s mistake is itself excusable; for Sarah Grand has so far succumbed to the advertising mania

as to hold it right to consent to the publication and to assist in the widespread distribution of a number of photographs which make her look like a pretty young actress of five-and-twenty. In this connexion Mr. Salter would do well to read the account of an interview with Sarah Grand given in the *Chicago Times* for August 5, 1894, the writer of which was evidently prepared to be lavish in her admiration. He will find another instance of a deficient sense of dignity on the part of Sarah Grand if he will turn to Mr. Stead's *Review of Reviews* for August, 1893, where there are extracts from an article by that lady "On the Duty of Looking Nice," illustrated by one of the aforesaid portraits of herself. From a feminine point of view, these, of course, are pardonable errors; but it can scarcely be maintained that those who commit them are justified in regarding men as infants, or are peculiarly fitted to expound the higher morality.

AN EPISODE IN THE HISTORY OF PHILOSOPHY.

BY THOMAS J. M'CORMACK.

EARLY in life, Adam Smith (1723-1790), author of *The Wealth of Nations*, and founder of political economy, is said to have projected a plan for giving "a connected history of the liberal sciences and the elegant arts," afterwards abandoning it as far too extensive. Of the papers left undestroyed on his death, the greater part, referring to this subject, were, by his friends Joseph Black and James Hutton, deemed worthy of preservation and published under the title of "Essays by Adam Smith on Philosophical Subjects." They usually appear in the same volume with his more famous treatise, *The Theory of Moral Sentiments*.¹ These Essays, though full of acute and valuable remarks, are little known, probably on account of their fragmentary character, and because, as the editors remark, the author regarded them as in need of thorough revision.

Our object in referring to these Essays is to point out a curious resemblance which exists between Smith's views of the principles which lead and direct philosophical inquiries as illustrated in his sketch of the history of astronomy, and the view of scientific explanation now so widely accepted by scientists and which was first accurately formulated and brought into modern notice independently of philosophical tradition, by Prof. Ernst Mach (1871), Clifford (1872), and Kirchhoff (1874). We have evidence in these Essays that Adam Smith possessed the philosophical views which now hold a dominant and characteristic place in positive research, and that he was perhaps also very near to that felicitous idea which has been developed and applied with such splendid success by Professor Mach,

in his doctrine of science as an economy of thought. It is not improbable that had Adam Smith ever fully worked out his plan, the development of many influential modern ideas would have been anticipated by more than a century.

In any case, the coincidence, and we think it more than a mere verbal one, in no way affects the question of priority, but merely shows the *naturalness* of the thoughts in question. The view that "explanation" is the description of the unknown in terms of the known is not new in philosophy, but it was never until recently defined with a precision which gave to it a wide range of usefulness. Besides, in verbal coincidences, great care must be exercised lest we interpret the *words* of one period in the light of the *ideas* of a subsequent one, where the intellectual environment is different.

That Adam Smith, however, should have come near to the idea of the economy of thought is not remarkable, for the main research of his life was occupied with that field from which Professor Mach drew the first suggestions of his theory.¹ Much that follows will be rendered more intelligible if we remember that Smith was powerfully influenced by the philosophical views of his friend David Hume.

In accordance with the philosophical drift of the time, Smith seeks the universal motive of philosophical research in a *Sentiment*—the sentiment of wonder.

"We wonder at all extraordinary and uncommon objects, at all the rarer phenomena of nature, at meteors, comets, eclipses, at singular plants and animals, and at every thing, in short, with which we have before been either little or not at all acquainted."

It will be seen that like Hobbes he placed the motive of philosophical research rather high in the psychological scale, and could say:

"Wonder, therefore, and not any expectation of advantage from its discoveries, is the first principle which prompts mankind to the study of Philosophy."

We should not state his results nowadays in the same words, but practically the same meaning is conveyed by them.

The starting-point clear, let us see what "explanation" consists in, keeping in mind the views of Clifford and Mach, which the curious reader will find summarised in the essays on Mental Adaptation, The Economy of Thought, and Comparison in Physics, in the latter's *Popular Scientific Lectures*, and in the article on the Aims and Instruments of Scientific Thought in the former's *Lectures and Essays*.

The mind, says Adam Smith, takes pleasure in observing the resemblances that are discoverable betwixt objects. By such observations it endeavors "to arrange and methodise all its ideas, and to reduce them

¹ A cheap edition of the Essays is published by Alexander Murray & Sons, London, 1869.

¹ Allied ideas may also be found in G. H. Lewes, *Problems of Life and Mind*, Third Series, Vol. II, Chapter 6.

into proper classes and assortments." One single common quality is sufficient to connect together widely different objects, which is done by abstract or general names. How, now, does this "methodising of ideas" result in explanation? The author says:

"Whatever . . . occurs to us we are fond of referring to some species or class of things, with all of which it has a nearly exact resemblance; and though we often know no more about them than about it, yet we are apt to fancy that by being able to do so, we show ourselves to be better acquainted with it, and to have a more thorough insight into its nature. But when something quite new and singular is presented, we feel ourselves incapable of doing this. The memory cannot from all its stores, cast up any image that nearly resembles this strange appearance. If by some of its qualities it seems to resemble, and to be connected with a species which we have before been acquainted with, it is by others separated and detached from that, and from all the other assortments of things we have hitherto been able to make. It stands alone and by itself in the imagination, and refuses to be grouped or confounded with any set of objects whatever. The imagination and memory exert themselves to no purpose, and in vain look around all their classes of ideas in order to find one under which it may be arranged.

"What sort of a thing can that be? What is that like? are the questions which, upon such an occasion, we are all naturally disposed to ask. If we can recollect many such objects which exactly resemble this new appearance, and which present themselves to the imagination naturally, and as it were of their own accord, our Wonder is entirely at an end. If we can recollect but a few, and which it requires too some trouble to be able to call up, our Wonder is indeed diminished, but not quite destroyed. If we can recollect none, but are quite at a loss, it is the greatest possible."

Again, not only may strange *individual* objects excite wonder and give rise to the foregoing process of the mind, but *a succession of objects which follow one another in an uncommon train or order, may produce the same effect, though there be nothing particular in any one of them taken by itself.* For example:

"The motion of a small piece of iron along a plain table is in itself no extraordinary object, yet the person who first saw it begin, without any visible impulse, in consequence of the motion of a loadstone at some little distance from it, could not behold it without the most extreme Surprise; and when that momentary emotion was over, he would still wonder how it came to be conjoined to an event with which, according to the ordinary train of things, he could have so little suspected it to have any connexion."

The solution of this problem involves the well-known conception of causality, as a rigid and familiar association of ideas, as a habit of the imagination.

"As its [the imagination's] ideas move more rapidly than external objects, it is continually running before them, and therefore anticipates, before it happens, every event which falls out according to this ordinary course of things. When objects succeed each other in the same train in which the ideas of the imagination have thus been accustomed to move, and in which, though not conducted by that chain of events presented to the senses, they have acquired a tendency to go on of their own accord, such objects appear all closely connected with one another, and the thought glides easily along them, without effort and without interruption. They fall in with the natural career of the imagination. . . . There

is no break, no stop, no gap, no interval. The ideas excited by so coherent a chain of things seem, as it were, to float through the mind of their own accord, without obliging it to exert itself, or to make any effort in order to pass from one of them to another."

Again:

"If this customary connexion be interrupted, if one or more objects appear in an order quite different from that to which the imagination has been accustomed, and for which it is prepared, the contrary of all this happens. We are at first surprised by the unexpectedness of the new appearance, and when that momentary emotion is over, we still wonder how it came to occur in that place. The imagination no longer feels the usual facility of passing from the event which goes before to that which comes after. It is an order or law of succession to which it has not been accustomed, and which it therefore finds some difficulty in following, or in attending to. The fancy is stopped and interrupted in the natural movement or career, according to which it was proceeding. These two events seem to stand at a distance from each other; it endeavors to bring them together, but they refuse to unite; and it feels, or imagines it feels, something like a gap or interval betwixt them. It naturally hesitates, and, as it were, pauses upon the brink of this interval; it endeavors to find out something which may fill up the gap, which, like a bridge, may so far at least unite those seemingly distant objects, as to render the passage of the thought betwixt them smooth, and natural, and easy. The supposition of a chain of intermediate, though invisible, events, which succeed each other in a train similar to that in which the imagination has been accustomed to move, and which links together those two disjointed appearances, is the only means by which the imagination can fill up this interval, is the only bridge which, if one may say so, can smooth its passage from the one object to the other. Thus, when we observe the motion of the iron, in consequence of that of the loadstone, we gaze and hesitate and feel a want of connexion betwixt two events which follow one another in so unusual a train. But when, with Des Cartes, we imagine certain invisible effluvia to circulate round one of them, and by their repeated impulses to impel the other, both to move towards it, and to follow its motion, we fill up the interval betwixt them, we join them together by a sort of bridge, and thus take off that hesitation and difficulty which the imagination felt in passing from the one to the other. That the iron should move after the loadstone seems, upon this hypothesis, in some measure according to the ordinary course of things. Motion after impulse is an order of succession with which of all things we are the most familiar. Two objects which are so connected seem, to our mind, no longer to be disjointed, and the imagination flows smoothly and easily along them."

The same happy phraseology is employed throughout the whole "Essay on the History of Astronomy."

Adam Smith is well aware, too, of the *relative* sufficiency of explanations. Speaking of astronomy, where science has been most successful, he says:

"Nay, in those cases in which we have been less successful, even the vague hypothesis of Des Cartes, and the yet more indetermined notions of Aristotle, have, with their followers, contributed to give some coherence to the appearances of nature, and might diminish, though they could not destroy their wonder. If they did not completely fill up the interval betwixt the two disjointed objects, they bestowed upon them, however, some sort of loose connexion which they wanted before."

And referring to events where the whole physiognomy of nature is conceived to be changed, he makes the following remark:

"Could we conceive a person of the soundest judgment, who had grown up to maturity, and whose imagination had acquired those habits, and that mould, which the constitution of things in this world necessarily impresses upon it, to be all at once transported alive to some other planet, where nature was governed by laws quite different from those which take place here; as he would be continually obliged to attend to events, which must to him appear in the highest degree jarring, irregular, and discordant, he would soon feel . . . [a] confusion and giddiness begin to come upon him, which would at last end . . . in lunacy and distraction."

The terms cause and effect seem to be avoided in Smith's discussion, but the function of the ideas cause and effect, as factors in comprehension, is well illustrated, as follows :

"The same orders of succession, which to one set of men seem quite according to the natural course of things, and such as require no intermediate events to join them, shall to another appear altogether incoherent and disjointed, unless some such events be supposed : and this for no other reason, but because such orders of succession are familiar to the one, and strange to the other. When we enter the work-houses of the most common artizans ; such as dyers, brewers, distillers ; we observe a number of appearances, which present themselves in an order that seems to us very strange and wonderful. Our thought cannot easily follow it, we feel an interval betwixt every two of them, and require some chain of intermediate events, to fill it up, and link them together. But the artizan himself, who has been for many years familiar with the consequences of all the operations of his art, feels no such interval. They fall in with what custom has made the natural movement of his imagination ; they no longer excite his Wonder, and if he is not a genius superior to his profession, so as to be capable of making the very easy reflexion, that those things, though familiar to him, may be strange to us, he will be disposed rather to laugh at, than sympathise with our Wonder. He cannot conceive what occasion there is for any connecting events to unite those appearances, which seem to him to succeed each other very naturally. It is their nature, he tells us, to follow one another in this order, and that accordingly they always do so."

Philosophy is "the science of the connecting principles of nature." Philosophies have succeeded or failed according as their connecting principles have been more or less familiar :

"Why has the chemical philosophy in all ages crept along in obscurity, and been so disregarded by the generality of mankind, while other systems, less useful, and not more agreeable to experience, have possessed universal admiration for whole centuries together ? The connecting principles of the chemical philosophy are such as the generality of mankind know nothing about, have rarely seen, and have never been acquainted with ; and which to them, therefore, are incapable of smoothing the passage of the imagination betwixt any two seemingly disjointed objects. Salts, sulphurs, and mercuries, acids and alkalis, are principles which can smooth things to those only who live about the furnace ; but whose most common operations seem, to the bulk of mankind, as disjointed as any two events which the chemists would connect together by them. Those artists, however, naturally explained things to themselves by principles that were familiar to themselves. As Aristotle observes, that the early Pythagoreans, who first studied arithmetic, explained all things by the properties of numbers ; and Cicero tells us, that Aristoxenus, the musician, found the nature of the soul to consist in harmony. In the same manner, a learned physician lately gave a system of moral philosophy upon

the principles of his own art, in which wisdom and virtue were the healthful state of the soul ; the different vices and follies, the different diseases to which it was subject ; in which the causes and symptoms of those diseases were ascertained ; and, in the same medical strain, a proper method of cure prescribed. In the same manner also, others have written parallels of painting and poetry, of poetry and music, of music and architecture, of beauty and virtue, of all the fine arts ; systems which have universally owed their origin to the lubrications of those who were acquainted with the one art, but ignorant of the other ; who therefore explained to themselves the phenomena in that which was strange to them, by those in that which was familiar ; and with whom, upon that account, the analogy, which in other writers gives occasion to a few ingenious similitudes, became the great hinge upon which every thing turned."

Regarding the *function* of a scientific system, Smith is also perfectly clear. After describing the astronomical system of the ancients as perfected by Eudoxus and Callippus, he says :

"Though rude and inartificial, it is capable of connecting together, in the imagination, the grandest and the most seemingly disjointed appearances in the heavens. . . . And if there had been no other bodies discoverable in the heavens, besides the Sun, the Moon, and the Fixed Stars, this hypothesis might have stood the examinations of all ages and gone down triumphant to the remotest posterity."

Owing to the discovery of new phenomena, however,

"This system had become as intricate and complex as those appearances themselves, which it had been invented to render uniform and coherent. The imagination, therefore, found itself but little relieved from that embarrassment, into which those appearances had thrown it, by so perplexed an account of things."

Similarly, speaking of the various phenomena which the astronomical system of Cleanthes leaves unexplained, he says :

"All these have, in his system, no bond of union, but remain as loose and incoherent in the fancy, as they at first appeared to the senses, before philosophy had attempted, by giving them a new arrangement, by placing them at different distances, by assigning to each some peculiar but regular principle of motion, to methodise and dispose them into an order that should enable the imagination to pass as smoothly, and with as little embarrassment, along them, as along the most regular, most familiar, and most coherent appearances of nature."

Then follows this paragraph, highly elucidative of the nature of scientific theories, and which Smith employs on another occasion, as we shall see later on.

"Systems in many respects resemble machines. A machine is a little system, created to perform, as well as to connect together, in reality, those different movements and effects which the artist has occasion for. A system is an imaginary machine invented to connect together in the fancy those different movements and effects which are already in reality performed. The machines that are first invented to perform any particular movement are always the most complex, and succeeding artists generally discover that, with fewer wheels, with fewer principles of motion, than had originally been employed, the same effects may be more easily produced. The first systems, in the same manner, are always the most complex, and a particular connecting chain, or principle, is generally thought necessary to unite every two seemingly disjointed appearances ; but it often happens that one great connect-

ing principle is afterwards found to be sufficient to bind together all the discordant phenomena that occur in a whole species of things. How many wheels are necessary to carry on the movements of this imaginary machine, the system of Eccentric Spheres! The westward diurnal revolution of the Firmament, whose rapidity carries all the other heavenly bodies along with it, requires one. The periodical eastward revolutions of the Sun, Moon, and Five Planets, require, for each of those bodies, another. Their differently accelerated and retarded motions require, that those wheels, or circles, should neither be concentric with the Firmament, nor with one another; which, more than anything, seems to disturb the harmony of the universe. The retrograde and stationary appearance of the Five Planets, as well as the extreme inconstancy of the Moon's motion, require, for each of them, an Epicycle, another little wheel attached to the circumference of the great wheel, which still more interrupts the uniformity of the system. The motion of the apogee of each of those bodies requires, in each of them, still another wheel, to carry the centres of their Eccentric Spheres round the centre of the Earth. And thus, this imaginary machine [Ptolemy's], though, perhaps, more simple, and certainly better adapted to the phenomena than the Fifty-six Planetary Spheres of Aristotle, was still too intricate and complex for the imagination to rest in it with complete tranquillity and satisfaction."

What Ptolemy's system failed to do, the system of Copernicus, however, accomplished.

"The system of Copernicus afforded this easily, and like a more simple machine, without the assistance of Epicycles, connected together, by fewer movements, the complex appearances of the heavens. . . . Thus far did this new account of things render the appearances of the heavens more completely coherent than had been done by any of the former systems. It did this, too, by a more simple and intelligible, as well as more beautiful machinery."

Further, by Copernicus's system the five planets which were formerly thought to be objects of a species by themselves unlike anything to which the imagination had been accustomed, were naturally apprehended to be objects of the same kind with the earth.

"Thus this hypothesis, by classing them in the same species of things with an object that is of all others the most familiar to us, took off that wonder and that uncertainty which the strangeness and singularity of their appearance had excited; and thus far, too, better answered the great end of Philosophy."

Smith's comparison of scientific theories to imaginary working-models of events, reminds us of Professor Mach's view that science is a *Nachbilden*, reproduction or imitation, of facts.

Smith also refers the success of Newton's law of gravitation to the afore-mentioned principle in "philosophy." Gravity, he says, of all the qualities of matter, is after its inertness that which is most familiar to us.

"The superior genius and sagacity of Sir Isaac Newton, therefore, made the most happy, and, we may now say, the greatest and most admirable improvement that was ever made in philosophy, when he discovered that he could join together the movements of the Planets by so familiar a principle of connexion, which completely removed all the difficulties the imagination had hitherto felt in attending to them."

Smith only began his Essay on the History of Ancient Physics. But he lays down the same principles as directing inquiry in this domain. Here, too, the imagination is "driven out of its natural career," only it is infinitely more embarrassed than in the heavens.

"To introduce order and coherence into the mind's conception of this seeming chaos of dissimilar and disjointed appearances [referring to terrestrial phenomena], it was necessary to deduce all their qualities, operations, and laws of succession, from those of some particular things, with which it was perfectly acquainted and familiar, and along which its imagination could glide smoothly and easily, and without interruption."

To render this lower, terrestrial part of the great theatre of nature a coherent spectacle to the imagination it is necessary to suppose, he says, and here we have in a nutshell his theory of explanation:

"First, that all the strange objects of which it consisted were made up out of a few, with which the mind was extremely familiar; and secondly, that all their qualities, operations, and rules of succession, were no more than different diversifications of those to which it had long been accustomed, in these primary and elementary objects."

In the few pages constituting this essay he shows how by these principles the physical speculations of the ancients were guided and practically justified. *Apropos* of the last consideration he remarks:

"Let us not despise those ancient philosophers, for thus supposing, that these two elements [fire and air] had a positive levity, or a real tendency upwards. Let us remember that this notion has an appearance of being confirmed by the most obvious observations; that those facts and experiments, which demonstrate the weight of the Air, and which no superior sagacity, but chance alone, presented to the moderns, were altogether unknown to them."

In concluding we shall give two quotations related to that made above on systems, which seem to indicate that the idea of mental economy was not entirely unfamiliar to Smith's mind. He is speaking in the "Essay on the Formation of Languages," of the dropping of declensions and conjugations, and of their places being supplied by auxiliary words. He says:

"It is in this manner that language becomes more simple in its rudiments and principles, just in proportion as it grows more complex in its composition, and the same thing has happened in it, which commonly happens with regard to mechanical engines. All machines are generally, when first invented, extremely complex in their principles, and there is often a particular principle of motion for every particular movement which it is intended they should perform. Succeeding improvers observe, that one principle may be so applied as to produce several of those movements; and thus the machine becomes gradually more and more simple, and produces its effects with fewer wheels, and fewer principles of motion. In language, in the same manner, every case of every noun, and every tense of every verb, was originally expressed by a particular distinct word, which served for this purpose and for no other. But succeeding observations discovered, that one set of words was capable of supplying the place of all that infinite number, and that four or five prepositions, and half a dozen auxiliary verbs, were capable of answering the end of all the declensions, and of all the conjugations in the ancient languages."

In another place in the same Essay, in speaking of impersonal verbs, which, according to him, express in one word a complete event and preserve in the expression that perfect simplicity and unity which there always is in the object and in the idea, and which suppose no abstraction or metaphysical division of the event into its several constituent members of subject and attribute, and after explaining how such impersonal verbs have become personal, by splitting up and dividing all events into a great number of metaphysical parts, he says:

"It is probably in some such manner as this, that almost all verbs have become personal, and that mankind have learned by degrees to split and divide almost every event into a great number of metaphysical parts, expressed by the different parts of speech, variously combined in the different members of every phrase and sentence. The same sort of progress seems to have been made in the art of speaking as in the art of writing. When mankind first began to attempt to express their ideas by writing, every character represented a whole word. But the number of words being almost infinite, the memory found itself quite loaded and oppressed by the multitude of characters which it was obliged to retain. Necessity taught them, therefore, to divide words into their elements, and to invent characters which should represent, not the words themselves, but the elements of which they were composed. In consequence of this invention, every particular word came to be represented, not by one character, but by a multitude of characters; and the expression of it in writing became much more intricate and complex than before. But though particular words were thus represented by a greater number of characters, the whole language was expressed by a much smaller, and about four and twenty letters were found capable of supplying the place of that immense multitude of characters, which were requisite before. In the same manner, in the beginnings of language, men seem to have attempted to express every particular event, which they had occasion to take notice of, by a particular word, which expressed at once the whole of the event. But as the number of words must, in this case, have become really infinite in consequence of the really infinite variety of events, men found themselves partly compelled by necessity, and partly conducted by nature, to divide every event into what may be called its metaphysical elements, and to institute words, which should denote, not so much the events, as the elements of which they were composed. The expression of every particular event became in this manner more intricate and complex, but the whole system of the language became more coherent, more connected, more easily retained and comprehended."

BOOK NOTICES.

THOUGHTS ON RELIGION. By *George John Romanes*. Edited by Charles Gore, M.A., Canon of Westminster. Chicago: The Open Court Publishing Co. 1895. Pages, 184. Price, \$1.25.

The late Prof. George John Romanes left some unfinished notes on religion which were handed, at his special request, to Mr. Charles Gore, Canon of Westminster, a friend of the late scientist, and a representative of ecclesiastical dogmatism, to do with them as Mr. Gore thought best. Mr. Gore decided to publish these notes, with editorial comments and two inedited essays on "The Influence of Science upon Religion," written by Romanes in 1889. All now lie before us, bearing the title *Thoughts on Religion*.

As was to be foreseen, this book is creating a sensation. Not only does it prove the depth of Professor Romanes's religious sen-

timent, but it is also striking evidence of the importance of the religious problem generally. We learn from it that the great biologist was possessed of a profound eagerness to believe, but discover that he was unable after all to conquer the objections made by science to the traditional dogmas of religion. It appears, however, that his tendency to belief increased, and we are informed by the editor, Mr. Gore, that Professor Romanes, before his death, "returned to that full deliberate communion with the Church of Jesus Christ, which he had for so many years been conscientiously compelled to forego."

The significance of the struggle in Professor Romanes's mind between reason and belief cannot be overrated. Romanes's posthumous work is a *mene tekel* which reminds us of the importance of the religious problem. We cannot and must not leave it unsettled in worldly indifference. We must attend to it and investigate it bravely and conscientiously. We can no longer denounce reason, or silence our intellectual needs, for it is God himself who speaks in the voice of reason: and the progress of science is his most glorious revelation which ecclesiasticism cannot smother. Indeed, the suppression of reason is the sin against the Holy Ghost which cannot be forgiven, but will inevitably lead, if persisted in, to eternal perdition.

The issues involved in Professor Romanes's *Thoughts on Religion* are discussed editorially and at length in the April *Monist*, which has just appeared.

We are glad to announce the appearance of a little paper, devoted to the interests of the People's Church of Peoria, Ill., entitled *The Unsectarian*. It is a welcome sign of the times, and will not only serve to promote and consolidate the interests of the organization which it represents, but will also afford example and encouragement to similar struggling institutions in other towns. The People's Church, we learn, "stands for the religion of humanity. . . . It is creedless. . . . Asks no one what he believes, . . . but aims to teach the physical, moral, and spiritual laws of the universe, and exhort obedience to them. . . . Knowledge is the saviour of the world." (R. B. Marsh, 216 Linn Street, Peoria, Ill.)

Cornell University has been publishing for nearly two years now a high-class technical magazine, *The Physical Review*, a Journal of Experimental and Theoretical Physics, conducted by Edward L. Nichols and Ernest Merritt. This periodical will, of course, claim the attention only of specialists, but it is significant of a new and general character of American research, which all will welcome. (New York: Macmillan & Co.)

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