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AN ORIENTATION TO THE STUDY OF PERCEPTION[1]

IN reading the "Novum Organum" of Francis Bacon, one is impressed with the author's feeling of discontent with the method of intellectual inquiry employed by those who had preceded him, and with his intense eagerness to inaugurate a new point of departure. Bacon's attitude toward the deductive method of the middle ages was not so much one of fault-finding as one frankly recognizing that the course of syllogistic reasoning had spent itself, that further progress in that direction was impossible. The deductive method, in its exhaustive application to the subject-matter at hand, had extracted all of the content which that subject-matter contained. Further advance and progress was possible only by the discovery of a new subject-matter, and for that discovery a new method and a new point of departure were necessary. When a situation ceases any longer to yield results, the practical thing to do is to quit the situation; when progress in a given direction is no longer possible, the obvious thing to do is to change the direction.

The situation in contemporary philosophy presents an outlook in many respects analogous to that represented by Bacon. A certain method of approach has for a very long time been dominant in philosophical analysis. This method has, with great rigor and consistency, been applied to the subject-matter which has been of interest to the reflective thinking of modern times. Certain very definite suppositions have been made, and those suppositions have been worked through in a most exhaustive manner. The controlling assumptions of modern thinking have been applied with a thoroughness that is commendable, but with a conclusion that is amazing. We find in the end that a rigorous application of our premises has tended to multiply rather than to solve problems. It has resulted in confusion rather than clarity. The conclusion is even being driven home to us that not only have many of our problems thus far defied solution, but that they are in the very nature of the case insoluble. They are actually

[1] Read at the fortnightly conference of the officers and students of the department of philosophy of Columbia University, on November 17, 1913.

being set down as persistent. Philosophy concerns itself not merely with existence and subsistence, but with *persistence*.

But if philosophy is to be productive and progressive, it must concern itself with more than the hereditary transmission of acquired problems. It is just the unsatisfactory character of the conclusions of modern philosophy, just the nature of the problems with which it deals, that suggests the requirement of a new point of departure. Reid once intimated, touching the skepticism of Hume, that it is just the absurdity of the conclusions which shows the falsity of the premises. There are many indications at present that a new point of departure is in a process of formation, a point of departure not directed back on old assumptions with a view to a more thorough application or further revision and refinement, but a point of departure freed from the old assumptions of the past and unencumbered with the dead weight of tradition. It is being borne in upon us from many sides that there is going on around us a philosophical renaissance. One who is at all sensitive to the trend of the times feels that a transformation is being effected, a transformation issuing in an entirely new method of approach. This current methodology is applied, not to a refutation of old theses in their old context, but to the formulation of new problems in a new context. It does not fight the past. It is content to let it alone. Questions of a certain nature, it does not strive to answer, it never asks them; problems of a definite kind, it does not attempt to solve, it suppresses them.

But it is the topic of *perception* which is the subject of this paper. In considering this topic I should like to indicate very clearly my main interest and purpose. The treatment is to be largely historical in character. An historical sketch is not undertaken, however, with any belief that a knowledge of the various senses in which the term perception has been employed will help us to tell what perception is. My interest is neither in the rigor of psychological analysis nor in the preciseness of logical definition. The main purpose of the paper is not an attempt to state what perception is, but to use the topic of perception to illustrate the necessity for a new point of departure in philosophical analysis. An analysis of certain representative historical accounts of perception is undertaken with the following questions in mind: Just what, in specific instances, was the problem of perception taken to be? Why was it a problem? What was the situation in which the problem arose? What were the motives and interests which forced the problem into prominence?

I shall cite only one example of the treatment of perception from Greek philosophy, that of Democritus. From an investigation, largely inductive, Democritus concludes that matter in motion is an

adequate conception for the explanation of the facts of the world and of experience. On such an assumption, he explains the fact of perception by the doctrine of effluences. I may not be able literally to take over the cold which you are suffering from, but germs of that cold may enter my body, and I may, as we say, catch it. And so for perception, the object does not enter into my body, nor does my body go out to the object, but the object may send off minute images of itself, and those may impinge on my eye with the result that I may say that I catch a perception in quite as literal a sense as I say that I catch a cold.

There is something very genuine in this theory of Democritus. The problem grows out of the subject-matter. It may be necessary to explain the meaning of the statement that a problem is a problem of the subject-matter. This I shall do by a rough characterization rather than by precise definition. An empirical situation which for the time is an object of investigation may present certain difficulties in response to certain demands which are made of the situation. If those demands grow out of the situation, they give rise to problems of the subject-matter. So long as a problem is kept within the context in which it occurs, and is expressive of a difficulty inherent in the context, it is a problem of the context. When I abstract it from the situation and consider it with respect to foreign subjects, or when I import into the situation other demands which are expressive of foreign interests, then the problem is no longer one of the subject-matter.

But to return to Democritus, we have, to start with, matter in motion and the void. The empirical situation is that I, a bit of matter here, establish communication with the chair, a bit of matter over there. Now, how, on his assumptions, is that possible? This is a genuine problem of the subject-matter. And for the solution of it, no hypothesis is invented, no *deus ex machina* is brought in. It is solved in terms of the assumptions which give rise to it, and is at all points kept within the context in which it arises.

When we turn to modern philosophy, the first thing that strikes us is the revolution in its point of departure. The Greeks began with the physical world and they discovered that perception is something which happens in that world. The moderns begin with the world of the inner life, and from a theory of knowledge work outwards to a physical world. For Aristotle things primarily *are,* and there is a science which is the science of *being.* Secondarily it is discovered that things not only are, but that they are *knowable.* But knowledge is something which arises in a world of fact. For the moderns it is the other way around, a world of fact is something that

is discovered, if discovered at all, through the medium of a theory of knowledge.

This fact is of tremendous significance in its relation to a theory of perception. It is one thing to begin with a world of fact and to discover that within that world perception is an event. It is altogether a different thing to begin with perceptual processes and to conclude that those processes yield a world of fact. In the former case perception takes its place as a natural happening; in the latter case the world of fact is under the dictation and control of a theory of knowledge. The outer world is there only by courtesy. It exists under the shadow and protection of consciousnes. The modern idealist has often said, give me consciousness and I will explain the world. But he begins by asking for consciousness. Might it not be better to begin without asking for anything, but to start with what we have, and attempt to give some sort of a consistent account of our possession?

In the forefront of modern philosophy, as one who more than any other has entrenched certain conceptions into our modes of thinking, stands John Locke. He uses the word perception in two senses. It stands for the act of perceiving, the operation involved; and then it stands for the content perceived, for the product of the operation. Perception considered as act is used by Locke in a very broad sense to include all so-called cognitive acts. "Having ideas and perception,"[2] are for Locke the same thing. "The two great and principal actions of the mind," he says, "are these two: perception, or thinking; and volition, or willing."[3] He includes, as he himself says, even more than thinking. Thinking, as he defines it, is an active process involving voluntary attention. Perception is this and more. It spans the territory of mental process from the highest acts of thinking involving voluntary attention down to "bare naked perception" where "the mind is, for the most part, only passive." Knowledge, in Locke's famous definition of it, is defined "as the perception of the connexion and agreement, or disagreement and repugnancy of any of our ideas."[4]

Such is Locke's use of the word perception as the act of perceiving. It is used as synonymous with consciousness in general. To perceive is the mental act of being-aware-of, quite irrespective of that of which there is awareness. The act of perceiving seems to be the same for all cognitive experience. It has no qualitative differences. The differences are describable fully in terms of ideas perceived.

But Locke also uses the word perception in a second sense.

[2] "Essay Concerning Human Understanding," II., 1, 9.

[3] *Ibid.*, II., 6, 2.

[4] *Ibid.*, IV., 1, 2.

"Whatever idea is in the mind," he says, "is either an actual perception, or else having been an actual perception, is so in the mind, that by memory it can be made an actual perception again."[5] In this second sense, perception stands for the content perceived. It is synonymous with "idea." "It is plain," he says in another place, "these perceptions are produced in us by exterior causes affecting our senses."[6] Or again, "Perception, as it is the first faculty of the mind exercised about her ideas, so it is the first and simplest idea we have from reflection."[7]

Now let us take Locke's account of perception in each of the two senses pointed out, and see what is the problem with which it is concerned. If we take perception as the act of perceiving, there is for Locke no problem, or we might better say Locke makes no problem of it. It is not a question as to whether perception is cognitive. Perception *is* cognition. It is just the act of being conscious, and Locke makes no attempt to define it any further. "What perception is," he says, "every one will know better by reflecting on what he does himself, when he sees, hears, feels, thinks, etc., than by any discourse of mine. Whoever reflects on what passes in his own mind can not miss it."[8]

It is obvious that such an account of perception at once puts the topic in such a context that any investigation of it is wholly impossible. To know what perception is, Locke tells us to reflect on what we do when we perceive. But that act of reflection is itself a second act of perceiving, and the original act which we wish to investigate has been precipitated into perception as content, and we are no further than we were at first. Any attempt to give an account of perception, therefore, involves us in an infinite regression.

The point to emphasize is that the account of perception which Locke gives is set in such terms that just such a difficulty arises. It is a genuine difficulty in the context in which it occurs. So long as the problem is set in the above terms, you can never tell what perception is. The only conclusion to draw is the one which Locke draws, *viz.*, that perception is ultimate and indefinable, that is to say, we give up the problem.

If we turn to Locke's use of perception in the sense of content, we find him interested in certain problems which are largely problems of the subject-matter. Knowledge is conversant about ideas. On that assumption certain questions naturally arise. One task is that of the statistician. We must take an inventory of the stock of ideas, discover, enumerate, and compile them. We look into consciousness and

[5] *Ibid.*, I., 4, 20.
[6] *Ibid.*, IV., 9, 4.
[7] *Ibid.*, I., 9, 1.
[8] *Ibid.*, II., 9, 2.

set down what we see when we look. Locke also wishes to know where the ideas come from, what relations obtain among them, and what relations they sustain toward the outside world, the reality of which he never denies. But these are all problems within the larger setting of Locke's initial supposition that knowledge is conversant about ideas, and with the internal consistency of his solution of these problems, we are not at all concerned. Our interest is with the wider background on which the doctrine of knowledge is displayed.

The immediate objects of knowledge, Locke says, are ideas. Ideas are psychical, intra-mental existences. That the immediate objects of knowledge are ideas is a supposition which Locke, I suppose, took over from Descartes. It has been pointed out, however, that Descartes does not always use idea in the sense of a purely psychical existence. However that may be, the meaning is very clear in Locke, and after him this meaning is thoroughly entrenched in philosophical literature. Hume's impressions, Kant's representations, Mill's sensations, contemporary psychology's use of states of consciousness, are all variations of Locke's terminology, and adhere to the original supposition that knowledge is directly concerned with psychical existences or mental states.

There is evidence to show that at the time of Locke his contemporaries hardly understood what he meant by calling the immediate objects of knowledge ideas. For instance, the Bishop of Worcester writes a long letter to Locke protesting against his "new way of ideas." He writes: "The world hath been strangely amused with *ideas* of late; and we have been told that strange things might be done by the help of ideas." After a long correspondence Locke concluded, "I pray you, let it be idea still." And *idea* it remained.

Now there is a genuine problem here, namely, whether or not ideas, in the manner in which Locke conceives them, really exist. This is simply a question of fact. What is the empirical evidence for the existence or non-existence of sensations, or ideas, or mental states? And the problem becomes a scientific inquiry into the nature of the evidence one presents in support of the view he takes. But this problem is hardly considered by Locke. Its affirmative solution is implied in the form of an assumption, the real problem being concealed in the form of an initial hypothesis. And just that hypothesis renders the entire subsequent development wholly artificial. The problems that arise are problems in virtue of the assumption, and possess meaning only in terms of that assumption.

Hume uses the word perception in the same broad sense as that employed by Locke.[9] His skeptical conclusions represent the logical

[9] "Treatise on Human Nature," I., 1, 1; and I., 2, 6.

deductions from Locke's assumptions. And these conclusions, as the history of philosophy shows, were very disquieting and called forth violent reactions from the Scotch school, on the one hand, and from Kant, on the other.

It was Thomas Reid, the founder of the Scotch school, who gave to the term perception its strict and precise psychological meaning, a meaning which has been largely adopted in psychology ever since. Prior to Reid, as we have seen, the word perception has had a long history in the wide sense of cognition in general. Reid gives the word a specific meaning. To quote: "The perception of external objects by our senses is an operation of the mind of a peculiar nature and ought to have a name appropriate to it. I know no word more proper to express this act of the mind than perception."[10]

Reid begins with a genuine interest in descriptive psychology. He carefully distinguishes sensation from memory, imagination, and reasoning. "The word sensation," according to Reid, "connotes only subjective state produced by an external stimulus without implying an awareness of an object."[11] Between sensation, on the one hand, and memory and imagination, on the other, there is a qualitative difference. While sensations themselves are subjective and imply no awareness, they are accompanied by an intuitive belief in the reality of an external object which is their cause. Now that act of the mind by which it refers its sensations to an external object as its cause is by Reid termed perception. The presence of sensations arouses a belief in an external material world, and the act of the mind involved in this belief is defined as perception. Perception is, therefore, the immediate or intuitive awareness of an external material object.

Now let us see what is implied in this doctrine and also attempt to see *why* Reid formulates it. On Locke's assumption no direct knowledge of the external world is possible. Berkeley destroys Locke's theory of representative realism and his copy theory. The conclusions of Hume constitute a logically implied solipsism. Reid, however, believes in the existence of an outside world, but his psychological analysis of sensation does not yield a knowledge of that world; consequently, a definition of perception is framed which does yield it, a definition, however, which smuggles in the very thing it is intended to explain. The real problem is concealed in the definition. Reid starts with a belief in an external world. He constructs a definition in response to that belief. Then he turns around and uses the definition to prove the existence of the material world, when the definition itself is the outgrowth of an original assumption. Now that,

[10] "Intell. Powers," I., 1, 28.

[11] "Baldwin's Dictionary," Article, "Perception."

I take it, is artificial. The definition begs the question. It assumes what it should prove.

But why is he involved in the problem, and why does he abandon his descriptive psychology and hurry on to a theory of knowledge? He does it because he wishes to refute the skepticism of Hume. Just as the Cambridge Platonists had, in opposition to a certain objectionable theory of Hobbes, appealed to intuition as an infallible and unerring guide to moral distinctions; and just as Berkeley had constructed his idealistic philosophy in response to certain theological interests; so Reid, in the field of knowledge, appeals to intuition in response to an interest centering in a refutation of Hume. In no one of the cases is the problem a problem of the subject-matter. In each case the problem is complicated by appealing to an interest in something entirely outside of the subject under consideration. Reid's account of perception is not the result of a direct analysis of the situation in which perception occurs, it is an account overawed by an interest entirely foreign to the concrete situation. This fact was recognized by Mill, who said that Reid's definition was so framed that it might be used to refute his antagonists.

In Reid's appeal to intuition we notice a characteristic peculiar to modern philosophy. Difficulties are solved by an appeal to a definition of the mind or to the mechanism of consciousness, rather than by an analysis of the given facts. Reid solves the problem of our knowledge of an external world by appealing to the act of perception, an act which carries with it its own guarantee of the existence of the outside world. Belief in its existence comes not from an examination of the world, but from an examination of the act of the mind by which the world is known.

Not only do we note that difficulties are solved by an appeal to the mind as a principle of explanation, but that appeal usually complicates the original problem by importing into it certain demands which arise solely out of the subjective appeal. And furthermore, if you appeal to the mind to solve your problem, then the mind has got to be just the sort of a thing that can do it. Such an appeal is not in the interest of sound descriptive psychology, but is under the constraint of the demand that it does what it is expected to do. And history shows us that the mind has been most versatile and accommodating in compliance with the demands which have been made of it.

This appeal to the mind as a source for the solution of difficulties becomes more obvious when we turn to Kant. Using the word perception, in the broad sense employed by both Locke and Hume, to stand for cognition in general, Kant's problem is expressed in the form of a question: "How is knowledge possible?" The problem is not a problem of *perception* at all, but a problem of the *presupposi-*

tions of perception. What sort of a thing must the mind be if it is to give us valid knowledge?

The perceptive process for Locke was an exceeding simple affair. It was void of any qualitative differentiation, an ultimate process not further definable. For Kant it is a highly complex process. If the mind is to perceive, it must be an elaborate mechanism, and Kant proceeds to rig it up. For Locke and Hume the emphasis was placed on perception as content perceived. With Kant perception as the act of perceiving is brought into prominence. The starting point for Hume and Kant is the same. Both begin with Locke's assumptions. From that assumption Hume concludes skepticism. From the same assumption Kant draws a very different conclusion. Because satisfactory relations are not found among impressions, Hume concludes that they do not exist. Kant would reply that Hume did not find them, because he was looking for them in the wrong place. That relations are not given as items of sense experience is no evidence that they do not exist. If they are not discovered on the content side of perception, the only other place to look for them is on the process side. Consequently the mind becomes endowed with relating activities. Hume sticks to his subject-matter, but does not find relations. Kant abandons the subject-matter, but does find relations as transcendental activities. How simply James handles the problem! A more exhaustive analysis of the subject-matter yields relations as felt relations within experience.

But the important point is that Kant's elaborate mechanism of perception was necessitated by his initial assumption, the original assumption of Locke, that all immediate objects of knowledge are ideas. On that assumption the "Critique of Pure Reason" is worked through with a thoroughness and consistency that is unexcelled.

An excellent example of the treatment of perception and of the problems that have arisen in connection with it is afforded by James Mill. The problem is clearly formulated by Mill in a passage in "The Analysis of the Human Mind." "When I lift my eyes from the paper on which I am writing, I see the chairs and tables and walls of my room, each of its proper shape and at its proper distance. I see from my window trees and meadows, and horses and oxen, and distant hills. I see each of its proper size, of its proper form, and at its proper distance; and those particulars appear as immediate informations of the eye, as the colors which I see by means of it." There is the empirical situation. Now Mill continues: "Yet philosophy has ascertained that we derive nothing from the eye whatever but sensations of color." There is your assumption. "How, then," asks Mill, "is it that we receive accurate information, by the eye,

of size and shape and distance?'' There is your problem. The reply is made: ''By association merely.'' There is your solution.

Now why was this a problem for Mill? Simply because, as he says, ''philosophy has ascertained'' that the immediate objects of knowledge are sensations. This was no problem for Democritus, because Greek philosophy had made no such ascertainment. It remained for modern philosophy to ascertain that the immediate objects of knowledge are ideas or sensations. On this assumption Mill has a genuine problem, but it is only a problem because of the context in which it is set. The real problem, namely, that regarding the evidence for the existence of sensations, Mill does not consider.

Furthermore, Mill's proffered solution of the problem, the doctrine of the association of ideas, is but a further refinement growing out of the same initial presupposition. If sensations are isolated, disconnected, detached, how do you explain the fact that perception is of *objects* and not of fragments? That is to say that the association of ideas as a principle of explanation is necessitated by first conceiving of ideas as dissociated. The entire associative machinery of the mind has been rendered necessary because we have first taken the materials of knowledge to be fragmentary items. But, it seems obvious, if you never take things apart, there will be no need of putting them together. Professor Royce, in ''The World and the Individual,'' puts the following question to the realist whom he represents as having pulverized a monolithic world: ''In brief,'' he says, ''I want to see him mend the broken crystal of the world of the many.'' Now we might agree, with Hume as an authority, that it is impossible to mend a broken crystal, but we might reply that, if we are careful, we need not break it. There is no need for beginning with a broken crystal. To do that is to start with an assumption. Might it not be well to go back to the days before Locke ever got his hands on the crystal at all and thus to seek a point of departure free from any prejudicial conception?

The account of perception given by Reid has, on its psychological side, been generally adhered to by psychologists ever since. With James, however, an important advance is made. Prior to James sensation and perception have been clearly distinguished and kept apart. Sensation is just so much helpless, inane content of a purely psychical nature. Perception is the cognitive act initiated at the suggestion of sensation by means of which I am immediately aware of an external object. Now at the hands of James, this distinction is obliterated. Sensations themselves become cognitive, and perception as a cognitive act is distinguished from sensation only in the matter of degree of complexity. You do not need the supervention of knowing acts

compresent with sensations. The sensations themselves do the knowing. The discussion of the problem is clarified to the extent that sensation and perception are distinguished only in degree. But even if we accept this account, namely, that "sensations are cognitive," are we any nearer to knowing what perception is than we were when Locke refused to discuss the question?

From this brief historical review, let us now stop to summarize the main points which it illustrates. The first is the inevitable connection between theories of perception and theories of knowledge. So long as ideas, or sensations, or mental states are taken to be the immediate objects of knowledge, then the relation between sensations and an outside world becomes a problem. Beginning with the inner world, it then becomes a very difficult matter to reach the world outside. In response to this difficulty we have eject theories, copy theories, Reid's intuitional realism, and the more elaborate analogical inferences of more recent times. Or if we begin naïvely with the outer world, this curious situation arises. By a psychological analysis we reduce that world to sensations, then by a subsequent epistemological transformation we re-objectify it. We end just where we began, but with the suspicion, I should like to suggest, that the outside world, though masquerading under the guise of subjectivity, has been the outside world all the time.

The second point to emphasize is that the discussion of perception in terms of the doctrine that mental states are the immediate data of perception has proceeded under the control of an initial assumption. The real problem, namely, that touching the existence of psychical data, and the evidence for or against them, has received but little consideration.

In the third place, the accounts of perception which have been given do not represent direct analyses of the situations in which perception occurs, but they represent analyses of more complicated situations, ones into which interests entirely foreign have been introjected. Kant was not primarily interested in perception; he was interested in the validity of knowledge, and perception is so conceived that it yields that kind of knowledge. Reid's account of perception had as its motive the desire to refute Hume. Such foreign interests and alien motives tend to exert a coercive influence and to establish an unwarranted dictation over the description of the facts which are given. In many cases, these foreign interests were of a local nature, some of them expressive of peculiar social, religious, or political conditions. The interests themselves may have entirely disappeared with a change in the conditions which evoked them, yet the theory of perception which was framed in response to temporary demands has been perpetuated.

Each of the three points which have been noted illustrates a marked artificiality involved in the discussions of perception. A problem arising within a given context may be a problem within that context, but if abstracted from the background on which it is displayed it may be no problem at all. Or, again, a problem may be a problem not only within a context, it may become so *because of* the context. If the context is genuine, the problem is real, but if the context itself is the result of false or inadequate analysis, the problem becomes artificial.

The discussion of the topic of perception, as outlined in the historical sketch which has been given, illustrates both types of artificiality. The artificiality, the attempt has been made to show, is unescapably bound up with the tradition. To avoid it, therefore, necessitates a new point of departure and a new method of approach.

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THE CASE METHOD IN ETHICS AND ITS CRITICS[1]

SURELY criticism of a new movement was never more kindly and constructive than here. Professor Overstreet showed a generous appreciation which makes me feel that it should be taken like Robert Browning's praise of early Italian painters "for daring so much before they well did it." Professor Powell has laid us all under obligation in giving a more reasoned and detailed apologia of the case system in law than I have seen elsewhere; and his recognition that such a system may, with propriety and value, be applied to ethics is reassuring and welcome. I have also received valuable comments from many sources through personal letters whose authors I may not quote, but whose criticisms I will endeavor to meet. If I fail to meet the intent of the critics they will render me a service by pointing out my failure, as I have no pride of opinion in the matter.

Let me then in brief space reply to one or two general criticisms. First, I have never proposed the case method except as a propædeutic to ethics;[2] and I have acknowledged many of the difficulties inherent in such a method of teaching. Yet I would reserve the right to consider it the only method if, after due consideration, other methods should come to appear futile.

[1] These articles will be referred to by the numbers here attached, *viz.:* my paper (1) "The Case Method in the Study and Teaching of Ethics," this Journal, Vol. X., page 337. (2) Professor H. A. Overstreet's "Discussion"; "Professor Cox's Case Method in Ethics," *ibid.,* Vol. X., page 464. (3) Professor Thomas Reed Powell's "The Study of Moral Judgments by the Case Method," *ibid.,* Vol. X., page 484.

[2] *Cf.* (1), page 343.

Then, I have been criticized by many, including a distinguished Justice of the Supreme Court of Massachusetts, for limiting my study to actual decisions. I may confess that in the class-room I do not so limit it. In my paper, necessarily brief (as this one must be), it was difficult to explain how cases which did not involve actual decisions were weighed; and I was, as the issue proved, justly fearful of being charged with the study of *mere opinion*. Inasmuch as judicial decisions are social acts, a theory built upon them can not, with propriety, be called subjective; but when I speak of judicial decisions I would not be understood to refer only to decisions of municipal, state, or federal courts. I referred rather to decisions made "by the authorities of the group to which men belong" whatever that group may be. For class-room purposes faculty judgments on student conduct, decisions of inter-fraternity councils, athletic committees, etc., have proved to be very valuable. Then, there are readily accessible decisions (acts) of other social groups, such as labor unions, manufacturers' associations, social clubs, and the like. I know of no kind of organization more capable of making judgments and carrying them out than Society, spelled with the capital letter, and sometimes those decisions are articulated by a recognized leader.

With reference to cases which do not come to actual decision, I would say this. Where there is general agreement respecting the probable outcome, these cases weigh in one's judgment as to the character of the law implied. Many newspaper cases from contemporaneous life are imperfectly stated and the conclusion is implied only: yet there is no least doubt as to the issue. For example, many cases of lynching are recorded by the newspapers. It is not difficult to supply the details for the whole case. One knows that under certain conditions, in particular localities and times, homicide is not only condoned, but applauded; nor does one have to go to records (which, *du reste,* are easily obtainable) to know that homicide under duelling conditions meets with the same judgment in some localities, and that killing in war is equally honorable, though our squeamish modern age professed to be shocked at the exploits of a recent redoubtable occupant of the Presidential Chair.

When, however, we come to the analysis of the judgments (acts) of individuals reacting to a situation, I confess myself unwilling to base any theory upon them, since the interpretation of such acts is so largely individual and so easily mistaken. The judge before mentioned warned me that not all legal decisions were *law*. I may be permitted to return to this in connection with Professor Powell's criticisms: but here let me say that every legal decision *is law* in a most emphatic sense for either defendant or plaintiff in any actual case.

PROFESSOR OVERSTREET'S CRITICISMS[3].

"The facts with which ethics is concerned are decisions of a certain type. In the end, to be sure, the ethical question is, what *ought* the decisions to be."[4] If I understand this, it is a begging of the whole question in the interest of that view of ethics which emphasizes its *normative* character and thereby removes it altogether from the realm of science. We may readily grant that *there is an ought* in every moral situation. No man would ever do anything, *deliberately,* unless for some reason he thought that he ought to do so. For this reason such a study as Professor Sharp's referred to by me before[5] is a valuable study in psychology especially for those who wish to influence other men to pursue a particular line of conduct. It does not seem to me to help us to determine what right conduct is or whether there is any such thing. Inductive studies seem to show pretty plainly that what a man *owes* to his group is determined by (1) instinct, (2) custom, (3) habit, (4) approvals of the elders.[6] These *may* be followed by some rational judgment concerning the value of particular acts for the individual and his group. His *sense* of duty can not develop except in connection with some particular society. I have expressly repudiated[7] the study of cases of conscience. One may study them as one studies any other subject—psychologically. The sophistic mob leader, whether in church or state, may study them in order to handle men better, or the lawyer to win cases, etc., but they are not the proper material for an objective study of ethics.

The objectivity which I have sought by means of an appeal to historical cases alone "would seem" says Professor Overstreet "to be purchased by the author at the altogether disastrous price of surrendering ethics for history"; and he does not think that I can really mean "to sell out for so cheap a mess of pottage," but he thinks me "seriously ambiguous upon the point."

In so far as I by no means confound such a study as mine with history, I may reassure him; but only in so far as, for example, economics is not history, yet derived immediately from history, which, moreover, may easily be contemporaneous. The time element need not enter in. It would be vain to seek for a definition of history which would not be seriously challenged; but there can be no manner of doubt that history, far from being a mere record, is a series of constructions, interpretations, whose subject-matter is the clashes of various groups, social, political, economic, religious. As a unit, from

[3] *Cf.* (2), *passim.*

[4] *Cf.* (2), page 464.

[5] "The Influence of Custom on the Moral Judgment," F. C. Sharp.

[6] *Cf.* Dewey and Tufts "Ethics," Ch. IV.

[7] *Cf.* (1), page 342.

the standpoint of a particular historian, it is quite naturally not any one of the disciplines implied above, but equally is it each one of these disciplines when it treats of the conflicts incidental to them.

But, says Professor Overstreet, "history, for all its seeming security, is not a consensus; . . . all the while that the student has been studying the historic judgments he has either been making upon them his judgment of 'ought,' *i. e.*, his judgment of moral value, or he has been utterly unable either to discover the moral trend of the historic succession or to pass judgment upon the contemporary situation."

I readily agree that history is not a consensus, but I by no means agree with what seems to be the implication, *viz.*, that there is no objective law to be deduced from history. In situations, however diverse and widely separated, and in the face of the possibility that the "latest" development of the contemporaneous situation may seem "lower" than much that has gone before, I maintain that there is a principle discoverable, under rigid tests, which will have all the certainty that one could desire. If, now, we should find that, under infinitely diverse conditions, men always do act according to a certain principle (*e. g.*, that of self-preservation), then it would be idle to tell them that they *ought* to act differently. I am assuming, as is evident, that no negative instances have been found. I have made no claim that such will be the case. My tentative conclusions that "The individual may do as he will so long as he does not deny his own nature and purpose in life," and "Individuality is the goal of social progress," have been supported by just such evidence, but in the absence of published cases I must make them with apparent dogmatism.[8]

Professor Powell's Criticisms

Professor Powell has so supplemented my imperfect paper from many points of view, and I am so grateful to him for this, that my response must be, in the main, merely to clear up obscure points. Yet in some ways I must take issue with him.

"No satisfactory criterion can be discovered in the sources themselves, as those jurists know who have struggled vainly to distinguish what is *malum in se* from what is merely *malum prohibitum.*"[9]

[8] In reply to the statement [(2), p. 466] "The paper does not indicate clearly the character of the cases studied (whether merely legal, or more broadly social, or even individual), the sources from which they are drawn, the kind of examination to which they are subjected for *ethical* purposes, and the type of *ethical* conclusions drawn." This is true. I can not do so here in the brief space at my command, and my critic's indulgence, as well as that of other readers, must be asked until a case book can be prepared and published. The aid of all well-disposed persons is asked to this end.

[9] *Cf.* (3), page 484.

First note that *malum* is sufficient designation for anything which is wrong; but wrong is relative. What courts, acting as representatives of civil bodies, call *mala prohibita* are merely those more tangible (and usually grosser) undesirable things, to permit which would endanger the very existence of the group in question. Social inertia is such that no action is taken until life (of the group) is threatened. "Rebaters" do indeed "go to dinner parties" (they may be the life of the party!), but pickpockets are barred. *They* would be fatal. It is not strange that jurists have failed to distinguish between these *mala,* for the difference is one of degree only. Again "as it is not safe to infer moral condemnation from legal prohibition or regulation, so it is equally dangerous to assume that the group approves of what it does not punish." There seems to be a failure here to change jurisdictions. Rebaters are not dangerous to dinner parties; pickpockets are. Both come before civil courts; but the latter come also before the court of dinner-givers. It seems to me perfectly safe to infer moral condemnation from legal prohibition. The infraction of any law, however trivial and silly, doomed to repeal at the earliest date, is none the less an infraction, and immoral *in so far.* We have a loose way of speaking of one frankly unlawful as none the less "quite a moral man," because he does not get drunk, pick pockets, or commit adultery, but there is high authority for the belief that "whosoever shall keep the whole law and yet offend in one point, he is guilty of all."

"In some jurisdictions adultery is not a crime." True; but how does Professor Powell know (as he assumes) that adultery *is* none the less a crime? Is it not because he is familiar with civil groups and courts which have *declared it* to be such? To insist (I fancy that he would not do so) that in the sight of God or before an ideal ethical law, it is always a crime, is to beg the whole question. The comparison of judgments of different groups under different conditions and at many periods of history is just that process which will enable us to obtain the "legal mind" which has been instanced in his article. Begin to study the history of adultery from the sources; call the acts which are now conceived to make up that crime always by the name adultery, and it is easy to see that one can readily find groups where "it is not a crime."

My contention is that there are principles implied in the persistent judgments of all groups at all times which patient research will, probably, reveal. *They are not yet found.* If the case method as applied to ethics shall obtain any following, then there are years of arduous research ahead for many investigators. The kindly judgment of the two critics cited encourages me to hope that there will

be others to use the method. From many unexpected sources has come encouragement to persist, and the new year has brought a much larger enrollment to my class, which will make the test of greater value. A veteran English philosopher, otherwise approving, calls my law "that each organism or organization applauds its upholder and condemns its threatener"[10] "merely formal," "a mere statement of the tendency to social preservation which sanctions every institution." Agreed. The law was not announced as very important (although it has importance), but because it was the only one thus far discoverable. For practical guidance to right living it is as fruitless as the Categorical Imperative itself! Professor Powell says[11] "that the application of the case system to the teaching of ethics has possibilities of incalculable service in training the capacity to form moral judgments seems beyond dispute. This alone justifies extensive experiment. Those who hope that it may result in giving us simpler and more definite canons of conduct may be sadly disillusioned. In the study of law it has not led students to believe that what is commonly termed 'the law' is a clear and simple objective entity or that there are rules of law which may after wise selection be *mechanically applied*[12] to the solution of concrete problems, etc." And again, "suppose that some (such) 'universal law' is 'found' and many others likewise. What profit have we? Will this make men moral?" "No stress is laid upon the value of the case method for training in . . . power of intelligent recognition and prudent adaptation." These seem to me wise words which I shall take to heart. I find no fault with them. Yet we may remember that even the Categorical Imperative has been of some value as a measuring rod, and my barren formulation may not be utterly useless. Conduct of an ideal sort must somehow conform to general laws, however barren in themselves; but it should not be forgotten that I have said "men get their moral impulsive power through loyalty to some group, however small or large." This statement, as well as many others, needs the support of collected cases. Its formulation was due to the study of cases, for, previous to this study, my personal conviction had been quite the contrary.

We do not, indeed, have courts of approval, as was expressly pointed out; but we can judge by the tendency of progressive legislative acts as to probable approvals. One does not need to know all the points of a curve in order to plot it. There is a tendency in disapprovals which, reversed, tells us pretty plainly what approvals will

[10] *Cf.* (1), page 346.

[11] *Cf.* (3), page 493.

[12] Italics mine.

be. Consider a case from daily life not passed upon formally by any court. A man has a "swollen fortune" gained by methods which many people, influenced by intuitive morals, loudly condemn. Some impassioned speaker denounces his "tainted" money and declares that *society* condemns such gains. Under the circumstances one is justly suspicious of the speaker, for *society* invites the rich man in question to dinners and house parties, gives large receptions in his honor, sends him upon embassies, elects him to directorates, accepts his money for colleges, churches, and hospitals, breaks its very neck to see him when he appears in public, and so on. Any member of the largest group to which he belongs would feel elated at the thought of being allied to his family in marriage (I am drawing a composite portrait). Is this condemnation? Then we must have passed with Alice through the Looking Glass.

The case system seems to Professor Powell to be adapted to give men the "ethical mind" and he thinks this valuable. This is its chief function as a system of *teaching* the subject. Particular virtues can not be taught in class except as the class is itself a particular group and has its own loyalties, but discrimination can be taught there. I am so far an Aristotelian that I consider no action virtuous which is not conceived to be so. But, when I said that "every teaching of ethics should be adapted to make men ethical," my thought was, not so much to give them the "ethical mind" as to make them act in the way which shall have been found, *at the end of our study,* to be ethical. Naturally, at present, we are prejudiced against murder, adultery, theft, lasciviousness, and the like. It is not probable that we shall ever feel otherwise. Yet, as ethics has been taught in the past it seems to me to have had very little influence upon its students to prevent such misdemeanors and crimes. Can not we find a way to make men practise what they profess to believe?[13] The actual use of cases inductively makes me skeptical about teaching them anything but discrimination, *i. e.,* giving them the "ethical mind." The rest, the greatest part must come from their recognized position as members of *some group* to which they are loyal. Apparently the most universal morality will come from consciousness of membership in the human family. If so, this will be an interesting corroboration from the scientific side of the ethics of the great religions. Ethics is powerless to initiate, but all-powerful to guide.

Professor Powell asks:[14] "Are we forced to conclude that the intellect, if it fail to discover an 'objective morality,' must retire and leave to 'temperament' the task of making moral judgments?"

[13] *Cf.* "The Ignominy of Being Good," Max Eastman, *Atlantic Monthly,* January, 1912.

[14] *Cf.* (3), page 493.

Perhaps my answer to this has already been sufficiently indicated. The evidence so far at hand seems to show that a man's final ethics will be largely a matter of his own formulation, *the way in which he wills to have his world.* Trained in a certain fashion of living, loyal to typical responses which he has come to love, a man finds, in the conflict of interests, that he always chooses after his admirations. How could he do otherwise? He comes to love for their own sake virtues which, originally, were only means to the end of self-preservation. He has been trained to love truth-telling which now at times is highly inconvenient, detrimental, even destructive; but he can not give it up. Though all his prosperity in life were to depend upon it, he can not lie. Truth-telling has acquired (whatever his ultimate metaphysics may be) an absolute value for him.

Thus a man creates his own world of moral values. Original endowment plays a large part (the largest, in my opinion); education and environment contribute. The world of his satisfactions is his own world, social, because no one can live without approvals, and he appeals to a chosen, if countless, crowd of witnesses. This is what I meant by temperament and tradition; this is implied in my phrase "liberty of propaganda." Logically, there follows charity, toleration of the ethics of others, with, at the same time, a rigid adherence to one's own. Those standards alone are truly absolute for a man which are followed when no one observes, when all inhibitions and restraints are removed—those things which he *wills* to have realized.

This seems a far cry from the search for universal and objective ethics, which may be interpreted as some remnant of a heart hunger to know what religious people call the *will of God.* In the failure to know this or to reach an objective ethics the resulting individualism may be called a final appeal to the universe to realize, in part at least, what one has conceived that will of God to be. The certain outcome appears to be this: No man can act morally except upon *his own* ethics. Since, however, men are more like than different, an ultimate similarity of ethical judgments may confidently be expected, but there is no danger of an absolute uniformity. Perhaps, if there were, all the sorrows and all the joys of this world would disappear together; and the need of ethics would vanish with the attainment of an ideal.

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REVIEWS AND ABSTRACTS OF LITERATURE

Pragmatism. D. L. MURRAY. New York: Dodge Publishing Company. 1912. Pp. x + 78.

This small volume is intended as an elementary introduction to pragmatism. It may be said at once that Mr. Murray has done with unusual success the thing that he set out to do, and that, too, with commendable brevity. This does not mean, of course, that every pragmatist would approve of all that is here set down. But it should be borne in mind that the author of this most excellent little volume is a disciple of Dr. Schiller. A humanistic pragmatist would, I presume, be the last to deny that he might for this very reason be led to *select* from Dewey and James what best served his purposes.

A singular interest is brought to the volume by a rather unique introduction by Dr. Schiller himself, who appears as sponsor for the author in his maiden attempt. While pointing out the need of such a volume as here appears and the peculiar fitness of Mr. Murray, by reason of his youth, training at Oxford, etc., to write the same, he delivers himself somewhat incidentally of the following characteristic paragraph, which, I think, deserves as wide a circulation as it may find.

"Mr. Murray has (like myself) enjoyed the advantage of a severely intellectualistic training in the classical philosophy of Oxford University, and in its premier college, Balliol. The aim of this training is to instill into the best minds the country produces the adamantine conviction that philosophy has made no progress since Aristotle. It costs about £50,000 a year, but on the whole it is singularly successful. Its effect upon capable minds possessed of common sense is to produce that contempt for the pure intellect which distinguishes the British nation from all others, and ensures the practical success of administrators selected by an examination so gloriously irrelevant to their duties that, since the lamentable demise of the Chinese system, it may boast to be the most antiquated in the world."

It is a mistake, according to Mr. Murray, to look upon pragmatism "as a parochial eccentricity, as a specific Americanism." On the contrary, "it has come into being by a *convergence* of distinct lines of thought pursued in different countries by different thinkers." He undertakes to single out the sources of pragmatism. It owes its being to the changed conceptions of scientific procedure consequent upon the increase in knowledge; the advent of Darwinism, which made possible the logical theories of Dewey; the internal evolution of philosophic reflection, set forth in the writings of Schiller; the inadequacy of formal logic, pointed out by A. Sidgwick, among others; the primacy of faith in the solution of religious problems long practised by the religious, but first adequately treated by James; and finally, most fertile of all, the new psychology, *i. e.*, the introduction of biological and voluntaristic principles into psychology.

Fundamentally pragmatism is a "collective name for the most modern solution of puzzles which have impeded philosophical progress from time immemorial, and it has arisen naturally in the course of philosophical

reflection." Not until William James substituted his "stream of experience" for the disjointed *self* of Hume was it possible for philosophy to extricate herself from the difficulties consequent upon the acceptance of atomistic psychology. Then all became clear; Kant's labors were supererogatory. The need of a transcendental factor of union, based upon the psychology of Hume, fell away. But even Hume's stress upon the discrete character of our experience was not without its advantages. Here was abundant evidence of the selective character of thinking. Indeed, "the volitional contribution is all-pervasive in our thinking" and may therefore be looked upon as legitimate. Thus arises the doctrine of voluntary postulation which affords a new compromise between the old schools of thought far superior to that offered by Kant, because based upon a truer psychology. But it must not be overlooked, as is sometimes done, that this doctrine involves verification, *i. e.,* any postulate may become either prejudice or axiom. That depends upon future experience. It is mere chance that James first presented this doctrine to a theological audience;[1] it is as applicable in science as in religion. The doctrine met a crying need. "For absolute truth has become a chimera, self-evidence an illusion, and intuition untrustworthy." It was either scepticism or relativism; pragmatism frankly takes the latter. For after all, "in real life thought starts in perplexities," as Dewey points out, and all judgments are truth claims, but subject to future validation. Mr. Murray then points out the failure of old definitions of truth.

As to the arbitrary character of the pragmatic method of testing truths which, it is claimed by some, would allow the pragmatist "to assert the truth of every idea which seems to us pretty or pleasant," he says: "The very term 'useful' was chosen by pragmatists as a protest against the common philosophic license of alleging 'truths' which could never be applied or tested, and were supposed to be none the worse for being 'useless.' It is clear both that such 'truths' must be a monopoly of intellectualism, and also that they do allow every man to believe whatever he wishes provided only that he boldly claims 'self-evidence' for his idiosyncrasy." I presume such a statement is justified considering the success with which pragmatists have met in getting their doctrine understood.

As the book purports to be an introduction to pragmatism, a doctrine associated with the name of Dewey, it may not be amiss to call attention to his own opinions in so far as they are opposed to humanism in at least one respect, bearing upon the last chapter, Thought and Life. Fortunately it can be done in his own words.[2] "According to the latter view (humanism) the personal appears to be ultimate and unanalyzable, the metaphysically real. Associations with idealism, moreover, give it an idealistic turn, a translation, in effect, of monistic intellectualistic idealism into a pluralistic, voluntaristic idealism. But according to the former (his own

[1] The essay "The Will to Believe" was read before the Philosophical Clubs of Yale and Brown Universities. These clubs hardly constitute *theological* audiences.

[2] This JOURNAL, Vol. V., page 97.

views), the personal is not ultimate, but it is to be analyzed and defined biologically on its genetic side, ethically on its prospective and functioning side." This, I think, represents the views of the majority of pragmatists in America, those under the influence of James as well as Dewey. There is, of course, much ground for associating what seems to be a recrudescence of an ancient Persian doctrine as to the importance of personal effort in cosmic evolution with the name of James, but even he seems to have stressed it less and less.

Humanistic pragmatism, if I may be allowed the general criticism, seems to me to be under the sway of what may be called the *genetic* fallacy. The place of *selection* in psychology is important. Recognition of this fact helps us to understand what was once obscure, the true nature of thinking. But it does not follow that it can hold the central place in a metaphysics that Mr. Murray would give it.

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. July, 1913. *The Rôle of Kinæsthesis in the Perception of Rhythm* (pp. 305–359): CHRISTIAN A. RUCKMICH. – An experimental investigation into the problem of rhythm with a great deal of introspective analysis. It was concluded that kinæsthesis is essential in the perception of rhythm, but when perceived, rhythm can go on without kinæsthesis. *Luther's Early Development in the Light of Psychoanalysis* (pp. 360–377): PRESERVED SMITH. – An analysis of the mental life of Luther, indicating terrific mental struggle and anguish. An analysis of his temptations and suggested reasons for his religious attitudes. *The Fluctuation of Liminal Visual Stimuli of Point Area* (pp. 378–409): C. E. FERREE. – A discussion of the fluctuation phenomena, followed by experimental data, from which the conclusion is drawn that fluctuations to minimal visual stimuli are due to the adaptation and recovery of the sense organ. *The Characteristic Form Assumed by Dreams* (pp. 410–413): ELLIOT PARK FROST. – Dreams seem to be rhythmic or spasmodic. Energy from one dream phase carries over to another and breaks out rather suddenly with the corresponding physiological accompaniments. *Suppression and Substitution as a Factor in Sex Differences* (pp. 414–425): M. E. HAGGERTY and E. J. KEMPF. – A series of association tests were given to men and women. The women showed a tendency to suppress associations that might be embarrassing. *Improvement in a Practise Experiment Under School Conditions* (pp. 426–428): M. E. DONOVAN and EDWARD L. THORNDIKE. – Additional data that support the point made in regard to practise in the *American Journal of Psychology*, Vol. XIX., page 383. *Discussion: The Method of Examination* (pp. 429–440): E. B. TITCHENER. *Professor Yuzero Motora* (pp. 440–443). *Fifth Report of the Polish Psychological Society* (p. 444). *Con-*

vention of Experimental Psychologists (p. 445): S. W. FERNBERGER. *Book Reviews:* Edwin B. Holt, *The Place of Illusory Experience in a Realistic World:* H. P. WELD. G. P. Lipp, *Das Problem der Willensfreiheit:* RADOSLAV A. TSANOFF. G. E. Moore, *Ethics:* RADOSLAV A. TSANOFF. Wilhelm Wundt, *Elemente der Volkerpsychologie:* SAMUEL W. FERNBERGER. J. G. Frazer, *The Belief in Immortality and the Worship of the Dead:* E. B. T. Edward Le Roy, *The New Philosophy of Henri Bergson:* IVY G. CAMPBELL. *Book Notes:* Herbert Eugene Walter, *Genetics.* A. Lasurski, *Ueber das Studium der Individualitat.* Edward Hitshmann, *Freud's Theories of the Neuroses.* Maurice Parmelee, *The Science of Human Behavior.* K. Orelli, *Die Philosophischen auf Fassungen des Mitleids. A Contribution to a Bibliography of Henri Bergson.* Emil Kraepelin, *General Paresis.* Giuseppe Fancuelli, *L'Umorismo.* Benj. Moore, *The Origin and Nature of Life.* Aboys Müller, *Wahrheit und Wirklichkeit.* De Witt H. Parker, *The Metaphysics of Historical Knowledge.* Theodor Lipps, *Psychologische Untersuchungen.* Else Wentscher, *Grundzuge der Ethik, mit Besonderer Berucksichtigung der Padagogischen Probleme.* David R. Major, *The Elements of Psychology.* John E. Russell, *A First Course in Philosophy.* H. von Hug-Hellmuth, *Aus dem Seelenleben des Kindes; eine Psycholoanalytische Studie.* Johannes Maria Verweyen, *Philosophie des Moglichen.* Garry C. Myers, *A Study in Incidental Memory.* Ludwig Edinger, *Einfuhrung in die Lehre vom Bau und Verrichtungen des Nervensystems.* Percy A. Campbell, *The Game of Mind; A Study in Psychological Disillusionment.* Max Frischeisen-Kohler, *Jahrbuch der Philosophie.* Dr. Eugene Bernard Le Roy, *Confession, d'un Incroyant.* John G. Murdoch, *Economics As the Basis of Living Ethics.*

Booth, Meyrick. Rudolf Eucken: His Philosophy and Influence. New York: Charles Scribner's Sons. 1913. Pp. vi + 207.

Bucheneau, Artur. Kants Lehre vom Kategorischen Imperativ. Leipzig: Verlag von Felix Meiner. 1913. Pp. ix + 125. 2 M.

NOTES AND NEWS

PRIZE IN PSYCHOPHYSICS

A PRIZE of one hundred dollars ($100) is offered for the best paper on the Availability of Pearson's Formulæ for Psychophysics.

The rules for the solution of this problem have been formulated in general terms by William Brown. It is now required (1) to make their formulation specific, and (2) to show how they work out in actual practise. This means that the writer must show the steps to be taken in the treatment of a complete set of data (*Vollreihe*) for the attainment in every case of a definite result. The calculations should be arranged with a view to practical application, *i. e.,* so that the amount of computation is reduced to a minimum. If the labor of computation can be reduced by new tables, this fact should be pointed out.

The paper must contain samples of numerical calculation; but it is not necessary that the writer have experimental data of his own. In default of new data, those of F. M. Urban's experiments on lifted weights (all seven observers) or those of H. Keller's acoumetrical experiments (all results of one observer in both time-orders) are to be used.

Papers in competition for this prize will be received, not later than December 31, 1914, by Professor E. B. Titchener, Cornell Heights, Ithaca, N. Y., U. S. A. Such papers are to be marked only with a motto, and are to be accompanied by a sealed envelope, marked with the same motto, and containing the name and address of the writer. The prize will be awarded by a committee consisting of Professors William Brown, E. B. Titchener, and F. M. Urban.

The committee will make known the name of the successful competitor on July 1, 1915. The unsuccessful papers, with the corresponding envelopes, will be destroyed (unless called for by their authors) six months after the publication of the award.

A MEETING of the Aristotelian Society was held on November 3. The president delivered the inaugural address on "Appearance and Real Existence." Since the publication of Mr. Bradley's great work in 1893, no distinction has been more readily pressed into service as a means of making headway in metaphysical construction than the distinction between appearance and reality. Anything which comes short when compared with reality is called by him "appearance," meaning thereby not that the thing always is itself an appearance, but that its character becomes an appearance in any judgment we make concerning it. Reality being conceived as the single absolute experience, immanent in finite centers of feeling, but never wholly included in any one finite center, it follows that the contents of a finite subject's experience will point beyond themselves, and will come to have for knowledge a meaning, this meaning being used as an idea, as an adjective qualifying that which is other than its own being. In later treatments of metaphysical problems we find the term "appearance," or equivalent expressions, freely used, but without any effort to make explicit and unmistakable the exact sense in which it is to be understood. The way in which phenomena or appearances have been treated in three great metaphysical systems—the Platonic, the Kantian, and the Hegelian—was then considered at some length. In all of them existence, in one form or another, is described to phenomena or appearances. The important question is whether the concrete particular things of the realm of existence are rightly described as phenomena or appearances. The former are in no sense mental constructions. The secondary qualities of things are not explicable as creations of the mind. If we keep rigorously to the significance of phenomena in which the subjective characteristic is the more prominent, they are not existing entities. Their mode of being is similar in kind to that assigned to universals.—*Athenæum.*

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PSYCHOLOGY AND SCIENTIFIC METHODS

VALUE AND POTENTIALITY

HENRI POINCARE[1] stood for the thesis that "scientific fact is nothing but brute fact translated into a convenient language," and further that "all that the scientist creates in his fact is the language in which he enunciates it"; and J. T. Merz[2] introduces us to that part of his monumental work that deals with philosophy by the statement that "more even than in science, we may say that in philosophy progress consists in finding an appropriate verbal expression, or, having found it, in conveying to our readers the clear definition of the meaning we desire to attach to it." If there is any truth in these opinions, then, it follows that the reconsideration of the terms in which any concept is defined is important, and the enunciation of a more clear or more convenient definition, a real progress.

Within the whole realm of philosophy, it seems to the writer, few concepts have suffered from inept formulation more than the concept of value, and this not because of peculiar difficulty concerning fact, but because of the interests of theologians and metaphysicians who have, for the most part, either reduced it to an abstraction or deduced it as corollary to an already accepted system. Metaphysical conceptions of value,[3] such as those of Professor Münsterberg and Mr. Russell, only become intelligible, if at all, when one is ensconced in the system; and psychological conceptions, such as are found among the German philosophers, and, in less objectionable form, among the realists and some of the pragmatists, carry with them many obscure connotations from psychology. Indeed, the psychologists, in this instance as in many others, are in a more difficult position than the metaphysicians, for in addition to the metaphysical assumption that the reality of value has something to do with mind, they are beset with difficulties due to the vacillation of their science between behaviorism, paral-

1 "The Value of Science," Pt. III., sec. 3.

2 "History of European Thought in the Nineteenth Century," Vol. III., page 4.

3 J. F. Dashiell, "The Philosophical Status of Values," New York, 1913 (thesis).

lelism, and spiritualism to such a degree that the "S O S" call is sent to-day rather from psychology to philosophy than in the counter direction.

To examine the weaknesses of these contemporary theories systematically would be a task of such magnitude that to attempt it here would be to remain walled up like the five kings in the cave of Makkedah, while the victorious psychologists and metaphysicians sweep the field. In consequence, this paper will merely attempt to restate the facts of value with as much concreteness and independence of the connotations of any system as the nature of the case permits. The result, although aiming at neither agreements nor disagreements with accepted positions, will doubtless attain both, but it desires neither credit nor discredit therefor, but rather seeks criticism on the ground that it successfully "walks around the idea and looks at it from all sides"—to borrow Professor Dewey's characterization of one of his analyses.

That the concept of potentiality might be the key to a useful discussion of the facts under consideration is suggested by the root meaning of the word *value,* for the value of an object, by derivation, is that of which the object is capable, the development of its potentialities. But first it is necessary to review the meaning of potentiality.

A potentiality of an actual thing is, I believe, generally accepted to be nothing but the thing itself in relation to some transformation, either of itself or of its environment, that might be brought about under some conditions, at some time, through the actuality of the thing. The group of conditions necessary for the realization of any specific effect are, each of them, potential contributors to its realization, but each demands the cooperation of the others before it can become an actual cause, and some one of these factors is generally seized upon as the effect "in potentiality." But which? They can not all be so chosen, for with them all given the effect is at once actual, although this fact is often obscured or denied when such factors as space and time are overlooked. And such oversight is not justifiable, for if cause is defined in the usual manner as the indispensable condition of an event, space and time are certainly cooperating causes. In such stock examples as "the egg is a potential chicken," "a pile of bricks is potentially a wall," "steel is a potential knife," it is the material cause to which the potentiality is accredited. This is the result of picking out a striking factor in the situation which impresses us by some empirically intimate relation to the effect and letting that factor stand as the condition *par excellence* of the effect. But we are not always uniform in this usage, and, indeed, in many instances, its applicability is not obvious. Thus the potentiality of old age may be said to lie in continued existence, and

the potentiality of success in constant application, and here it is hardly a question of material cause, in a modern nomenclature, but of what is merely the "warmest" causal factor. But even this restriction is somewhat arbitrary and, although it is, perhaps, contrary to every-day usage, it is surely not meaningless to ascribe the potentiality of an effect to any of its causal factors. Thus space and time, as well as the egg, are potential chickens, for they are indispensable conditions of the chicken-realization. It may be this is turning them into material causes. Bergson does this in the case of time, and there may be good ground, in the dynamic changes that result from mere proportional increase in spatial magnitude, to believe something analogous is true in the case of space. But at any rate, natural choices in this matter are expressions of human interest rather than of the ontological character of the thing chosen.

The potentialities of an object in some sense constitute its values, but to identify the two terms would be to blur terms better kept apart, provided a suitable differentia can be found. A frequent procedure is to assume that potentialities become values through the selective activity of some human interest. Thus the egg is valuable because of its chicken-potentiality, or the steel because of its knife-potentiality, *when* somebody wants that chicken or that knife. This is a view that makes the distinction between potentiality and value depend neither on a difference in the objects nor on the processes of transformation they are to initiate or undergo, nor on the end to be realized, nor on any relation between these things, but only on the attitude with which our thought approaches them, and while it is a very excellent thing to have distinctions of this sort in language—for language has much more to do than to express the mere facts of an objective world, and must often suggest our attitude toward them and the angles at which we approach them—it is unfortunate when the philosopher confuses such distinctions with the ontological status of facts, and, at best, it is a bad thing to accept a subjective differentia of a concept when it is possible to find others less ephemeral and more closely bound up with the nature of things. The human organism is essentially egoistic and lives by making things realize its ends through their potentialities. Consequently it is interested in controllable potentialities and is quick to call them values, but it does not follow that the true nature of value is brought out by such preferences. On the contrary, in a concrete situation, it is not forced or unnatural to say "sunshine has value for the growth of trees and flowers," or "coral polyps for the production of islands," quite regardless whether or no these things are desirable from any human standpoint. And such instances should be adequate to show the undue narrowness of the subjective criterion.

If we examine certain related terms an interesting fact appears. If a thing has value, it is valuable; but in the case of potentiality, there is no correspondingly allied adjective, for "potential" is not related to "potentiality" as "valuable" is to "value"; potential relates to the effect to be realized through the potentiality possessed by something else, but valuable means to possess the value. The potentiality of the egg is in relation to the chicken that may come out of it, but the potential egg is quite a different thing, yet the egg is at once a value and valuable in relation to the chicken. Again, with the assertion that a thing has value, there trembles on the lips the question, how valuable is it? But it is only torturing the meaning of the word to ask of a potentiality, how potential is it? In other words, value relates to the adequacy of a thing to the realization of an effect, whereas potentiality relates to the thing as contributing to the realization, without reference to its adequacy. Adequacy is an objective attribute of the situation in question, and, if value is to be defined in relation to potentiality, we might say that *value is degree of adequacy of a potentiality to the realization of the effect by virtue of which it is a potentiality,* or, put more concretely, *the value of an object consists in the adequacy of its qualities in reference to the realization of a specific effect.* Of course, the degree of such adequacy need not be numerically estimated, and need not be specifically defined, but the possibility of such estimates lies, nevertheless, behind all instances of value. Values are not, then, a subclass of potentialities, for the two concepts are mutually implicative in that the situations in which they arise are identical. They differ in that they refer to different aspects of the situations; potentiality, the factor through which the effect may be realized and value to the readiness of the realization. Nor does the definition mean that value is a relation, for I confess I can find little instruction in such phrases. Value only arises in complex situations where there are relations and is a name for a describable aspect of such situations, but the value is no more the relation than it is the thing, and to try to reduce it to one or the other is a highly unwarranted over-simplification.

But an even more pernicious over-simplification appears when one attempts to lump all values together as subjective or objective. The subjective alternative is given peculiar plausibility because of a confusion due to the differentia of values. Adequacy is easily confused with the feeling of adequacy and interest in that adequacy and, in consequence, value is taken to depend upon the behavior of a conscious subject or at least upon an "organism in the whole organism-environment situation." The latter alternative, to be sure, avoids much of the psychological difficulties in formulating a definition of consciousness, but with the glamor of consciousness gone, the classifi-

cation of *all* values as subjective is hard to understand unless it be the result of exclusive attention to the normative sciences of tradition which deal only with types of value already selected by human interest. But there are values as truly objective as these are subjective, although it should be noted that even this subjectivity is nothing but a special case of objectivity, namely, that objectivity in which a particular object, the organism, plays a leading rôle.

Let us examine a particular case of these subjective values. A sunset charms me to-night, but if I had seen it last night when I had the blues, it would have been repellent. Therefore I say the sunset's value is subjective with respect to its esthetic character. But what does this mean? That the sunset in one environment-situation contributes to the realization of one effect, and in another, to the realization of quite a different effect. The sunset has remained, by hypothesis, the same sunset, and its potentialities, as sunset, are unchanged, but my organism—in both cases the environment—was first in one state and then in another and its potentialities changed accordingly, and to call the esthetic value subjective refers merely to this fact. In other words, the difference between the values called subjective and those called objective is that while the latter may reside in the potentialities of one object or of a group of objects, of which the organism is not one, the former demand at least a pair of objects of which the organism must be one and the primary variable of the group. Ontologically, subjective values are a sort of objective values differentiated by the fact that an organism plays a leading part in their variation.

It happens that organisms plus environments constitute the necessary conditions for the realization of a large number of effects most interesting to human beings, and as a change in either the organism or the environment modifies the character of those effects, we seek to discover whether it is the organism or the environment that is primarily responsible in particular situations; that is, to observe which is, as a value, the greater. But we can not express this situation well by attributing subjective value to an objective part of the complex, by calling the esthetic value of the sunset subjective, without causing confusion of thought. Indeed, it may well be that the peculiar lack of interest in esthetics, and its peculiar unsuccess among philosophical studies, is rooted in just this confusion. If the concrete expression should be that an effect-value in a certain situation is determined by an organism through its major contribution to the realization of that effect, the fact that a certain object possesses esthetic value for me is not so much a comment on the character of the object as on my own condition and the possession of a certain sense of beauty becomes an indication of the life status of the possessor.

If we grant that a certain situation requiring organic cooperation for its attainment is desirable,—and such an admission must always be an hypothesis based upon anticipatory experiments in the thought of an individual,—the problem of the normative sciences becomes, what sort of an environment and organism would be adequate to attain it? And being practically interested, we limit ourselves to an attainable environment and possible modifications of our organism in approximation to the desired result. And there is always the corollary problem, how are these modifications of the organism and the environment to be brought about? The scientific study of such questions involves, of course, a selection from all values of those subjectively interesting, but not necessarily of exclusively subjective values, even in the sense in which the subjective is a species of the objective. For even the assumption of the desired end, however socialized the selecting individual may become, is only an expression of organic fact.

We have yet to ask, does our definition imply that there are no absolute values? The problem of the absolute or relative character of value is often confused with that of their subjectivity or objectivity. If this identification be accepted, the above account is sufficient to show that there are values wholly objective, or absolute, and values, in a sense, subjective, or relative. But the point of the distinction of the absolute and relative is not kept by this identification, for "absolute" intends to mark out an abiding standard for reference. An effect, through the potential realization of which a value exists, is the standard, and such effects, as we have seen, may be independent of an organism or dependent upon one, but it is at least dubious to assume that the non-organic in relation to effects is eternal, while the organic is transitory. The one may be relatively more abiding than the other, but an eternal value could only appear in a world where

"Change may come not till all change end."

Such may be the world of a philosophic absolute being, but the study of concrete values seems to give no evidence of such a world, however glibly values may be deduced when such a world is once assumed.

But absolute is also taken to mean (1) independent of any limitation, (2) finished or perfect, and (3) capable of being conceived by itself alone, and it is *à propos* to inquire whether in any of these senses, also, there may be absolute values.

In the first instance, it is only value as an abstraction that may be absolute, for any concrete instance of value is a value limited by the potentialities of the thing possessing value. Thus the problem of the reality of absolute value in this sense is the problem of the reality

of abstractions which introduces logical considerations beyond the scope of this paper, but I suspect that if the abstractions are sufficiently purified to be absolute, they may turn out to be like the coins of M. Anatole France's needy knife-grinder from which have been effaced all images, and which, because they contain nothing English, French, or German about them any more, are no longer worth five shillings, but are of "inestimable value and their circulation is extended infinitely." Such abstract values may be glorious, but they are hardly interesting.

The first sense of absolute is near the third, the absolute as that which can be conceived through itself alone, but now it is the concrete sense of value that may be absolute, and the abstract that is relative, for abstractions are conceivable only through the concrete from which they are abstracted, but a concrete value, the value of a glass of water to statisfy my thirst at the present time, is surely conceivable without the aid of extraneous fact and, therefore, conforms to the condition laid down for absolute value. The plurality of the facts is no slur upon the absoluteness of the value, for the conception is really thirst-satisfying-glass-of-water-value, in which the facts are all incorporated.

In the second sense, as perfect, values may also be absolute, whether concrete or abstract, and, indeed, every object must be possessed of some absolute value in this sense. for in so far as it possessed uniqueness it has some potentiality possessed by no other object, and is the perfect possessor of the corresponding value, in the sense of possessing it accurately and adequately. This perfection is, of course, hardly spectacular. It means merely that the object-situation from which the definition of the value is derived lives up to the definition obtained from it. The distinction is only of importance when coupled with some theory of uniqueness and individuality such as idealism formulates regarding its Absolute Being.

The problem of absolute value is also sometimes confused with that of intrinsic and extrinsic value, the former being classified as absolute, the latter as relative. The distinction is based upon a specific relation between the potentiality of the thing valued and the effect with respect to which it has a value. If the effect appears as a development of the thing itself, or as guaranteed by the thing itself with the addition of such factors as space and time alone, the value is called intrinsic or absolute. Thus the egg as a potential chicken, or gold as a desirable medium of exchange, are intrinsic or absolute values, but the egg, as a chicken dinner, or a banknote as a certificate of deposited gold, are only extrinsically, or relatively valuable. The dividing line is, however, not always easy to draw, and the intrinsic is sometimes identified with the object's character as representative

of a class in the sense that a parsnip may be intrinsically of great value as a parsnip, but extrinsically of small value as an article of food.

The concept of value has now been reviewed in its most significant aspects, but before leaving the discussion there is still one form of the definition of value that must be commented upon, the definition of value in terms of purpose. If the present use of potentiality as a starting-point is accepted, it must appear that such definitions involve a *hysteron proteron,* or at least that they beg the question of the subjectivity of values unless the concept of purpose be given some cosmic significance that expresses a hope of the theologian rather than an induction of science.

In the first place, if we turn to the question of logical priority, we find that it is quite unintelligible to speak of purpose without the presupposition of something purposed, but in order that there be such a thing, there must be in our environment potentialities looking toward the realization of the thing. Further, there must also be potentialities of modifications in the organism which, taken in conjunction with this environment, seem to guarantee its actuality. The recognition of this environment-organism interaction is the recognition of a value of the type we have called subjective, and pleasurable or unpleasurable reaction to such perceived values is that selection or rejection of them that we call purpose. In other words, purpose does not generate values, but purpose is itself a reaction of an organism in a world of values whereby some of them are selected or rejected because of our feelings toward the effects with respect to which they are values. Take the purposive act of looking at a watch to learn the time, as an example. The watch, the pocket, the hand, each has many values; the watch, with respect to the pawnshop, as a missile; the pocket as a storehouse for articles, as a place to put the hand when embarrassed; the hand as a means of running a typewriter, etc. Being in a state of unrest, it is perceived that certain of the watch-hand-pocket values in conjunction with the present organic condition can lead to a state of peace devoutly to be wished, and the selection of these requisite values is the purposing of the action through which the end is realized. Purposive action, then, presupposes values, but doubly selected ones, for in the first place, the selected values must be subjective, and in the second place, desirable; and purpose is only possible because we live in a world where there are objective as well as organic potentialities generative of values amongst which we can select for the sake of realizing effects which are somehow presented to us as desirable in anticipation.

There are also certain interesting interpretations of consciousness resulting from this analysis of value in terms of potentiality, as well

as certain comments on the division and nature of the normative sciences that should be developed, but to enter upon this here would extend this paper unduly, and therefore they must be left until a later date. Our problem was primarily one of the clarification and precision of language, but it is hoped that it has not been wholly unilluminating as to the status of certain facts. Whatever facts may be, this much is certain; it is only through words that they can enter deeply into our thinking and, therefore, the reconsideration of the meaning of words must be the necessary foundation of sound thinking both in philosophy and in science.

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PERCEPTION [1]

WHATEVER perception may be, it is obviously something that has reference to living organisms. It is a term applied to a phase of organic or living behavior. If, then, we first set out the various fundamental types of behavior characteristic of living organisms, we shall be in a position to find a context for the proper study of perception. Observation discovers three basic types of organic action, *viz*, involuntary, reflex, and voluntary. Involuntary and reflex action are different in that the latter occurs only in connection with a disturbance in the organism's environment, whereas the former continues rhythmically (though with variations) under all conditions. They are alike in that they are practically determinate forms of activity which can be almost as easily foretold as sunrise and sunset.

Voluntary action occurs under conditions so variable that it is impossible to foretell what the behavior of the organism will be. It is evident that we are trying to describe voluntary action in terms of observation from without. Is the description adequate? Is it true that it is impossible to foretell the organism's conduct? It is true, but not true enough. Though we can not say what will be the particular act, we can foretell with fair certainty what the eventual consequences of the act will be. It may seem absurd to say that we do not know the act, but do know its consequences, yet this may in a sense be true. We know the general direction, tendency, or end of the organism's activity, but we do not know its means in each instance. Now what is that direction or end? It seems to be incapable of description in terms more explicit than the self-main-

[1] Read at a fortnightly conference of the officers and students of the department of philosophy of Columbia University, on December 1, 1913.

tenance of the organism and its continuous progress through a process of change. Thus we may speak of the cycle of life of a chicken or a dog as Shakespeare speaks of the stages of man. While we can not say what will be the particular events in the life history of any of these organisms, we feel quite certain that whatever may happen to it, and however much any event may divert its course, the eventual consequence will be the return of the organism to its vital path—otherwise there is disaster and death. Here we come upon the chief differentium of life expressed in terms of objectively observed behavior, *viz,* purposive conduct, where by purpose we mean the maintenance of an uniquely equilibrated activity in a particular direction in time.

Now we are in a position to ask and perhaps answer some pertinent questions about perception. Had we begun with perception at the outset of this paper, we might have been led, innocently enough, to ask how perception is possible, how it can be valid, what its content must be and whether that content is real or not. By our method of approach we have avoided the pitfalls of artificial problems. We have come upon our difficulty naturally, for we are confronted by a real situation which we are trying to understand and describe. We see living organisms maintaining their characters and pursuing their careers despite many distressing obstacles; we see life existing and operating in the face of innumerable opposing forces. How is this managed? is a problem generated naturally by the situation before us. The answer is that the basic means is the process of perception.

Perception is, then, a process of a living organism that enables it to solve the problems set for it by its environment. It is a process of adjustment to the advantages and disadvantages, values and disvalues of the situation in which the organism fulfills its career. We shall presently discuss the mechanism of perception, for we already understand its function. And the knowledge of its function saves us from the discussion of unreal problems about it. We see that it is a process, an act, and we do not ask questions that would be relevant to knowledge or states of mind or consciousness, but irrelevant to perception as action. Perception is an act of adjustment, and in the sense in which we have defined purpose it is a purposive act. The adjustment is not purely mechanical, for it has reference to past and future time. If I stand erect, and you come behind me and seize my arms and jerk me backward, I fall. Yet this is not adjustment; a dummy used in football practise will do the same. But if you come again when I am in the same position, and hearing your footsteps I turn around to confront you, my act is adjustment. My turning around is not the necessary mech-

anical consequent of the noise made by your approach. That I do turn around is explicable in terms of the present situation (stimulus), the past (experience), and the future (purpose).

Let us imagine an experiment with two figures, alike in every detail, one of which named M is a machine, while the other named X is a human being. Suppose that the machine is so ingeniously constructed of steel and wax as to be sensitive to light and sound, while Mr. X is uncommonly dull and expressionless. Now let us test them to see which is animate and which inanimate. We flash a light and both close and re-open their eyes. We set off a giant firecracker and both jump as the great noise is heard. We are limiting ourselves, of course, to simple tests in order not to make too great a demand on the mechanician's ingenuity. Must we abandon the experiment and confess our inability to devise a simple test to reveal life as distinguished from a machine? No, for we have as yet failed to take account of the essential factor in living nature, *viz, time.* Let us repeat the loud noise at short intervals. We observe that figure M moves with perfect ease and precision, whereas X is not so certain in movement. One of our observers remarks that figure M which works so smoothly must be alive, for it functions so well, so much better than its neighbor. But we continue to repeat the sound until presently we note that M jumps as unhesitatingly and easily as ever, while X does not move at all.

By this time the result of the experiment is obvious to all, even to him who mistook efficiency for life. We infer correctly that figure M is a machine responding regularly and inevitably in a definite way to a given stimulus, whereas X, who responded in various ways and now does not react at all, is a living being. Now all that we had to connect X with the noise was a process of sensitiveness to sound. There is no knowledge on his part of anything that occurred, for things were so arranged that we could observe him without his observing us. He can not be said to have directed his conduct by any idea, for whatever may be the efficiency of an idea, the conditions for its development were not present.

How then shall we explain his behavior? How does he come to respond variously to the same stimulus? This trait of varied response is the other side of what we noted as the mark of life, *viz,* purpose. Purpose may stand for the end in any segment of the current of living conduct, and variation of response may be regarded as the means. Let us now fit means to end; let us inquire into the mechanism of perception as manifested in our experiment. When the giant firecracker was exploded, air vibrations were set up which pressed against X's body, especially against his ear-drum. The pressure was then transmitted successively to the oval window,

lymph, cochlea, hairs, and the fibrils leading to the auditory nerve. The nerves conducted the movement to some center in the spinal cord or the brain, from which center the movement was in turn conducted to certain motor areas such as the leg muscles. The leg muscles contracted and X jumped. There was evidently an inherited structure which permitted an immediate and coordinated response to the noise. But the process we have described is much too simple to account for the act of jumping, for the body needs to be held in a certain way; arms, neck, abdomen, etc., have their part to play in the act. The stimulus coming in by way of the ear must have been discharged to many parts of the body. Nor was the body at rest when the sound was made. Many processes were going on, such as breathing, beating of the heart, gazing around the room aimlessly, which were noticeably affected by the change induced by the sound.

There is obviously no mechanical equivalence between the energy of the sound and the energy expended in the jump. And some have thought this fact of excess of energy in response over stimulus to be the distinguishing trait of organic behavior. But observation of nature reveals similar occurrences in the inorganic world, where by a slight shock nitro-glycerine is decomposed into water, carbonic acid, and nitrogen, the process being accompanied by a powerful evolution of energy. It is true that a slight stimulus will often initiate a great reaction, but there is no miracle in this. It is simply a way of saying that the organism is a storehouse of a large amount of potential energy which will be released whenever necessary by any proper stimulus, however slight. In the case of X we note that the effect of the sound pressing against his ear-drum was to release many tendencies in his body and to disarrange or rearrange its processes.

Now is this perception? Have we explained the situation adequately by describing the physiological structure that connects sound with jumping. Obviously not, for to stop here would be making a mystery of stimulus and response. What is this sound that is said to have made X jump? It did not make us jump even at the beginning of the experiment, and at the end it did not visibly affect him either. Is it not obvious that in perception, at least, the sound made by the explosion of a firecracker is to be judged according to its contextual relations? In a certain sense it was the same sound that we all heard. In the light and fulness of present knowledge (and this changes in the course of time) we can study the sound retrospectively, and then we come to agree that in the context of this knowledge, by means of which it is interpreted, the sound is a definite fact, and the same for all of us. But was it the

same for us all when it happened? Experience is insistent on this point, in showing that sounds, smells, tastes, etc., are very different for various persons at various times. Then if X and you and I did not have precisely similar perceptions, what is the cause and mark of difference? Or, to come to closer grip with the problem, what was the difference between his relation to the sound heard first and the sound (agreed by us to be exactly similar) he heard last? The first made him jump, the last made him disgusted. It is clear that we are dealing with relations, the relations of an organism to a series of vibrations. What is this relation? Relations are manifold and it would be useless to go through a list of them to show what this relation is or is not. Let us say directly that this relation is one of *meaning*, a relation peculiar to living organisms in their dealings with their environment. What Mr. X perceived was not so many vibrations of air per second, but the meaning to him of the environmental situation. To him the event meant danger, and as it had meant the same for a long line of ancestors, it had, by the reactions repeatedly called forth, formed a structure or system in his body that enabled him to respond immediately to the stimulus.

Had X's response, the jump, proved satisfactory, we would not have noted in this particular case any change in behavior from rapid movement to none at all. But the jump was not satisfactory, *i. e.*, it was not itself a value, for it did not lead to further responses. If the sound had fulfilled its meaning (say by the presence of a lion), X's jump would have been followed by running or fighting, all in a continuous succession wherein every element has its meaning or value by what precedes and follows it, *i. e.*, by its place in the continuum. But the jump was a disvalue in that it cost valuable energy without becoming a means to further action. The condition of the organism after the jump was one of dissatisfaction. Not that X was not happy to find himself unharmed. But compare his feeling to what it would have been (and was in the case of his ancestors) had the jump led to flight and finally to escape and victory. "Ah," he could say, "that was a fine jump, and didn't I run fast!" How he would have exulted in every precious moment of the hard-fought battle! But here the jump led nowhere. It was like the golden apples that turn to brass in your hand. It cost so much to attain and was worth so little. It was a *means* to nothing and it *meant* nothing.

On its physiological side the situation is probably as follows: The energy released to the motor areas, especially to the leg muscles, is of a quantity large enough to start the full movement, jump—run, etc. But there is a break in the motor phase of the activity. There is no running, or very little of it, and the result is

a back-up of energy in opposition to the direction initiated by the sound stimulus. This back-up and the resultant conflict cause a degradation of the system. The structure gets shaky, so to speak, and the next time the sound is heard the paths of discharge that were formerly so free are now somewhat clogged. The sensory situation when the last sound in our experiment is heard, is such that discharge is no longer to the motor areas, but to other centers which *do* lead somewhere, say to esthetic appreciation. We see thus that the air vibrations which first meant danger now mean something totally different. The perceiving process not only relates us to what affects us at the moment, it is not an instantaneous carving up of the environment, or arresting of a limited portion of the surrounding flux. *Perception is a temporal process that opens up new things to stimulate us. It is a progressive discovery of values or revelation of reality.*

We have been considering a situation which, however plausible, is not characteristic of perception, and it may therefore be well to study an example of perception in daily life. Suppose, then, we ask what happens when one sees his friend enter the room. What is the content of the perception,—is it a man one sees or merely a reflection of one's own consciousness? Suppose that as soon as one sees him one goes over and shakes hands with him. Of course no one would claim to be shaking hands with a meaning, and if it is a man one shakes hands with, it must be a man that one saw. Moreover, one could not have gone to greet him without having seen him first; ergo, one saw a man, a physical entity having no smack or taint of meaning about him. Let us test this situation. When the friend stepped in, light reflected from his body, dashed against the eyeball of his host. Now it is imagined by some that at this point in the process of perception an image of some sort is impressed on the retina and is then conveyed somehow to consciousness. But the facts are different, I believe. There is no image in the retina until the light stimulus, having first reached an appropriate brain-center, is discharged back to the eye. The eye must be accommodated for the seeing of the object from which the light stimulus comes, and this accommodation is directed by cortical control. But even when the circuit has been established, there is no sight of a man. At most there is movement of the eyeball. But the man that one sees is tall and solid; he wears a rough cheviot suit and smooth gloves, all of which one sees contemporaneously with the sight of his blue tie and pale cheeks. The roughness and smoothness and solidity are evidently tactual data in perception, and if redischarge were only to the eye there would be no perception of a man at all. However, the organism seems to be wiser than some of its philo-

sophical critics. The incoming charge reaches centers of the spinal cord and brain, and from these centers redischarges are made in various directions, for example, to other centers and to a number of peripheral sense-organs. The call that reaches the organism by way of the eye is communicated to other agents in the communal enterprise of perception. If there is to be any perception at all, it must be accomplished by the cooperation of the various senses and neural centers.

Successful cooperation is dependent upon a proper coordination of the sensory reactions. What are the conditions of this coordination? Simple observations of infants show how coordination has to be *learned.* They kick and fling about and roll their eyes and turn head and body at every stimulation. The frequent presence of the same stimulus results in coordination becoming more easily and rapidly effected, till presently the child perceives immediately —he sees a person completely, at once. But this is at the cost of many previous trials in the course of which the coordination grows better and better. Yet is it proper to regard the coordination as fitted to the act of seeing? Has the child learned laboriously to coordinate merely to see or recognize or know his mother? This is contrary to the facts of life where the organism finds the object of perception a value or disvalue. There is no consummation in seeing. Seeing or perceiving generally is for further action and is conditioned by the history and destiny of the percipient. The perception is conditioned by the quality of the sensory situation *before* and *after* the perception.

So, in the case of the friend whom one sees as he enters the room. In a sense one sees the greeting as much as the friend. For the light stimulation from his body sets up a sensory condition which has its roots in one's previous experience with his friend. There are movements of the eyes and legs; there are neural currents and cross-currents in various directions. What is the quality of these movements and how are they correlated? Is the situation one of conflict and interference or is it one of progressive coordination? Perhaps the conflict of the various elements in the sensory situation is such as to inhibit any response—this means that there is as yet no perception. Perhaps partial responses are being effected, tending to bring about the coordination requisite for a total or complete response. When the coordination occurs, a deed has been accomplished that may be termed variously as perception, or selection of stimulus, or choice of response. In other words, the organism, *disturbed* or threatened or aided by the environment, has restored its equilibrium, has regained the track of its career.

Now we have been trying to show that the sensory situation

of conflict or of harmony is not a chance affair. Its conditions may be analyzed and enumerated as (1) organic equilibrium, (2) organic momentum, (3) organic reserve tendencies, (4) the organism's biography or past experience, (5) its purpose. The present sensory situation is a *forecast* of my future movement, for that future movement will be the outgrowth of factors operating in the present situaion. But this situation derives its character from the organism's experience of the *consequences of its previous responses* to disturbances of this sort. Former consequences of organic action have so affected the organism that its present activities have a tendency to attain or avoid certain consequences of its own behavior, or, in other words, to develop certain values by its own conduct.

When, therefore, the coordination takes place, the perception on its mental side is a feeling of my present organic attitude, which is what it is because of my experience and my purpose. The perception is thus an *anticipation* as well as a recognition. The friend whom one sees is the friend who was a value or source of happiness yesterday, and who will be the same presently. In seeing him one has a feeling of the outcome of one's present organic attitude, an anticipation of the consequences of his conduct—his developing response to his developing stimulus. Stated differently, perception is a cardinal point in a process of selecting a stimulus and response, neither of which could be chosen separately, and both of which have their mental aspect in a feeling of anticipation.

The organism is constantly gambling with the odds as much in its favor as it can manage. It does not respond without an interest in the outcome of the response as a source of further stimuli to further action. It is always in a situation of stimulus—response—stimulus, a situation which though compelling the organism to react somehow, yet permits it to react intelligently, by affording an opportunity for choice. Perception is a process of choosing, for it is the intermedium between the organism's present stage and the stage which it desires to attain. The organism may experiment with its environment in order to determine the various steps in its forward march. But experiment is too dangerous, if the whole organism is to be risked in testing every situation. Why not develop a mediating process, a sort of buffer, whose function it shall be to experiment with disturbing stimuli, and thus to presage in the presently operating organic situation the quality of the possible consequences of organic action, while these consequences themselves are yet undetermined? Here is opportunity for choice. The organism, having felt the consequences of its conduct, in a part of itself, a part that stands midway between it and its environment, is free to determine what its behavior as a *whole* shall be.

A perception is then definable as a choice of a stimulus and response in view of selected consequences to which they may lead. The friend one sees is the friend one expects to greet, who will greet one warmly, and with whom one will spend a pleasant evening. None of these expectations is necessarily known as such. Here it is important to recall that perception as we have been limiting the use of the term is not a state of mind, or a fact of knowledge, but primarily a fact of organic action. Suppose an indescribably strange creature to enter the room of a person who is resting on a couch. Observe his behavior as soon as his conduct appears to be a function of the strange visitor's presence. Does he remain quite still, does he approach the intruder, or does he flee? We notice that his eyes shut and reopen quickly, his fingers twitch and are clenched into a fist, his limbs shake—in short, he appears in a number of conflicting attitudes of attack and defense. These attitudes have their counterparts in many partial responses that are taking place within his sensory system. Of the many tendencies that are contending for overt execution one becomes dominant and a coordination of the sensory system is effected—now perception takes place. The invader has uttered a loud shrieking sound, and his frightened victim hides under the couch.

When asked later by a friend why he is so cold and pale, he says that he ran away from a ghost or what-not. When his friend suggests that it was a witch he assents; when told that it must have been Mephisto, he says, "Certainly." Then his friend discloses that it was himself playing a trick on him, and when he has regained his composure he says, "Why of course it was you!" and they go over the details of the experience. It is clear that neither friend nor devil entered into the experience when it happened, but it is easily reconstructed retrospectively. What occurred was a feeling of an organic tendency to flee from a presence that had a meaning of dread, an anticipation of harm. Action and perception took place, but there was hardly anything that could be called knowledge.

Now what is the relation of perception to knowledge, on one hand, and to action, on the other? Perception is not a knowing, not an idea; neither is it a complete overt act. Perception is a peculiar kind of action, *viz*, the organism's incipient act, its internal and partial activity leading *to* overt action and to knowledge. We have, of course, been discussing the process of perceiving. If we must employ the word "perception," let us limit its use to designate an organic situation, which on its motor side is a coordination of tendencies into a definite incipient action that is the mean between chosen stimulus and response, and on its mental side a feeling of anticipation of future consequences.

In assigning this definition to the word perception we are not doing violence to language, though we are dealing pretty roughly with "the genteel tradition in philosophy" that set up the elaborate outfit of sensations, images, ideas, states of consciousness, etc., in order to connect two parts of a complex, which are first artificially separated and then miraculously rejoined. In the view that we have been trying to explain the organism and its environment are in continuous and dynamic relation. The attitude of the organism to its surrounding material is fundamentally one of touching, gripping, etc., and is manifested in many forms of various degrees of refinement, such as taste, smell, hearing, and seeing. What better word could be used to denote this attitude or activity than the word "perceive" which originally meant, to seize or hold *through* something, or take possession of a thing thoroughly? The internal activity through which the organism takes thorough possession of its environment, by means of which it discovers the values needed for the fulfilment of its career—there you have perception.

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MISS CALKINS ON IDEALISM AND REALISM[1]

THE controversy between realists and idealists promises to be unending, partly because both parties are guilty of unconscious fallacies in their arguments, which remain undetected by their opponents. I think such a fallacy lies in Miss Calkins's paper, a fallacy which affects the root of the matter (the quotations are abbreviated for convenience).

"The realist" says Miss Calkins "describes an object as yellow. Some one may deny the yellowness. This throws the realist back on what he directly observes, what he knows with certainty—that he is having a complex experience described by the term yellowness" (p. 603).

There is a fallacy here in stating the true position of the realist, and as it is a fallacy often acquiesced in by realists themselves, it may again have escaped detection. The final sentence, so far from being unchallengeable, verges on the absurd. If the original assertion made by the realist be denied, he is undoubtedly thrown back, like every one else, on what he directly observes; that is his final court of appeal. The questions, then, are, What does he observe? Of what is he certain? and no realist can, or should, accept the answer to these questions put into his mouth by Miss Calkins, who says the realist "is having a complex experience described by the term yellowness."

[1] This JOURNAL, Vol. IX., page 603.

Now to "describe an entity by a term" is to assert that the entity is of the character, or has the quality or attribute, denoted by that term. If I describe this journal by the term valuable, I mean it has the quality of value, I conjoin the entity with the character denoted by the term; so that what Miss Calkins does is to make the realist assert that his experience has the character of yellowness. But this is not at all what the realist first asserted—he described the *object,* not his experience, as yellow, and Miss Calkins brings forward nothing which can make him change his standpoint and modify his assertion.

In making the realist say that he has an experience described by the term yellowness, Miss Calkins does one of two things; she either (1) identifies the object of the realist with his experience—regards the statement "this object is described by the term yellowness" as identical in meaning and final implication with "my experience is described by the term yellowness." Or (2) if she does not so identify object and experience, then she regards the realist's assertion, "the object is described by the term yellow," as enabling and justifying her to say that, therefore, his experience is described by the term yellowness—to argue from the one to the other.

The realist can, however, controvert both alternatives. Miss Calkins herself seems to adopt the first, for we have (p. 605) "yellow *is* a certain experience which a self has, just as any relation *is* a self-in-its-relating—a self as knowing"; this is a type of terminology frequent among idealists. I can never succeed in understanding the second form of it; "any relation is a self in relation" seems to identify part with whole—surely the self in relation is something more than, and essentially different from, the relation merely.

Take an instance outside philosophy, and we quickly get a *reductio ad absurdam.* "Any relation is a self in relation." Marriage is a relation. Therefore, marriage is a person married! and more generally, a relation implies the terms it relates, and can in no sense be identified with either of its terms.

In its first form (yellow *is* an experience) it can be accepted by realists only with very careful and accurate definition and explanation, if it is not denied altogether. The point lies in the exact sense in which the term experience is used and understood.

I suppose realists and idealists will alike accept the assertion "I am conscious"; and if I am conscious, I must be conscious of something; or since the word "thing" has already a definite usage and implications, let us say "I am conscious of some entity," where "entity" merely denotes what I am conscious of and carries here no implications whatever as to its nature.

Now it is possible to use the word experience in one of two

mutually exclusive and incompatible senses. (*a*) I may choose to say "I experience an entity" in the sense, and instead of, "I am conscious of an entity;" we do this commonly, *e. g.*, "I experience an emotion, or a desire, or a determination." It is less usual and more questionable to say "I experience an orange." But with this construction of the word, in neither case can we say that the entity is the experience, even if it be experienced; we can not identify or confuse the entity which is experienced with the experiencing of the entity; we can not say "yellow *is* an experience," even if we admit the expression "yellow is experienced"; for that would be, on this interpretation of experience, to identify what I am conscious of with my being conscious of it. (*b*) On the other hand, we may use experience to denote the entities of which I am conscious. Here again we find a common usage, as when we say "my emotions, or pains, constituted a terrible experience"; and here again it is less usual and more questionable to say "the objects and qualities I perceive are my experience," but in this case it is still less legitimate to identify "experience" as denoting what I am conscious of, with my being conscious itself.

Hence, if realists admit the expression "yellow is an experience" it can only be in sense (*b*), meaning yellow is something which is experienced, which I am conscious of. Nor can idealists derive any controversial advantage from this admission, because to admit that an entity is experienced in sense (*b*), implies in itself nothing further about the nature of the entity; neither idealism or realism, unfortunately, has any *a priori* foundations; the nature of the entities still remains to be determined. We can not at once go on to say, as Miss Calkins does (p. 604), "yellow is a way in which I am conscious." The utmost we can say is that "seeing yellow is a way in which I am conscious"; but "seeing yellow" and "yellow seen" are two entirely different things.

On the other hand, if Miss Calkins does not identify object and experience, she can not ignore the realist's original assertion (which was that he described the *object* as yellow), and substitute for that that his experience is described as yellow. To transform the argument is not to rebut it. The realist will adhere to his original assertion (provided he really is certain of what he is conscious). He will say, if his assertion be denied, "the object is yellow, for I am certain that I see, or perceive, or experience, if you like, it is yellow. But my seeing, or perceiving, or even experiencing this, is certainly not to be described by the term yellowness. I can not understand such an assertion. I can not conceive seeing or perceiving, as a visual process, or experiencing as a conscious process or relation, to be described

by the term yellowness—that is an adjective applicable only to material objects, not to the process of their cognition.''

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REVIEWS AND ABSTRACTS OF LITERATURE

Enjoyment of Poetry. MAX EASTMAN. New York: Charles Scribner's Sons. 1913. Pp. xi + 224.

The excellence of Mr. Eastman's book is its unusual vitality. No reader is likely to come from it with indifference. Whether it will "increase enjoyment," as it is intended to do, remains to be seen. If the reader is a scholar, or if he has thought much on the nature of poetry, he will be puzzled and offended by the smartness, one is tempted to say the boyish wilfulness, with which Mr. Eastman continually drops his subject and takes a shot at trained or organized investigation of truth. "A misfortune incident to all education," he says, "is the fact that those who elect to be teachers are scholars." Much in the book, unfortunately, will increase the enjoyment of those who like to see scholarship chastised, and who like to see that "art of life" exploited which consists of doing and believing what one pleases. But Mr. Eastman might take his defense from his own pages. In the chapter on "Realization of Things," he quotes Edward Carpenter's "Little Brook Without a Name," which he considers "one of the very precious poems of recent times": "The little mouse, the water-shrew, walks (*even like Jesus Christ*) upon the flood, paddling quickly over the surface with its half-webbed feet." Commenting on the art of shocking, here illustrated, he says: "Such extreme measures are at times indispensable to the sustainment of poetry. Something has to explode. Our souls must be invaded and ravaged, so ponderous is their lethargy in which they apprehend only vague presences and general bearings of things. Sing 'Lord! Lord!' forever, and you rouse no hearts to repentance; but shout 'Sky-Blasting Jehovah!' and some necks will move." Mr. Eastman teaches us in the key of "Sky-Blasting Jehovah!" and his book is vital—our necks do move.

And he does teach us. I feel bound by my own devotion to poetry to state at once the unfortunate twist in the book which will probably alienate most scholars; to state simply my great admiration for the new and sound things in the volume might imply some agreement (whereas I feel none at all) with Mr. Eastman's judgments of scholarship and science. But once this discrimination is made, his doctrine is immensely suggestive. The heart of it is in the first chapter, where he defines the poetic temperament as the disposition to realize the flavor of life, to taste the quality of experience rather than to control it. This poetic tendency holds in all kinds of living—in the senses, in memory, in the intellect. Simple as the definition is, and old as it is, it takes on extraordinary vigor in Mr. Eastman's handling; this brief chapter may well provide a turning-point in the mental life of many a reader.

This definition of what is poetic, it should be noticed, is from the standpoint of one who experiences poetry, but does not create it. The book would have been more effective if it had all been written from this point of view; the title certainly leads us to expect as much. We should not then have been puzzled by the chapter "To Compose Poetry." To be sure, we should have missed its encouraging first sentence—"The knowledge needed to create an English rhythm, the only general knowledge there is upon that subject, may be acquired while one converses about it"; but we would gladly exchange that encouragement for a chapter on how to read English rhythm after it is created—a far more difficult and necessary step toward the enjoyment of poetry. It should also be noticed that this definition of what is poetic is as good for music or any other art as is is for literature. Yet when Mr. Eastman begins to apply it more closely to literature, the art he is for the moment concerned with, he limits the definition so that it can no longer apply to music, not even to verbal music, but only to the arts which present or suggest pictures.

This narrowing of the definition appears in the second, third, and fourth chapters, in which the distinction is made at some length between the "language that chooses" and the "language that compares." Illustrations of the first kind are, *winter squash, Canada fox, ball-and-socket, office building, steamboat, railroad, money-saver,* and *motor-cyclist.* Illustrations of the second kind—the poetic kind—are, *blue-eyed grass, golden-rod, fire-bird, dovetail, sky-scraper, ocean-greyhound, pinchpenny, rake-hell, swashbuckler, spitfire, kill-joy,* and *slipgibbet.* The obvious difference between these lists is that the "poetic" words all are metaphorical, and the others are not. We begin to see that to Mr. Eastman, as to Mr. Hudson Maxim, poetry is simply metaphor. We notice that the verse illustrations quoted in the book so far are from poems richer in images than in music; we are prepared for the statement (p. 36) that "poetic creation begins in us when we marry . . . the images of memory to the impressions of sense," and also for the statement (p. 95) that "poetry . . . is a series of pictures accompanied by appropriate music." The "appropriate music," the "vocal wonder" of poetry, is treated in the chapter called "Poetry Itself" as something which is "built up" by such constructors of verse as Tennyson, Lanier, Poe, Kipling, and Francis Thompson.

But where are the images or pictures accompanied by appropriate music in Tennyson's

> Better to have loved and lost
> Than never to have loved at all,

or in Burns's

> Had we never lov'd sae kindly,
> Had we never lov'd sae blindly,
> Never met—or never parted—
> We had ne'er been broken-hearted,

or in Paolo's words to Dante,

> *quel giorno più non vi leggemmo avante,*

or in Ophelia's answer to Hamlet, "I was the more deceived"? The fact is that Mr. Eastman has forgotten what to most of us is the very essence of poetry—he has forgotten the emotion. The poetic realization of life, that which distinguishes it from the practical realization, is a storing-up of passion which craves to be released. Mr. Eastman does not believe this, I know; he says (p. 51): "Words make the world grow—not, I think, because they express a feeling, for that means that they relieve you of it, but because they give to the feeling locality and distinct body." But which of us who has written anything, has not felt that words do relieve us of emotion? The mood is exhausted. A reader undergoes a similar though more leisurely exhaustion; after repeated readings of any poem he "becomes tired of it," and must lay it aside until he has stored up new emotions for it to express. He can not understand a poem at all until he has experienced the emotion it is calculated to relieve. In "Hamlet" we live through the experience which Ophelia's words express; we experience her devotion to the Prince, and when he says "I never loved you," we realize our own heart-break in her quiet "I was the more deceived." Paolo's narrative, similarly, has admitted us to a share in his tragic love of Francesca, so that the simple statement "That day we read no more," does justice to what is in our hearts. A dramatist or a story-teller prepares the emotion which he later releases in poetry; a lyric poet must assume this emotional preparation in the reader. But in all cases the poetic quality of the language consists in the adequateness with which it provides an outlet for the emotion. It may provide this outlet by an image, or by a verbal cadence, or by mere felicity of diction.

If Mr. Eastman had remembered that emotion, and not image, is cardinal in poetic expression, he would not have identified poetry with slang. It is tiresome to be told so often, especially when we do not believe it, that this or that vulgar expression is poetic. Slang is figurative, but never poetic. It never gives any one the uplift expected of poetry; it can not because it expresses no emotion. *To lean against the leather, to rap out a two-bagger, to zip it to the fence,* are according to Mr. Eastman, poetic expressions. Yet it is perhaps easier to believe that they were manufactured in cold blood than that they sprang out of the realization of life; for, like all slang, they save us the trouble, not only of feeling, but of thinking. Mr. Eastman might answer that slang, though it immediately does become formula, is not so to the man who invented it; to him it is poetry. That might be questioned; but Mr. Eastman would then be talking of the creator, not of the reader, and we should notice that from the standpoint of the reader slang, as soon as it is invented, becomes a mere formula, whereas poetry does not.

Also if Mr. Eastman had remembered that emotion, and not image, is cardinal in poetic expression, he probably would not have made those lists of poetic and of practical words; for surely he would not be understood to believe in an eighteenth-century poetic diction, a certain preserve of language whence the authentic words of poetry may be drawn. That critic would be bold indeed who would say that any word is unfit for poetic use; the genius may arrive at any moment who will make that

word the vehicle of emotion. Conversely, I am surprised that Mr. Eastman should list any words as though he could guarantee them to be poetic; it depends on how they are used. Is "sky-scraper," in the mouth of most New Yorkers, an expression of the flavor of experience, a conscious satisfaction in a Homeric image? or is it just a practical word, used for control?

Perhaps I have failed to indicate how highly I value this book. It has stimulated me to much thinking, and it has helped me toward setting my own house in order. If I object to his onslaughts upon the professional scholars, Mr. Eastman will not be surprised, since I belong in that camp. Like all else in his book, the onslaughts are interesting, and will, as I admitted, provide enjoyment for many readers; but I leave the book convinced that it is only the noblest kind of enjoyment that Mr. Eastman really wishes to provide.

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The Philosophy of the Present in Germany. OSWALD KÜLPE. Translated from the fifth German edition by MAUD LYALL PATRICK and G. T. W. PATRICK. New York: The Macmillan Company. 1913. Pp. vii + 256.

This is certainly a better book than popular expositions of philosophy usually are. It is small and readable. It is not, apparently, addressed to students of philosophy, but to the German reading public, and it was worth translating. That does not mean, however, that the philosophy it describes is particularly modern. The breath of really modern thinking does not seem to have fluttered these pleasant pages. Still, the title indicates the subject sufficiently well.

It was rather a happy thought to sum up contemporary philosophy in Germany under the headings of positivism, materialism, naturalism, and idealism; under each of these topics there is a brief exposition of the philosophy of its chief representatives, and a statement of their shortcomings. The expositions are clear, but in the case of Mach a reader has the impression that the author could not get the point of view he seeks to criticize: in general, criticisms tend a little to the reproach that the writers reviewed overlooked considerations that belonged to other systems than their own; the trouble is not that they did not do well what they tried to do, but that they did not do well what they had no intention to do.

Positivism is represented by Mach and Dühring, materialism by Haeckel, naturalism by Nietzsche, and idealism by Fechner, Lotze, von Hartmann, and Wundt. It is not surprising that materialism fares rather badly, and it is certainly a pity to define naturalism as something that can be illustrated by any writer who claims that his doctrine is a return to nature. The chapter on Nietzsche is well written in spite of the following quotation from it: "The sterner philosophical disciplines, such as logic and the theory of knowledge, Nietzsche touched upon only casually and never gave himself up to their problems with original interest; and in the other branches which he liked to cultivate, such as metaphysics and ethics, he has no exact results to offer. We can not call him, therefore, really a philosopher. Life was his

problem, and his heartfelt interest was the determination of life's value and life's problems. This is the only theme which his thought mastered, and this theme he was able with astonishing versatility of spirit to express in every form of variation from the lowest to the most ideal" (p. 128). Nevertheless, Nietzsche was not "really a philosopher." "But his own time will come. . . . Then we shall welcome his criticisms just so far as they point to actual evils. . . . Then we shall recognize in his judgments and descriptions the direct expression of an original and significant sensibility. . . ." One asks quite simply, "why not now?"

No one of the four schools of thought selected for analysis will be the philosophy of the future. That philosophy is most likely to result from the cooperation of positivism and idealism. Scientific empiricism has dethroned old-fashioned rationalism, but "neo-rationalism" will come to our aid. How else will philosophers of the future be able to lecture about the "world-riddle"? Many things in the book are neatly put. "Leibniz attributed to all thought, in so far as it takes place without contradiction, a real significance and objective validity. According to this modern doctrine [Mach], on the contrary, all thought is merely formal. In both cases the difference between mathematics and metaphysics ceases to exist, but in the first case mathematics becomes metaphysics, while in the second, *vice versa,* metaphysics becomes mathematics" (p. 242).

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JOURNALS AND NEW BOOKS

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. July, 1913. *Friedrich Rosens's Darstellung der persischen Mystik:* L. Stein. – A note calling attention to the reprint of Georg Rosens's translation of the Mesnevi, the greatest work of the Persian mystics. Friedrich Rosens, son of the translator, has contributed a noteworthy introduction to the new edition. *Platos Stellung zu Erziehungsfragen:* Dr. Jegel. – A painstaking and systematic presentation of Plato's teaching on education as found in the Republic and the Laws. The aim of Plato in education was to train the youth to be capable citizens serviceable to the state. *Bemerkungen zur Abfassungszeit und Methode der Amphibolie der Reflexionsbegriffe:* Edgar Zilsel. – The first section of the "Amphiboly of Reflective Concepts" in the "Critique of Pure Reason" comes from the year 1771; the second and third divisions are supplementary presentations of later years. The "Reflective Concepts" were uncritical forerunners of the "Categories." The first division accepts a knowable "Noumenon," the second denies it, the third recognizes it as the limit of that which may be known. *Kleitophon wider Socrates:* Dr. H. Brünnecke. – "Cleitophon" is a genuine Platonic dialogue in which Antisthenes is attacked under the name of Socrates, and the bankruptcy of the Cynic teaching revealed as preparation for the message of the Platonic Socrates in the dialectical com-

bat with Thrasymachus in the presence of Cleitophon in the beginning of the Republic. Philological studies corroborate this view, and show that the dialogue was written in the later years of Plato's life. *The Logic of Antisthenes, Part I.:* C. M. GILLESPIE. – An analysis of the passages referring to Antisthenes, and a statement of his views on logic. Hobbes's teachings are used as a basis of comparison. *Rezensionen. Die neuesten Erscheinungn auf der Gebiet der Geschichte der Philosophie. Beiheft: Die Wissenschaft Demokrits und ihr Einfluss auf die moderne Naturwissenschaft:* LOUIS LÖWENHEIM. – This supplement contains the introductory sections of a work whose endeavor is to expound the teachings of Democritus, and to show that he was the greatest figure in Greek thought, and the real father of our modern scientific period. This latter title he may claim since he was the teacher of Galileo who broke the homogeneous Roman-Medieval tradition and returned to the Greek type of thought, similarity to which characterizes the best work of our day. Löwenheim's exposition is marked by freshness of approach, and by singular freedom from tradition, but the evidence for his assertions frequently seems rather slender.

THE PHILOSOPHICAL REVIEW. July, 1913. *Philosophy in France in 1912* (pp. 357–374): A. LALANDE. – The topic of most frequent current discussion is religion and philosophy. There is given an analysis and criticism of Durkheim's *Les formes élémentaires de la vie religieuse,* the leading philosophical work of the year. Contributions to the philosophy of science are mentioned. French philosophy is poor in logical theories. *Identity as a Principle of Stable Values and as a Principle of Predication* (pp. 375–394): L. E. HICKS. – "The postulate of a stability sufficient to know things, to make assertions about them, to combine statements in a chain of reasoning, is not out of harmony with actual conditions in a changing world. At the same time it is quite sufficient for both epistemology and logic." *Ethical Objectivity in the Light of Social Psychology* (pp. 395–409): WILLIAM K. WRIGHT. – Current psychological analysis has tended toward a subjectivistic account of moral standards. The *Social Psychology* of McDougall, it is claimed, furnishes an adequate basis for an objective ethics which will satisfy the demands of empirical psychology. *Discussion: Error and the New Realism* (pp. 410–423): A. O. LOVEJOY. – A criticism of the three different solutions offered by Professors Holt, Montague, and Pitkin, of the problem of error and illusion and their reconcilement with the main thesis of neo-realism, with the conclusion that the enterprise in which these neo-realistic writers is engaged is "one in which success is impossible." *Reviews of Books:* James H. Leuba, *A Psychological Study of Religion:* ERNEST L. TALBERT. Emile Durkheim, *Les formes élémentaires de la vie religieuse:* IRVING KING. Herbert Leslie Stewart, *Questions of the Day in Philosophy and Psychology:* GEORGE H. SABINE. *Notices of New Books. Summaries of Articles. Notes.*

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NOTES AND NEWS

Letter from Professor Wilm

To the Editors of the Journal of Philosophy, Psychology, and Scientific Methods:

I have to thank Professor Hocking for the interesting comments on a recent book of mine called "The Problem of Religion," which he printed in this Journal.[1] I think, however, that those who have read Mr. Hocking's review, but have not read my book (and the latter class must easily include the majority of mankind) may have received a very partial view of the sort of philosophy which my book really attempts to express. This would, by itself, be a fact of very slight importance. Since, however, the matter involves a principial question in philosophy, one which seems never to remain long in abeyance, the question, namely, of philosophical method, it may be worth while to exploit it somewhat further.

"The problem of religion," Mr. Hocking writes, apparently with critical intentions, "reduces, for the author, to a question of theory: 'the only valid source of religious truth is philosophy.' The contributions of social tradition and of intuition to religious knowledge receive scant recognition in comparison, for example, with their place in Royce's 'The Sources of Religious Insight.' Philosophy, as here understood, summarily excludes revelation or authority in any historic sense."

Now, in so far as the positions here attributed to me serve to disparage pseudo-scientific and occult methods of arriving at truth, and emphasize methodically guarded reflection upon our experience as the sole *organon* of the philosophy of religion, I most cordially subscribe to them. On the

[1] Vol. X., page 719.

other hand, I disclaim the suggestion, apparently also attributed to me, that truth can be arrived at by the manipulation of empty concepts, or that religion, even, comes into being as the result of formally logical processes. Philosophy does not create religion *ex nihilo* any more than it creates art or the state. Our "social experience," including the social experience of the past as crystallized in tradition, does, of course, furnish the indispensable materials for any religious interpretation of the world. We do not pick our philosophies out of the air. On the other hand, social experience, whether original or traditional, can not be accepted unreflectively. But the critical reflection upon experience is philosophy.

Furthermore, religion has uses, and it contains poetic and sentimental values which are to many persons very precious, and which can be felt without theorizing about them. But these values and graces can be exhibited in their context and articulately justified only by philosophy. The only alternative to this which I see is a mystic absorption which either chokes utterance completely, or else limits the intellect to the stolid reiteration, "God is great." It is a matter for congratulation that Professor Hocking has himself not rested in so brief a creed, but has written a thick book to show both that God is great and in what sense great.

E. C. Wilm.

Wells College.

The American Psychological Association and the American Philosophical Association held a joint meeting at Yale University on December 29 to 31. This was the twenty-second annual meeting of the former association and the thirteenth annual meeting of the latter association. On the evening of December 29 the President of the Philosophical Association delivered his address. A joint dinner of the two associations was followed by the address of the President of the Psychological Association and an informal smoker on the evening of December 30. The joint meeting of the two associations was held on December 31. The Psychological Association elected the following officers: President, Professor R. M. Ogden, of the University of Tennessee; Secretary and Treasurer, Professor W. H. Sheldon, of Dartmouth College; Members of Council, Professor S. I. Franz, of the Government Hospital for the Insane, Washington, D. C., and Professor G. M. Whipple, of Cornell University. The following officers were elected by the Philosophical Association: President, Professor J. H. Tufts, of the University of Chicago; Vice-president, Professor W. H. Sheldon, of Dartmouth College; Secretary and Treasurer, Professor E. G. Spaulding, of Princeton University; Members of the Executive Committee, Professor C. M. Bakewell, of Yale University; Professor I. Woodbridge Riley, of Vassar College, and Professor Wendell T. Bush, of Columbia University (to serve one year in place of Miss Calkins, resigned).

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SOCIETIES

THE THIRTEENTH ANNUAL MEETING OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

THE thirteenth annual meeting of the American Philosophical Association was held at Yale University, December 29, 30, and 31, in conjunction with the meeting of the affiliated Psychological Association. Altogether the affair was highly successful not only from the interest of the papers presented, but also, on the social side, from the cordial hospitality of Yale and her graduate club, together with the excellent facilities for commingling at the Hotel Taft, the headquarters of both associations.

That the presence of the two associations together in New Haven was appreciated by their members was attested by the frequent exchange of visits at their respective sessions and the awakening discussion of the joint meeting on Wednesday morning. Except for the address of the President of the Philosophical Association, Professor McGilvary, Monday evening was left open and gave grateful opportunity for private dinners and reunions of friends, while a joint dinner and smoker, on Tuesday, served to bring the members of the two associations together to listen to Professor Warren, the President of the Psychological Association, and to exchange views informally.

As the addresses of both presidents will be published shortly there is no need of summarizing them here. Professor McGilvary spoke on "Time and the Experience of Time," distinguishing his position from the positions of James, Bergson, and Royce; and Professor Warren, on "The Mental and the Physical," setting forth the advantages of a "double aspect" theory in the present state of psychological investigation.

The general attendance at the meetings of the Philosophical Association was large, although tardy arrivals somewhat weakened the first session, and haste to leave town, or perhaps an unusually interesting programme of the psychologists, reduced the attendance at the last session to a pitiful handful. It was evident that few papers and extended general discussion contribute most to the ends

of the association, for in spite of the general excellence of Monday's papers and their bearing on the next day's discussion, night came without that clear demarcation of problems and issues which constitutes the only end practicably attainable by such discussion. The association would do well to consider the advantages of a more radical adherence to the method of topical discussion introduced by a small number of papers. Furthermore, the contrast between the outcome of the longer discussion of Tuesday and the more limited one of the joint session indicated that one day, at least, is necessary for the best results.

If, however, it is necessary to retain a miscellaneous programme for the benefit of those whose interests can not be met by the chosen topics, certain modifications of this year's programme seem advisable. In the first place, the beginning is a more desirable locus for such papers than the end, for the sake both of avoiding the disconcerting anticlimax of a vanishing audience and of approaching fresh minds and not those already jaded or turned to other lines of reflection by previous meetings. Secondly, the practise of circulating abstracts should not be allowed to lapse so that, as at the present meeting, most critics begin with the apology that they had had no abstracts should not be allowed to lapse so that, as at the present tion of a speaker's time is twenty minutes, he should write a twenty-minute paper and not make extempore and not always intelligible omissions, or read against time at a speed far greater than human articulatory powers can master or human apprehension meet.

Monday morning's meeting was duly opened by Professor McGilvary. Professor W. M. Urban spoke on "Existance, Value, and Reality." His contentions were that value is indefinable; that it belongs neither to existence nor to subsistence, but is a third type of objective; that value presupposes existence, but does not depend upon it; that all values are scaled; and that a theory of existence is independent of a theory of value. Professor Pitkin pointed out that what we have here is really a relational theory of value, and he maintained that the theory could be better stated in other terms. Professor Urban's conception of a special value judgment seemed to him undesirable. Professor Sheldon objected to conceiving value as something that lies behind qualities that are not values, or, in other words, to making them a sort of Kantian thing-in-itself. He also expressed a wish for a presentation of concrete instances. Professor Urban replied that he was trying to eliminate the value judgment, but he could not accept value as quality because of such ambiguities as that of the concept of good, used in the ethical, and in the more general sense.

If the first discussion seemed based on the assumption that the meaning of words can be determined apart from concrete situations,

Professor Henderson's paper, on "The Scale of Values," proceeded in the opposite fashion. A questionnaire was presented with a view to scaling moral, intellectual, social, economic, taste, and health values in the order of desirability. There was rather general dissent to the questionnaire proposed by Professor Henderson both on the ground of ambiguity as to the exact situations intended, and a tendency of his cases, in some instances, to involve each other surreptitiously. Professors Tufts, Sheldon, and Creighton introduced a discussion as to the value of any hypothetical situations on the ground that choices made in them differ fundamentally from those made under the pressure of actual living. Attention then turned to the classes of people from whom answers had been obtained, and many thought these rather artificially selected. Professor Henderson's reply recognized these objections, but he insisted that an approximation had been obtained in the order moral, intellectual, social, property, and health values, that had some predictive significance as to the choices of most individuals.

The last paper of the morning, Professor Cohen's "History *versus* Value," contested the value of history as peculiarly exhibiting the nature of things, or their values. The special cases of economics, jurisprudence, ethics, politics, religion, and philosophy were examined for evidence. The opinion of the meeting seemed, however, to accord with that expressed by Professor Woodbridge, that a false use of history had been assumed in the argument, for while history does not determine standards, it is an extension of experience, and often enables us to understand valuations through the conditions that gave rise to them. Professor Tufts also insisted upon the value of the correct use of history, illustrating his point by a conception of law as a growing essence.

In the afternoon Dr. Kallen was first on the programme with a brilliantly written paper on "Value and Existence in Art and Religion." In a world not made for man, men must contradict their own experience; hence, value has its seat, not in nature, but in human nature. Value appears as an ideal reconstruction of environment; the unity of mind results from the interests of the body. Immortality and freedom are also desiderates, but while art acknowledges the reality of experience and changes existence into values by injecting value into it, religion conserves values which it postulates outside of existence, but does not create them. Professor Hocking anathematized the paper as an epitome of what he most disbelieved. Religion and philosophy do not deal with the unreal and subjective. Values are rooted in experience and in the permanent. Because of the possibility of a vicarious satisfaction of instincts, the plurality of values is not ultimate, but can be reduced to forms of the one value.

Dr. Kallen replied that the empirical attitude is self-validating in the struggle for existence and that the conditions of satisfaction are not facts.

Professor Tufts presented the most empirical paper of the afternoon, on "Social Factors in the Judgment of Value." The situation in which predicates of valuation arise is dominated by a selective activity of the organism. This may change its character from time to time as can be seen in the history of economic, social, ethical, and esthetic values. The good, for example, is empirically only good because good people approve it. Existence could only determine a standard of value if we could find in the universe something sympathetic to ourselves, a larger self, as it were. Professor Overstreet voiced the importance of the analysis of actual situations where the type of situation determines value, but he objected to distinctions made in terms of objectivity, subjectivity, or mixed forms when we don't really know what objectivity, etc., mean. It is better to think of value merely in terms of real situation. Professor Tufts, however, felt that this was merely a question of nomenclature.

Professor Montague's paper, "A Neo-realistic Conception of Value," defined values as "all objects in so far as they satisfy human interests," and developed this definition as implying two sorts of value, primary and secondary,—those satisfying interests of conscious life, and those regulative of impersonal processes. All values have extensity and intensity. He confined himself to developing the class of primary values with respect to their relations to cognitive, affective, and conative faculties. Values are forms of adaptation to environment. The truth-seeker bows to things as they are, the good-seeker needs arrogance, but the beauty-seeker must trust to luck. Professor Bakewell remarked that this discussion was peculiarly foreign to the realistic position, and objectionable because, factually, some values, such as the esthetic, are not measurable by extensity and intensity. Also the distinction between the primary and secondary values is only one of degree, so the principle of division leads to a cross classification. We can enjoy beliefs and appreciate the beauty of truths. Moreover, the principle of conformity between individual and environment is false,—witness the case of the martyr whose quivering flesh is not the conformity to environment that a value should attain. Professor Sheldon also objected to the *a priori* standpoint of the classification and to the artificial division of the individual into three faculties. Professor French asked if there were no wholly objective values. To this last Professor Montague answered categorically, no. He then justified his method as the one best for the association and his content as providing for an intersection of values; truth can be pursued for logical, ethical, or esthetic ends. The case of the martyr is no real exception.

On account of the lateness of the hour, the paper of Dr. Dashiell, who was introduced by Professor Woodbridge, was postponed until Wednesday morning.

Dr. Dashiell emphasized the dynamic aspect of the universe and defined value as that character of things which the conditions of dynamic life throw into perspective. The distinction between value and things is accordingly relative, and valuation may create new values as well as modify old ones. The value experience is primary and only afterwards analyzable into the organic and extra-organic; hence it is incorrect to try to attribute *a priori* either an organic or an extra-organic constitution to values. Dr. Drake's criticism was primarily directed at Dr. Dashiell's conception of the ultimateness of value. Values result from the reaction of an organism on its perceptions, but some values are irreducible, others not. Dr. Dashiell had not distinguished intrinsic and extrinsic values. For all practical purposes consciousness is necessary for values and some, though not all values, are modified by valuation. Dr. Dashiell replied that he objected to making value a reaction to perception merely. The relational theory is not to be reduced to a simple relation between two things.

Professor Sheldon opened the general discussion and derived a definition of value through a comparison of instances of values and their common properties. The resulting conclusion, after examining six classes of values, those satisfying instinct, the economic, the esthetic, the moral, the intellectual, and the religious, was that value is always the furthering of a tendency already present, but is not dependent upon consciousness. Values are real and closely related to potentiality. The scale of values is relative to the number of tendencies furthered; hence the high value of personality. If a tendency to perfection were omnipresent in experience there would be an all-inclusive value.

Professor Perry, the other leader of the debate, was rich in references to published studies of value. He took his departure from Professor Sheldon in asserting the need of discussing value in epistemological terms on the ground that values can not be collected like butterflies. His first task was to present a classification of definitions of value. From this classification it resulted that, although judgments of value are often complex, there is no unique class of value judgments. Value is a certain kind of fact and all values exist. But wherever there is value, there is a certain kind of bias of interest; hence effort and interest form the central point in discussing value. A norm is merely an acknowledged standard.

In reply to Professor Overstreet's question as to the exact relation between the papers, it was gradually brought out that Professor

Perry's conception of *interest,* while relating in his opinion to the structure and nature of things, is still a mental factor, and so narrower than Professor Sheldon's *tendency,* and Professor Perry seemed to imply that values give a fulfilment of interest, while they only further Professor Sheldon's tendency.

Professor Urban introduced the distinction between the psychological and the ontological definitions. The latter he believed to be impossible, but the former, as given by Professor Perry, was in accordance with his own views. If Professor Sheldon uses the words "better than," he must presuppose the fulfilment condition for values.

For some moments the discussion drifted into a sceptical turn. Professor Pitkin confessed an inability to understand what was meant by "bias," "interest," and "appetite" as used to ground the definition of value, and he thought that Professor Urban was wrong in inferring that value is absolute from the fact that values can be ordered, since, as the mathematicians have taught us, entities that can be ordered must be complexes. And Professor Creighton maintained that the whole procedure was aimed at a type of scholastic definition of little value beside a discussion of the actual manifestations of values. Professor Woodbridge suggested that Professor Sheldon had really restated in modern philosophy certain classic questions which should be discussed, such as, Is being good? and with such questions goes the need of reanalyzing potentiality and actuality. Professor Perry objected that this sort of question was unintelligible as meaning different things to different people, and Professor Lovejoy pointed out that historically Professor Woodbridge's problem had led to an "immoral optimism." He then recurred to the original discussion by defending definitions against Professor Creighton on the grounds of utility. Professor Perry should define his position more closely with reference to hedonism, for hedonistic satisfaction means gratification of interests, and if a plurality of interests is also a good, the concept of the good has a double meaning transcending pure hedonism.

Dr. Kallen maintained, as against Professor Pitkin, that the question of discovering the element of value is independent of those elements, but he felt with Professor Creighton, that a knowledge of acquaintance is worth more than too much knowledge about. Professor Perry's definition, moreover, was circular without some external criterion of satisfaction.

The afternoon's discussion crystallized the differences between Professor Perry and Professor Sheldon, as anticipated above. Its new features were Miss Calkins's extension of the olive branch to the New Realists, and the introduction, somewhat late, of the problem of the scaling of values.

Miss Calkins, forgetting her last year's harmony with Professor Perry, again entertainingly offered a first agreement, for his concept of *interest,* as well as Professor Montague's *satisfaction*, coincides with her idealistic *liking* and *willing.* She might be willing to differ from Professor Montague as to classes of the valued, for his cognitive values made no appeal, but in fundamental points, he was ripe to enter a triumvirate with her and Professor Perry. Professor Urban thought the agreement of slight significance because it was on grounds general enough to be psychological commonplaces. Professor Overstreet insisted on trying to introduce discord into the triumvirate, first by offering crucial examples and then by distinguishing an organicity party (Professor Perry) from a psychological party (Miss Calkins and Professor Montague). Professor Sheldon could not be even an ally because his *potentiality* differed radically from the kind of liking and seeking the others meant. Crucial instances introduced by Professor Pitkin, Professor Tufts, and Professor Lord emphasized the fact that his *tendency* was something wider than the limitations of conscious or organic processes, though inclusive of such processes. Professor French found it hard to believe that value could be so defined and have the same meaning in case of physical as in case of conscious processes.

A certain confusion was introduced when certain members tried to recur to the problem of the relation of value to existence and the problem of mechanism and teleology. Professor McGilvary inquired why we suppose that what aids tendency is good and what opposes it evil. Is desire nothing but consciousness of movement toward, or is something more added?

Professor Spaulding thought that Professor Sheldon's answer shifted the ground and introduced the second dominant topic of the afternoon by inquiring how we decided what tendencies give rise to values that are better than others. The answer, that it was the number of tendencies furthered, Professor Creighton characterized as the *reductio ad absurdum* of the whole discussion, and it did not seem, in general, to satisfy the members of the association. Professor Pitkin suggested that instead of a number of individual tendencies, the maximum action in the field might furnish a criterion; Professor Hocking, that it might be the kind of quantitative control; and Professor Overstreet, that it might be the inclusiveness of the tendency. Professor Sheldon did not seem very certain of his attitude toward these suggestions and, unfortunately, the lateness of the hour prevented a sharpening of the issues on this point, as the meeting was adjourned in favor of the business meeting.

On Wednesday morning a joint discussion with the Psychological Association took place. The topic was "The Standpoint and Method of Psychology." President Warren presided.

Professor Creighton discussed two questions: Would results in psychology analogous to those of the physical sciences satisfy us? and is the identity between the physical and the mental such that similar methods can be applied in psychology and in the physical sciences? To both questions his reply was a qualified negative. Psychology has the same ideal of accuracy as other sciences, but its obligation to deal with personality and with social problems alters its status. We are under no logical necessity to divide mind into faculties and, factually, we need not interpolate psychical states between things and experience. Psychology falls on the one hand into brain physiology, and, on the other, into an interpretation of life in terms of the self.

Professor F. M. Urban maintained that philosophy develops its methods and problems independently, and takes its material from the entire field of experience. Psychology cultivates part of this field and is related to philosophy exactly as the other sciences are. Certain problems of introspection, probability, and the psychometric functions lead directly to philosophic considerations, and in them the philosopher can be of help to the psychologist. For example, in trying to correlate mental states as revealed by introspection with definite groups of conditions, one is confronted with the difficulty that no group of conditions, however carefully controlled, will always produce the same mental content. The judgments given on the comparison of two stimuli have all the features of chance events. Are we to conclude that they are not causally necessitated? Or again, with psychometrics comes the use of analytic functions and the assumption that natural events may be represented by analytic functions. Causal connection is represented by functional dependence, and psychology uses a highly specialized form of this notion only. What are the reasons for doing so? The answer must result from analyzing the logical implications of the assumption, and from finding the consequences of dropping it as a whole or in part. The result is an analysis of the idea of causality.

Professor Dewey turned aside from the "dreary" methodological problem and discussed the unwieldy ideas that students of psychology bring to the philosophic class-room, ideas which it is the chief labor of the teacher of philosophy to eradicate. Some examples are the idea of a distinct world of the psychic, and of the privacy of consciousness. Either philosophy must be wholly compromised by such psychological conceptions or the philosopher must challenge the ideas of the psychologist. Naturally he prefers the latter alternative. Nor is he presumptuous in doing so, for not only have some among the psychologists challenged them, but also history shows that many of these notions are nothing but adaptations of notions forged by philosophers which, having given, they can take away. Behaviorism

is promising, but must not be prejudiced by earlier psychological conceptions. It can not mean mere mechanics of the nervous system, a subcutaneous psychology, but must permit environment to be taken into consideration as well. Perhaps the most important thing is to get rid of the abstract term *consciousness,* although it is, of course, justifiable to distinguish conscious acts from those that are not conscious.

Professor Münsterberg built up his discussion from the fight in Germany over the proposed separation of philosophical and psychological professorships. He believes that psychology can never lead us to real philosophical problems since psychological facts can be interpreted by any one of several conflicting theories; double aspect, interactional, or parallelistic. Philosophy must determine general conceptions, but it determines them *a priori* and without reference to experience. Dualism is preferable, and there are two sorts of psychology, usually unhappily mixed; the objective, or causal, and the subjective, or purposive. The former is most studied, but it is no more truly psychology than the latter. Causal psychology is justified by the success of applied psychology, and it is in this field that behaviorism may succeed. Both forms are transcended in the over-individual will and absolute validity.

Professor Yerkes was unfortunately absent, so the meeting was thrown open for general discussion. Miss Calkins found herself close to Professor Creighton in distinguishing the two kinds of psychology and introduced her nomenclature of the ideal (causal), and the self (teleological), psychology. Professor Dearborn emphasized the need for practical psychology, but objected to the introduction of any artificial limitations. Professor Dunlap expressed sympathy with Professor Dewey, although he recognized certain difficulties in delimiting the behaviorist's field, manifest in such problems as whether such processes as digestion should not also be ranked as behavior. Professor Stanley Hall called attention to the contrast between himself and Professor Münsterberg, for he had gone from philosophy to psychology, while Professor Münsterberg was going in the opposite direction, and inquired whether it was not artificial to separate the problems. He concluded, however, that the important thing was to keep at work, for the carrying through of any one point of view would be an advantage.

The small afternoon session was opened by Professor Armstrong's discussion of "Bergson, Berkeley, and Philosophical Intuition." Professor Armstrong contended that Bergson's attempt to reduce philosophies to developments of a single intuition, however inspiring and vital its results might appear to students, distorted the facts. For example, although Berkeley's philosophy is a theistic immaterial-

ism, it is equally true that Berkeley wished to reform science. The immaterialism might have been related to several different conceptions of science. We can ask, then, whether his scientific conceptions, and Bergson's own biology, are mere media of expression or integral parts in their respective philosophies. Both Professor Lovejoy and Miss Calkins welcomed this emphasis on Berkeley's philosophy as being something more than a mere doctrine of *esse est percipi* and Professor Lovejoy pointed out other evils that Bergson's conception of intuition introduced into the study of the history of philosophy.

Professor Riley read some excerpts concerning "Some Aspects of the New Realism" from a book that he is about to bring out on the history of American philosophy. The extracts exposited the origins and development of the new realism and the doctrines set forth in the realists' volume. Professor Lovejoy objected that the place indicated for the account in the book distorted chronology for the sake of connecting the old with the new realism, and Professor Perry complained of lack of reference to the influence of James. Professor Riley justified himself before Professor Lovejoy by explaining the popular character of the intended book, and before Professor Perry by referring to unread chapters.

Mrs. Ladd-Franklin's paper, which should have been entitled, "The Non-Existence of Existence" instead of "Non-occurrence," as on the official programme, was fundamentally an exposition of indefinables in philosophy. The abstract term *existence* has no meaning unless "*précisé.*" We need a conception of *domain* of which may be asked whether a specified object occurs in this domain, instead of a meaningless question concerning the existence of the object. Domains are the indefinables, although they may be fixed by the logical method of pointing. They have not yet been completely classified, but the distinction of the domain of objects having a "pastness"-, and a "space-coefficient," and that of objects not having these, is general. The terms *real* and *reality* are as obscure as the term *existence* and need further demarcations. The doctrine that results from these conceptions is a hypothetical realism and a real solepsism. Professor Lovejoy gladly welcomed the expression "occurrence in a domain."

Professor Hyslop laid bare certain prejudices entering into our thinking from an unjustifiable carrying over of distinctions from one field to another. Thus the mechanical, the physical, and the teleological are grouped together as against the teleological, the spiritual, the supernatural, etc., although the assimilation of the terms in the two groups is logically unnecessary and historically sequential upon the rise of Christian thought. Professor Montague offered several valuable illustrations and, as Professor Britain, the last speaker on the programme, was absent, the session was declared at an end.

At the business meeting of the Philosophical Association the following officers were elected: President, Professor Tufts; Vice-president, Professor Sheldon; Secretary and Treasurer, Professor Spaulding; Members of the Executive Committee, Professor Bakewell, Professor Riley, and Professor Bush (to serve one year in place of Miss Calkins, resigned). Besides the usual business, Professor Creighton introduced Professor Hoernlé who laid before the Association the attractions of the International Congress of Philosophy to meet in London in 1915. The place of the Association's meeting next year was left in the hands of the executive committee with power.

At a joint business meeting with the Psychological Association the report of the special committee that has been studying the conditions of the resignation of Professor Mecklin from Lafayette was unanimously accepted, and instructions given concerning its publication and circulation.

HAROLD CHAPMAN BROWN.

COLUMBIA UNIVERSITY.

THE CASE OF PROFESSOR MECKLIN

REPORT OF THE COMMITTEE OF INQUIRY OF THE AMERICAN PHILOSOPHICAL ASSOCIATION AND THE AMERICAN PSYCHOLOGICAL ASSOCIATION

BY the joint action of the presidents of the two associations, the undersigned have been appointed a committee to inquire into the circumstances connected with the resignation of Dr. John M. Mecklin, in June last, from the professorship of philosophy and psychology at Lafayette College. Reports of the incident published in certain scientific journals and statements made by Professor Mecklin seemed to the presidents of the associations to give *prima facie* grounds for the belief that Professor Mecklin's resignation was given under virtual compulsion; that it was primarily due to the objections of the president of the college to philosophical teachings contained, or supposed to be contained, in certain text-books used by him; that the precise nature of the doctrines to which exception was taken had not been made clear by the governing authorities of the college; that the whole affair was involved in a degree of indefiniteness and obscurity which might, if not dissipated, operate unfairly to the injury of the professional standing of Dr. Mecklin; and that the procedure used in bringing about his separation from the Lafayette College faculty was of a somewhat summary and peculiar character. The case, therefore, seemed to the presidents of both associations to be one calling for investigation, in order that the facts might be fully and accurately ascertained and made known to the members of these

associations and such other persons as might have an interest therein. The *personnel* of the committee was not completely determined until October; at the request of the chairman, the two presidents have acted as members *ex officio*.

The committee's understanding of the purposes and scope of its inquiry is sufficiently indicated by the first letter to President Warfield, sent November 12, which, with the omission of the prefatory paragraph, is as follows:

"The function of the committee is primarily to secure an authoritative statement of the facts in the case which can be laid before the members of the associations (of both of which Professor Mecklin is a member) at their approaching annual meetings, for their information. The concern of these bodies in the matter is twofold. They consist for the most part of members of the university teaching profession, and they are therefore anxious to ascertain the reason for any action which may have the effect of injuring the professional standing and opportunities of any of their own members. It would seem, in the second place, desirable that the members of these associations should know somewhat definitely what doctrinal restrictions are imposed upon teachers and investigators in philosophy and psychology in the principal American institutions of learning. Such knowledge it is important to our members to have, both in order that their action in making recommendations for positions and the like may be guided thereby, and also that in their judgment of the department of philosophy and psychology in any institution, they may bear in mind the predetermined limits of liberty of opinion which affect the tenure of professorships in that institution. It has been publicly asserted that restrictions of this kind obtain at Lafayette College.

"In its attempt to secure the desired information the committee, of course, turns first to yourself and to Professor Mecklin. We shall therefore be greatly obliged if you will let us know whether the statements already published in *Science* and the JOURNAL OF PHILOSOPHY regarding the circumstances of Professor Mecklin's resignation seem to you accurate, and what your understanding is as to the doctrinal requirements imposed upon professors of philosophy and psychology at Lafayette. The points about which we especially desire to be informed are indicated by the accompanying questions; we shall be obliged if, as an aid to giving definiteness to any statement which the committee may prepare on the subject, you will cover these questions in the reply which we hope you will be good enough to let us have."

The appended questions were as follows:

"1. Was the resignation of Professor Mecklin called for by the administrative authorities of Lafayette (*a*) because of certain doctrines held or taught by him; or (*b*) because of certain doctrines contained in the text-books used by him?

"2. In either case, what, specifically, were the opinions or teachings to which objection was made?

"3. Are the statements made by Professor Mecklin in THE JOURNAL OF PHILOSOPHY of September 25, 1913, regarded by the administrative authorities of Lafayette College as giving a substantially accurate and sufficient account of the facts in the case?

"4. Is subscription to any specified creed a requisite to appointment to a professorship in Lafayette College?

"5. Are the professors of philosophy and psychology required, so long as they hold their positions, to conform their teachings to any specified creed or doctrine?

"6. If so, what is this creed?

"7. Are similar requirements imposed upon professors of other departments, such as biology and geology?

"8. In case of alleged deviation by any professor from the doctrinal standards of the college, by whose interpretation of these standards is such deviation determined?"

It should be said at once that the committee has failed to secure from President Warfield any definite answer to its inquiries. One month later, after a second copy of the above letter had been sent, the following communication was received:

"Lafayette College has long been conducted under the general direction of the Synod of Pennsylvania of the Presbyterian Church. It has given very definite pledges to the public at large and particularly to those who have contributed to its endowment and who have entrusted their sons to its instruction, that the teachings in its class-rooms should be consistent in substance and in tendency with the standards of the Church. The professorship of mental and moral philosophy was endowed by an alumnus and member of the board of trustees with clear and positive statement that it was his purpose in endowing the professorship to continue the type of teaching of philosophy which had long been characteristic of the college and to provide thereby a foundation for conservative Christian thought and character. The board of trustees of the college, acting under the responsibility imposed by its charter and in the performance of the trusts created by individuals is, of course, the judge of the fitness of a professor and the satisfactory performance of the duties belonging to his professorship.

"Acting through the proper officers with deliberation and with

full opportunity for all those interested to be heard, the resignation of Professor John M. Mecklin, Ph.D., was asked and given.[1]

(signed)

"J. W. HOLLENBACK,
President Board of Trustees,
E. D. WARFIELD,
President,
MCCLUNEY RADCLIFFE,
Chairman Curriculum Committee."

The lateness of the date making it impossible for the chairman to consult the entire committee, he, upon his own responsibility, on December 19, addressed the following to President Warfield:

"I beg to acknowledge with thanks the receipt of the communication signed by yourself and Messrs. Hollenback and Radcliffe, in reply to the inquiries of the committee of the American Philosophical and Psychological Associations of which I have the honor to be chairman. I note that, by your letter, the board of trustees of the college assumes the official responsibility for asking, as well as accepting, the resignation of Professor Mecklin.

"May I express the hope that you will be good enough to let the committee have, from yourself personally, some more specific statement in regard to certain facts in the case concerning which we greatly desire to be informed?

"1. The committee will not, I think, be able to gather from the reply thus far received, precisely what teachings of Professor Mecklin were regarded by the trustees as the grounds upon which his resignation was asked for.

"2. The committee will further be unable to gather what specific doctrinal requirements are laid upon the professors of philosophy and psychology at Lafayette College. I note the statement in your letter to the effect that the college 'has given very definite pledges

[1] Since the presentation of this report, the chairman is in receipt of a communication from a member of the board of trustees, who states that he feels it his duty to place before the committee some actual facts which are not in accordance with the above communication. He writes: "It is possible that the curriculum committee did ask for the resignation of Professor Mecklin, though not to my knowledge. It is certain that the trustees before whom the matter was brought by the committee did not ask for the resignation of Professor Mecklin. The resignation of Professor Mecklin was given under pressure, it is true, but was not distinctly asked for by the board of trustees. The last statement, therefore, in the certificate sent to you [that cited above] is not in accordance with the facts. I am not at present attempting to discuss the remainder of this certificate as to whether it is in accordance with the facts or not, but because I have not discussed it I do not wish it to be inferred that I believe it to be in accordance with the facts." The chairman of the committee publishes this statement as a part of the evidence in the case.

that the teachings in its class-rooms should be consistent in substance and in tendency with the standards of the Presbyterian Church.' It would appear, however, that Professor Mecklin declares that his teachings in his class-room have never been inconsistent with the standards of that Church, as they are interpreted by many ministers and other members of the Church. It would seem from this that it is not Presbyterian doctrine as such, but some particular interpretation of that doctrine, which is required at Lafayette. The committee is anxious to be referred to some statement of that interpretation. It seems not unfair to ask that when a college thus stands committed to the teaching of a particular body of philosophical and religious doctrine, it should make clear to all concerned what that body of doctrine is, or indicate the creed or confession in which it may be found formulated.

"3. The attention of the committee has been called by a number of persons connected with the college, including members of the board of trustees, to article VIII. of the charter of the college, with which you are no doubt familiar. The committee is somewhat at a loss to reconcile this article of the charter with the statement which you have kindly made in regard to the doctrinal requirements imposed upon professors. Is this article held by the trustees to have been abrogated by subsequent acts? And is it held by the trustees that this clause is not a binding force in the execution of the trusts created by the benefactors of the college?

"The committee's desire is solely for an authoritative statement of the facts in the matter, which is clearly of general interest and concern to the entire body of teachers in philosophy and psychology. We of course take it for granted that the authorities of Lafayette College have no desire to prevent the facts from being fully known. We are therefore encouraged to hope that we may once more be favored with a reply to our request for information." To this letter President Warfield replied on December 26 as follows:

"I beg to acknowledge your letter in which you ask from me 'personally' 'some more specific statement' in regard to certain facts in connection with the resignation of Professor John M. Mecklin, Ph.D.

"I trust you will pardon me if I say that your committee has no relation to me personally which would justify my making a personal statement to you with regard to these matters.

"You are quite correct in supposing that the 'authorities of Lafayette College have no desire to prevent the facts from being fully known.' Those who were recognized as speaking for Dr. Mecklin formally requested of the board of trustees that no information should be given to the public with regard to what took place before

the board of trustees except that after the consideration of a report from the curriculum committee Dr. Mecklin offered his resignation, which was accepted, and that he was granted a year's salary. I feel myself absolutely concluded [*sic*] by this action from any personal statement in regard to several of the matters involved.

"The Synod of Pennsylvania is the duly constituted visitor of the college. The chairman of the committee of visitation for 1913 is a member of the staff of instruction of Union Theological Seminary of New York City.

"I hope you will, on reflection, perceive the impropriety of my discussing with your committee questions affecting the college or its members.

"Very truly yours,
(signed) E. D. WARFIELD."

This closes the correspondence between the committee and the president of Lafayette College.

On the same date on which the first-mentioned letter was addressed to President Warfield a copy of it and the appended questions was sent to Professor Mecklin, together with the following:

"We shall be obliged if you will put before the committee a statement of any facts which seem to you pertinent to our inquiry. We should like in particular to know:

"1. Whether, on accepting your appointment at Lafayette, you had either a tacit or definite understanding that your teaching was subject to certain doctrinal restrictions.

"2. What specific objections either to your teaching or to the text-books used were made by President Warfield in his letters to or conversations with you.

"3. By whose judgment your alleged departure from Presbyterian standards was determined.

"Any other documents bearing upon the case, in addition to those you have already sent Professor Warren, the committee will be glad to receive. Our purpose, as explained in the letter to President Warfield, is primarily to secure authoritative statements, not only of the facts in the case in which you were personally concerned, but also of the precise restrictions imposed upon freedom of inquiry and teaching in philosophy and psychology at Lafayette College." To this request Professor Mecklin responded with a full statement; he has subsequently answered directly and with detail further interrogations of the committee, has had an interview with several of the members, and has shown himself at all times ready to assist the committee in its investigation. The committee has also received, in reply to inquiries, letters from several members of the board of trustees of the college, and from members of the faculty, and has

seen letters concerning the character and religious influence of Professor Mecklin's teaching written by former students of his. In this material, which is too voluminous to reproduce, the committee believes it has sufficient evidence to justify it in presenting certain conclusions. These conclusions bear upon three general questions.

I. *What, before the present case arose, has been the accepted understanding as to the limits of freedom in philosophical and psychological teaching at Lafayette College?*

American colleges and universities fall into two classes: those in which freedom of inquiry, of belief, and of teaching is, if not absolutely unrestricted, at least subject to limitations so few and so remote as to give practically no occasion for differences of opinion; and those which are frankly instruments of denominational or political propaganda. The committee does not consider itself authorized to discuss the question whether the existence of both sorts of institution is desirable. If, therefore, the present case were one in which a teacher in a professedly denominational college had in his teaching expressly repudiated some clearly defined and generally accepted doctrine of that denomination, the committee would not feel justified in proceeding further with the matter. These associations should, in the committee's opinion, intervene in questions of this sort only for three ends: (1) To ascertain which institutions do, and which do not, officially profess the principle of freedom of teaching; (2) to ascertain, with a fair degree of definiteness, in the case of those institutions which do not, what the doctrinal limitations imposed upon their teachers of philosophy and psychology are; and (3) to call attention publicly to all instances in which, in institutions of the former sort, freedom of teaching appears to have been interfered with, or in which, in institutions of the latter sort, restrictions other than those antecedently laid down appear to have been imposed.

Upon the question whether Lafayette is to be classed with institutions of the first or second type, the committee finds a surprising measure of disagreement among officers, teachers, and graduates of the college. Article VIII. of the college charter provides:

"That persons of every religious denomination shall be capable of being elected trustees, nor shall any person, either as principal, professor, tutor or pupil, be refused admittance into said college, or denied any of the privileges, immunities or advantages thereof for or on account of his sentiments in matters of religion."

In accordance with this clause of the charter, a trustee writes the committee as follows:

"I need not remind you that Lafayette College is not a theological institution, nor does it profess to teach, or impose upon its

teachers or students, any creed or doctrinal religious standards.... Whatever may be Dr. Mecklin's impression of the attitude of the president, so far as the trustees and faculty of the institution are concerned, I know of no policy or shaping thereof that in any way involves the recognition or inculcation of any sectarian creed, Presbyterian or otherwise, much less any particular type of Presbyterianism." This interpretation of the charter—which is obviously in harmony with its text—is evidently shared by other members of the board of trustees.

On the other hand, the testimony of some members of the faculty, and that of President Warfield and Messrs. Hollenback and Radcliffe already cited, is that there is a general assumption that the teaching of professors shall be in harmony with the doctrinal standards of the Presbyterian Church. The General Catalogue (1912–13) contains the following statement (p. 146):

"The aim of Lafayette College is distinctly religious. Under the general direction of the Synod of Pennsylvania of the Presbyterian Church, its instruction is in full sympathy with the doctrines of that body. At the same time religious instruction is carried on with a view to a broad and general development of Christian character, within the lines of general acceptance among evangelical Christians, the points of agreement, rather than those of disagreement, being dwelt upon."

The last sentence would appear to indicate the understanding upon which Professor Mecklin accepted the call to the professorship of philosophy and psychology in 1904; he writes that he then and at all times recognized that his teaching, "as well as that of every other professor," was to be "in accord with Christianity in the broad evangelical interpretation of that term."

Here, then, would appear to be three distinct views of the position and policy of the college: It is committed to no specific creed; it is committed only to the principles of "evangelical Christianity"; and it is committed to the principles of the Presbyterian Church. The committee, for the rest of this report, assumes that substantially the last-mentioned view is to be taken as the answer to the first question,—that, in the words of a trustee, it has been "commonly understood that the teachings in such departments [*i. e.*, those of philosophy and psychology] are in general to be in harmony with the doctrines of philosophy usually taught and held in the Presbyterian Church." But the committee can not but think it highly undesirable that in any college a question of such importance should be left open to such divergent official answers; and it appears of doubtful legality that the prevailing practise in the matter should be in express contradiction with an unrepealed clause in the college charter.

II. The second question which the committee has endeavored to answer is: *What were the actual grounds upon which Professor Mecklin's resignation was asked for, and what do these indicate as to the doctrinal limitations imposed upon professors in philosophy and psychology under the present administration of the college?* Upon this the committee's findings are as follows:

1. No connected and altogether definite statement seems ever to have been formulated of the specific points in Professor Mecklin's teaching to which objection was made, or of the manner in which these were held to conflict with Presbyterian principles. A member of the board of trustees of the college, who was present at the meeting of the curriculum committee at which the matter was first brought forward, states that he was unable from the discussion at that meeting, or in any other way, to ascertain precisely on account of what charges as to doctrines held or taught by him Professor Mecklin was dismissed. This trustee writes that the accusations of erroneous doctrines or opinions made against Professor Mecklin at this meeting "were indefinite and as far as I am concerned remain so to this present time." Another correspondent conversant with the facts writes the committee that the president of the college simply asserted that "the doctrines set forth in certain text-books adopted by Professor Mecklin, *viz.*, Angell on Psychology, Dewey and Tufts on Ethics, McDougall on Social Psychology, and Ames on the Psychology of Religious Experience, were a departure from the doctrines that had been taught in the college in previous years. No definite statement was ever made by the president to the board of trustees, so far as I recollect, of the exact teachings to which he made objections, other than the general objections to the text-books above mentioned, and a general and indefinite statement that the teachings of Professor Mecklin were not in harmony with the traditional teachings of the college in the department of philosophy. Previously to Professor Mecklin's occupying the chair of philosophy, the teaching in that department had for some years been by Presbyterian clergymen who devoted a portion of their time thereto, but did not undertake to present to the student any clearly defined system of philosophical instruction. Professor Mecklin undertook to introduce such a system of instruction, in line with other first-class educational institutions, some of which were well-known Presbyterian colleges, and used in connection therewith, among others, the text-books above mentioned. Some of his teachings as inferred from the said text-books were objected to by the president as contrary to the traditional teaching of the college on these subjects. The board of trustees did not pass upon the questions raised, although they discussed them, and there was a difference of opinion among them on the subject. Some of

the trustees, feeling it desirable that a controversy of a religious or denominational aspect should be avoided, thought it wisest, in view of all the circumstances, to advise Professor Mecklin to resign rather than have the discussion proceed to a vote, which might or might not have been in his favor." There seems, in short, to be no general and clear understanding among the members of the board of trustees and the faculty of the college as to the precise doctrinal grounds upon which the president's insistence on Professor Mecklin's dismissal was based. It is the opinion of the committee that in no institution, of whatever type, should a professor be compelled to relinquish his position for doctrinal reasons, except upon definite charges, communicated to him in writing and laid, with the supporting evidence, before the entire board of trustees and the faculty; and that it is unfortunate in any case of this kind that, even by agreement between the persons concerned, the matter should fail to be brought to an explicit issue before the responsible governing body of the institution.

2. It is not, however, impossible to gather from various evidence examined by the committee, some indication of the feature of Professor Mecklin's teaching to which primarily President Warfield took exception. His objections seem to have been originally directed against the text-books already mentioned, and in these chiefly against a certain doctrine. The first intimation to Professor Mecklin that his resignation was likely to be demanded was in a letter from President Warfield of March 28, 1913, excerpts from which follow:

"The papers [certain examination papers] which you sent me on Monday are simply astonishing. They seem to confirm all that has been rumored and to give body to those rumors. It would not be just to you or to me if I failed to say so at once and frankly to ask for a full statement of your position in regard to this matter and to the chair which you hold. . . . My personal regard for you is such that any criticism of or objection to your work gives me the greatest pain. But obligations I can not escape make it necessary for me to ask you to give a full and clear statement with regard to your teaching and to say, in as kind a spirit as possible, that as president of the college I insist that the instruction in the department of philosophy shall be consistent with the professions made by its authorities. I shall be glad to give you every opportunity to explain your opinions and your teachings, but I ask that you do so explain them or retire from the chair which you occupy." It appears that the feature of the examination papers in Professor Mecklin's course on "Theism" which aroused these expressions was the application of the conception of evolution, or what Professor Mecklin designates as "the genetic and functional method," to the history of religion,

including the religion of Israel. And the statements of several members of the faculty show it to be their understanding that, in the words of one of them, "the objection to Dr. Mecklin's teaching was based upon his use of the doctrine or theory of evolution in his discussion of the growth of religion."

So far, then, as may be gathered in the absence of definite charges, the doctrine mentioned would appear to have been the original and decisive ground of the president's objection to Professor Mecklin's teaching. Other objections to the contents of the text-books used by him were subsequently introduced; and exception was taken also to an article published by Dr. Mecklin in *The International Journal of Ethics* in April, 1913. Your committee is not clearly informed as to the passages in this article which President Warfield regarded with disfavor. In a newspaper statement, given out after Professor Mecklin's resignation, President Warfield declared that his objection was to the "scope and method" of Dr. Mecklin's teaching, "especially to his extending the instruction of his chair into departments which never were intended to be embraced in it, particularly the psychology of religious experience." It is abundantly evident, however, that the question at issue was not the extent, but the actual or supposed content of Professor Mecklin's teaching; and the committee therefore supposes that the expressions in the president's published statement refer in an obscure manner to his disapproval of the doctrine already indicated.

3. The committee as a body has, of course, no competency to discuss whether the doctrines and the text-books in question are or are not in harmony with Presbyterian standards. The committee thinks it pertinent, however, to make the following observations:

(*a*) At the time of his resignation Professor Mecklin was an ordained Presbyterian minister in good standing, and was frequently called upon to preach in churches within the Synod of Pennsylvania.

(*b*) Certain of the text-books which appear to President Warfield to be of a dangerous tendency are in use in other colleges of definitely Presbyterian affiliations.

(*c*) Professor Mecklin declares:

"I have respected the denominational (Presbyterian) connections of the college in my teachings, in that I have not allowed moot theological questions, such as the supernatural, to rise in the discussions of the class-room. I did not think, however, when I accepted the chair, that these theological connections would be incompatible with the use of the best text-books and the most approved scientific methods in such subjects as psychology and ethics and the philosophy of religion. The president and his supporters on the board of trustees objected that the implications of functional psychology and the

genetic method are antagonistic to the ultra-conservative (Princeton) type of theology which they identify with evangelical Christianity; hence the issue resulting in my resignation." It is also the testimony of several members of the Lafayette faculty that it is generally understood in the College community that Professor Mecklin abstained from the direct discussion of questions of dogmatic theology.

(*d*) It appears to be the understanding of most of the members of the Lafayette faculty who have answered our inquiries, that at present adherence to a particular form of Presbyterian theology is expected of the professor of philosophy and psychology. One writes: "The teachings of the professor of philosophy are expected to conform to the standards of the most orthodox form of Presbyterianism, *viz.*, the Princeton type." (The references to "Princeton" here the committee understands to be to the Princeton Theological Seminary, of which institution Dr. Warfield is president of the board of directors.) Another member of the Lafayette faculty writes: "The creed to which the professor of philosophy and psychology is required to conform is, I should say, that of the most conservative branch in the Presbyterian Church." A third, in reply to the question: "In cases of alleged deviation by any professor from the doctrinal standards of the college, by whose interpretation of these standards is such deviation determined?" answers: "The president of the college." Finally Professor Mecklin states to the committee:

"Last spring, after receipt of the President's letter, I asked what he meant by the 'standards of the Presbyterian Church.' He said in reply that he meant by that term the type of Presbyterianism found in the Southern Presbyterian Church and in Princeton Seminary."

In view of these facts, the committee is forced to conclude that at Lafayette College at the present time tenure of the professorship of philosophy and psychology is, in practise, subject, not only to the requirement that the teachings of the incumbent shall be in substantial harmony with the commonly accepted doctrines of the Presbyterian Church, but also to the requirement that his teachings shall be in substantial harmony with the theological opinions of the administrative authorities of the college, and with their interpretation of the philosophical implications of those opinions. The committee also concludes that the statement of the Lafayette College Catalogue, that the religious instruction there "is carried on within the lines of general acceptance among evangelical Christians, the points of agreement, rather than those of disagreement, being emphasized," is not accurately descriptive of the present policy and practise of the college. The committee further gathers from various evidence brought to its notice that the administration of the

college disapproves of the mere presentation to the students, through text-books or collateral reading, of any philosophical views which it regards as seriously erroneous, and discourages instruction which has the effect, as Professor Mecklin's evidently had, of provoking thought and stimulating discussion and debate among the students upon philosophical and religious issues.

4. It remains to inquire, in this connection, whether these special restrictions were imposed, as President Warfield intimates, in part because of the terms of the gift by which the chair of philosophy in this college was endowed. Upon this point the committee finds three considerations to be relevant:

(*a*) It does not seem that the incumbent of a particular endowed chair in any college can rightfully or lawfully be subjected to requirements to which the charter of that college declares that no professor shall be subjected.

(*b*) The letter of President Warfield (December 6, 1904) by which Dr. Mecklin was called to this professorship contained no intimation that the position was regarded as subject to special or peculiar doctrinal restrictions. It declared only that the person to be appointed "must approach the work from the point of view of the teacher interested in grounding young men in a sound philosophical basis for the experiences of life," and that he should be "an earnest Christian man" having the ability "to anchor strong characters to high truths."

(*c*) Professor Mecklin informs the committee that when he learned that his teaching was being criticized, he sought out the founder of the chair, explained his own attitude and his views about the work of the department, and offered to resign his position if the donor felt that the purposes of the foundation were being defeated. Dr. Mecklin assures the committee that the donor declared that he had no such feeling and deprecated the step which Dr. Mecklin had offered to take.

III. The third general question taken up by the committee concerns the attitude of the administrative authorities of Lafayette College towards the committee's inquiry. The letter already given, signed by the president of the college, the president of the board of trustees, and the chairman of the curriculum committee, can be construed by your committee only as a courteous declination to give these associations the definite information asked for. The subsequent letter of President Warfield accentuates this declination. It is true that in this letter he gives as a reason for his refusal to make "a statement with regard to these matters" a formal request by "those who were recognized as speaking for Professor Mecklin" that "no information should be given out with regard to what took

place before the board of trustees except that after the consideration of a report from the curriculum committee Dr. Mecklin offered his resignation which was accepted and that he was granted a year's salary.'' President Warfield thus represents his reticence as actuated, at least in part, by a deference to Professor Mecklin's wishes. Upon this matter Professor Mecklin makes the following statement to the committee: that no such request was made to the trustees by his authority; that, on the contrary, he regarded such a policy of secrecy about the causes and circumstances of his resignation as unfair to him and likely to be detrimental to his professional reputation; that he expressly informed a committee of the trustees which conferred with him that he desired no concealment of the grounds for the action taken; that he has publicly given evidence that such was his desire, by his letter on the case, published in THE JOURNAL OF PHILOSOPHY; and that his wish that the facts should be fully made known has come within the knowledge of President Warfield. Your committee notes, also, that there was published in the Philadelphia *Public Ledger* of June 20, 1913, a long and circumstantial, though incomplete, statement (already referred to) by Dr. Warfield respecting Dr. Mecklin's resignation; it can not, therefore, be said that hitherto ''no information'' has been ''given to the public with regard to what took place before the board of trustees,'' beyond that contained in the letter above cited. In view of these circumstances the committee finds itself unable to suppose that the decisive reason for President Warfield's reluctance to answer its inquiries is his consideration for the interests and wishes of Professor Mecklin. The committee notes, moreover, that two out of the three questions last laid before President Warfield asked for information, not about the resignation of Professor Mecklin, but about the general policy of the college and the specific credal requirements attaching to the professorship of philosophy and psychology. These inquiries, also, President Warfield has declined to answer. He intimates, indeed, that he regards it as improper for persons not connected with the college to ask, or for him to answer, ''questions concerning the college or its members.''

The attitude thus assumed does not seem to this committee one which can with propriety be maintained by the officers of any college or university towards the inquiries of a representative national organization of college and university teachers and other scholars. We believe it to be the right of the general body of professors of philosophy and psychology to know definitely the conditions of the tenure of any professorship in their subject; and also their right, and that of the public to which colleges look for support, to understand unequivocally what measure of freedom of teaching is guaranteed in any college, and to be informed as to the essential details of

any case in which credal restrictions, other than those to which the college officially stands committed, are publicly declared by responsible persons to have been imposed. No college does well to live unto itself to such a degree that it fails to recognize that in all such issues the university teaching profession at large has a legitimate concern. And any college hazards its claim upon the confidence of the public and the friendly regard of the teaching profession by an appearance of unwillingness to make a full and frank statement of the facts in all matters of this sort.

(signed) A. O. LOVEJOY, *Chairman,*
Johns Hopkins University.
J. E. CREIGHTON,
Cornell University.
W. E. HOCKING,
Yale University.
E. B. MCGILVARY,
University of Wisconsin.
W. T. MARVIN,
Rutgers College.
G. H. MEAD,
University of Chicago.
HOWARD C. WARREN,
Princeton University.

REVIEWS AND ABSTRACTS OF LITERATURE

The Influence of Monarchs. FREDERICK ADAMS WOODS. New York: 1913. Pp. 13 + 422.

In "Heredity in Royalty," Dr. Woods measured the resemblance of related individuals in intellect and morals, and presented evidence to show that nearly all of this resemblance was referable to inborn nature. In the present volume he measures the relation between a monarch's ability and the progress during his reign of the people over whom he rules. The data considered reach down to the end of the eighteenth century. The ability of a monarch is defined as the general consensus of historians would define it; the progress of the people in question is a mixture composed, apparently, chiefly of material well-being, partly of safety and expansion as a nation, and, to a less degree, of individual liberty and gains in science, letters, and art. The comments of standard historians impartially collected serve to grade the two facts, in each case, as superior, medium, or inferior. A "raw" correlation of .6 is found between the ability of the monarch and the progress of his people. Dr. Woods shows that most of the factors producing unreliability in the original data act to make this "raw" correlation less than it would be were the data unexceptionable.

He does not regard certain contrary tendencies—to credit a monarch with ability when his realm progressed for whatever cause, and rate him unduly low when, by calamities, however caused, his rule suffered—as of great magnitude. In general, then, the rise and fall of national well-being on the material and political sides is due in large measure to heredity and variation acting on the gametes of royal families and the noble families who have usurped or been granted monarchical position. England seems to have emancipated herself from dependence on the quality of its kings by about 1600.

As in the "Heredity in Royalty," Dr. Woods seems to assume that intellect, ability, kindness, and chastity are unit characters, segregating in the gametes. This is not necessary to his argument, and is in rather direct opposition to the general findings of individual psychology, and indeed, to some of Dr. Woods's own measurements. For example, if intellect and morality were unit-characters due to the presence or absence of a single determiner in the germs, a continuous gradation from very high degrees that are rare through mediocre degrees that are common to very low degrees that are rare, would not be the form of distribution for them.

It should be noted further that Woods's measures of the condition of a country's inhabitants, since they are based on the judgments of historians, and since these in turn are probably often *relative* to a standard of what in general might be expected in that land and era, are not, and do not pretend to be, *absolute* measures of real advance from or retrogression toward some defined zero-point of well-being.

Those students of history who are rebelling against being confined to history as a record to be enlarged and corrected, and who envy the student of the natural sciences, will find cause for hope in Dr. Woods's book and suggestions in his methods that are applicable to the investigation of many problems in the so-called "philosophy" of history. Woods is devoted to the cause of replacing individual impressions concerning causes and effects in human affairs by objective measurements of relations and more unbiased massing of evidence. The criticism that is likely to be made of such historiometric work is that it can not be done. The scientific retort to this criticism is to go ahead and try to do it; Dr. Woods so retorts in this volume, and, in my opinion, with success.

E. L. THORNDIKE.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE NÉO-SCOLASTIQUE DE PHILOSOPHIE. August, 1913. *Vers l'unité* (pp. 253–278): D. MERCIER. – The moral, as well as the speculative order, must be brought under the control of reason, so that the contents of human consciousness may be united in an integral synthesis. *La démonstration métaphysique du libre arbitre* (pp. 279–293): P. DE MUNNYNCK. – In order to prove the existence of free will, we must not resort to the testimony of consciousness, as has been done too often

since Descartes, but to the metaphysical argument. *L'esthétique de Plotin* (pp. 294–338): Jos. COCHEZ. – In Plotinus's system, the first place belongs to the beautiful and the good. Intelligence is subsistent beauty; the soul is beautiful through intelligence; everything else is beautiful through the soul. *Le Pragmatisme en morale* (pp. 339–365): F. PALHORIÈS. – In the system of the pragmatists, moral science has lost its proper object and is bound to disappear. *Godefroid de Fontaines* (pp. 365–388): A. PELZER. – A description of the extant manuscripts of Godefroid de Fontaines, a Belgian philosopher of the thirteenth century. *Le mouvement néo-scolastique* (pp. 388–395): M. DE WULF. *Comptes rendus:* A. Mansion, *Introduction à la physique d'Aristote:* G. COLLE. J. Lemaire, *Cosmologia sive philosophia mineralium:* D. NYS. J. Dedieu, *Montesquieu:* G. LEGRAND. B. Petronievics, *Principien der Metaphysik:* M. DEMUTH. A. Appelmans, *La protection des animaux:* J. LEMAIRE. Dr. Hornich, *Viertes Jahrbuch des Vereins fur christ. Erziehungswissenschaft:* F. DE HOVRE. J. Ingenieros, *Principios de Psicología biológica:* J. VAN MOLLÉ. *Chronique. Sommaire idéologique des ouvrages et revues de philosophie.*

Shaw, Charles Gray. The Ego and Its Place in the World. New York: The Macmillan Company. 1913. Pp. xii + 523. $3.75.

Tagore, Rabindranath. Sādahana; The Realization of Life. New York: The Macmillan Company. 1913. Pp. xi + 164. $1.25.

Wallin, J. E. Wallace. Psychological Aspects of the Problem of Atmospheric Smoke Pollution. Pittsburgh: University of Pittsburgh Press. 1913. Pp. 46.

Ward, James. Heredity and Memory. Cambridge: University Press. 1913. Pp. 56. 1s. 6d.

NOTES AND NEWS

LETTER FROM PROFESSOR MAJOR

TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY, AND SCIENTIFIC METHODS:

Two points in the review of my "Elements of Psychology"[1] seem to call for brief notice. (1) The reviewer is evidently unfamiliar with the distinction between the broad generalization known as the law of psychoneural parallelism and the several doctrines described under the heading—psychophysical parallelism, and so finds what he thinks is an incurracy in statement. In passing, I may say that in order to avoid all possible misunderstanding the term "psychoneural correlation" will be substituted, in the revised edition, for the term "psychoneural parallelism." (2) The diagram on page 47 of the text has had a sorry time of it at the hands of several critics, and no doubt it could be greatly improved. And yet I am inclined to think that if it is examined in connection with the descriptive matter of the text (p. 48), and if the reader remembers that the diagram

[1] This JOURNAL, Vol. X., page 669.

professes to be only a diagram (not a figure), his reaction will be a trifle milder than that of the reviewer cited above.

Very truly yours,

DAVID R. MAJOR

UNIVERSITY OF OHIO.

A meeting of the Aristotelian Society was held on December 22, Professor G. Dawes Hicks, President, in the chair. Mr. C. Delisle Burns read a paper on "William of Ockham on Universals." The problem of the reality of universals and particulars is not purely medieval, and not only of historical interest. The difficulties which were once faced by William of Ockham still need discussion. The problem arises in the perception that we do not quite know what we mean when we say that two things are similar. Various forms of modern idealism seem to imply that what is real is ultimately and most truly one and indivisible. The particular and the distinct should therefore have no reality except the conventional reality given it by our need for action or the unfortunate limitations of "finite" mind. But this is simply to adopt the solution offered by all medieval realism in its modern form, as in Thomas Aquinas and Duns Scotus. It must mean that particulars are to be explained finally in terms of universals; or at least that the individual is regarded as a difficulty remaining over to be explained after we have grasped the real nature of the whole. And it was to destroy precisely this form of philosophy that Ockham labored. The interest of the position as Ockham found it is that it was practically the same as that which we find to-day in surviving idealism.—*Athenaeum.*

DR. FRANK P. GRAVES, of the Ohio State University, has been appointed professor of the history of education, and Dr. Harlan Updegraff, of Northwestern University, professor of educational administration at the University of Pennsylvania. Professor A. Duncan Yocum, who has occupied the chair of pedagogy at that institution, will continue as professor of educational research and practise.

PROFESSOR SHEPHERD IVORY FRANZ, scientific director and psychologist of the Government Hospital for the Insane, Washington, D. C., recently addressed the Medical Society of St. Louis, on the subject of "Psychological Factors in Medical Practise."

A REGULAR meeting of the New York University Philosophical Society was held on Tuesday evening, January 13. Professor John Dewey, of Columbia University, read a paper on "Some Conceptions of Pragmatism."

MR. H. G. CHILDS, professor of educational psychology in the Brooklyn Training School for Teachers, has accepted an appointment to the chair of educational psychology in the University of Indiana.

MR. A. G. STEELE has been appointed head of the department of psychology in Temple University, Philadelphia, Pa.

MRS. CHRISTINE LADD-FRANKLIN recently held a conference on Color-vision at the Brooklyn Academy of Music.

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SOCIETIES

TWENTY-SECOND ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

THE twenty-second annual meeting of the American Psychological Association occurred at Yale University, December 29 to 31. From first to last the attendance was large and representative of the northeastern part of the country. The chief social feature was the joint banquet held at the Hotel Taft in connection with the American Philosophical Association. Numerous smaller impromptu luncheons, occurring at other times, contributed to the pleasure and value of the meeting.

At the business meeting the several standing committees and officers presented reports and appropriations were made to cover committee expenses. Professor Whipple resigned from the committee on teaching experiments and Professor Kirkpatrick was elected to the vacancy. The next annual meeting is to be held at Philadelphia in affiliation with the American Association for the Advancement of Science. For that meeting the following officers were elected: President, Mr. R. S. Woodworth; New Members of the Council, Mr. G. N. Whipple and Mr. S. I. Franz. Mr. R. M. Ogden was elected secretary-treasurer for a period of three years, and a stipend of two hundred and fifty dollars per annum was fixed for the position on recommendation of the council. Mr. E. B. Twitmyer was elected representative of the association on the council of the American Association and the nominating committee for the coming year consists of Messrs. H. W. Warren, E. L. Thorndike, and J. R. Angell.

On motion of Mr. Urban a committee of three is to be appointed by the president to consider the advisability and means of offering prizes for distinguished work in psychology.

There was considerable feeling manifested that the association meetings can be made more helpful than they are. This feeling found expression in a recommendation of the council that next year the executive committee arrange for more informal dinners, smokers,

luncheons, etc. Such meetings, it was thought, would favor informal conferences among persons of kindred interests.

One round-table conference on mental tests of college students found a place on this programme. Mr. Woodworth presided, and there was discussion by Messrs. Whipple, Cornell, Bingham, Wells, Major, Porter, Haggerty, and others. If arrangements for such round-tables can be made so that persons interested in similar problems can be brought together for informal discussion, the value of the annual meetings will be greatly enhanced. Our sessions are too often made up of condensed lectures and too little discussion. This result is almost unavoidable with our programmes arranged as they now are. Where the materials for the programmes are offered by individuals, there is sure to be a heterogeneous list of subjects. The secretary must then do heroic work to arrange these into sessions with some degree of unity. The interest of recent meetings is due largely to the success of the retiring secretary in accomplishing this feat. This method of securing a programme, valuable as it is from certain points of view, has serious limitations and the newly elected officers may well study methods for improving the general plan.

The apparatus exhibits begun at the Washington meeting continue to be a source of great interest. The Stoelting exhibit was again on display and there were individual pieces shown by Messrs. Whipple, Dunlap, Dearborn, McComas, Kirkpatrick, Bentley, Franz, Porter, Hays, Warren, Bingham, and others.

The programme of forty-four papers had but three lacunæ due to absence. At one time double sessions were necessary. In spirit the meeting had a decidedly behavioristic tendency. More than half the papers either championed the behavioristic point of view in one or another form or reported experiments pursued through behavioristic methods. A considerable part of the time the word itself was in the air.

Mr. Warren, in the president's address on "The Mental and The Physical," championed a monodualistic view of mind and matter. He contended that science is not yet ready to adopt a metaphysics of mind and matter. But some working hypothesis of the psychoneural relation is needed in order to fix the scientific status of psychology. The double-aspect view (monodualism) seems to fit the conditions best. This conception of the relationship between mental and physical becomes clear when we examine the analogous relation between surface and mass in our perception of material phenomena.

If mental and physical activity are two inseparable aspects of one series of events, then the scientific assumption of uniformity or "law" is extended from the physical into the mental sphere. The old anthropomorphic conception of choice and reason must be radi-

cally amended. In the light of modern science the presumption is that mental phenomena, including choice and reason, are as uniform as physical events. The burden of proof rests on those who deny the regularity and determinacy of human volition and human reasoning. Even teleology may be brought into line with the mechanistic processes of nature. Foresight is the conscious counterpart of purposive activity, which is due to distant stimuli preparing the response to contact stimuli by means of a complex nervous mechanism; the beginnings of this purposive activity are manifest far down the organic scale.

Psychology should embrace both the inner and outer aspects of experience. It is the science of the relations between the individual and his environment. These relations may be studied either objectively as behavior, or introspectively as events of consciousness. Behavior study is essential to an understanding of genetic problems; it serves also as a check on the data of introspection. Introspective psychology has disclosed uniformities among mental events; it claims recognition by science on the ground that science should include every branch which contributes to a unified view of the world. The behaviorist himself admits that consciousness is a necessary instrument of research. Without it there would be no scientific observation or generalization. Sense perception and the logical processes require analysis quite as much as the facts and values which they reveal. Science must study its instruments as well as its data.

In opening the joint session with the philosophers, Mr. Creighton contended for a psychology which is not existential, but teleological. The physical sciences, based on the mechanical theory, do not describe concrete individual things, but seek to determine the *general* conditions and relations of material existence. Psychology has attempted to obtain information of the same type as that expressed in the laws of physical nature. Its laws, therefore, refer to the conditions of mentality in general, in abstraction from the *individualized* form of concrete minds. The question arises whether these abstract conditions of mentality have not ultimately to be expressed in physiological rather than in psychological terms. Is it possible to maintain that there are *existing* processes or modes of consciousness or even that there is any genuine scientific advantage in describing mental life from this point of view? Even if we grant, as it is probably necessary to do, that a psychological physiology or a physiological psychology is necessary, yet this type of science does not satisfy all the legitimate demands that are made upon psychology. There is also necessary a science of psychology, which shall deal with the concrete individualized form of experience and which shall express its results in terms of a different mode of uniformity from

that of the natural sciences. Its method is teleological rather than casual, and its standpoint is that of the concrete self in its relations and functions. This type of psychology is no mere unrealized ideal, but is found both in the historical systems and in contemporary investigations. Its method of analysis is different from that of the existential psychology, but not inferior in either definiteness or certainty.

Mr. Urban contended that psychology has the same need as any other science of the support of philosophy, because philosophy develops its methods and problems independently and takes its material from the whole field of experience. Certain problems lead more directly to philosophic speculation, and it is in clearing up these ideas that philosophy may be of assistance to psychology. The notions of introspection, probability, and of the psychometric functions are used as examples. In trying to correlate mental states, as revealed by introspection, with definite groups of conditions one encounters the difficulty that no group of conditions, no matter how carefully controlled, will always produce the same mental content. As a matter of fact, judgments given on the comparison of two stimuli have all the features of chance events, and the question arises whether we have to conclude from this that they are not causally necessitated. The notion of the psychometric functions offers a problem of similar great generality. In empirical determinations of these functions one has to restrict oneself to certain simple expressions called analytic functions. This restriction contains certain implications which may be broadly stated in this way. Events characterized by such functions may be fully determined on the basis of a finite number of observations, and, once determined, the course of these functions may be followed up indefinitely into the future or back into the past. The assumption that the events of nature may be represented by analytic functions must be made every time mathematical reasoning is applied to the study of nature, because the general type of function can not be used successfully. Can this restriction be justified? It seems that it is at the bottom of certain peculiarities of our notions about causality. The way to advance this problem consists in analyzing the logical implications of this assumption and finding the consequences of dropping it as a whole or in part.

The behaviorist note was present in Mr. Dewey's discussion of the standpoint of psychology. The speaker dealt with the topic "as it presents itself in the actual teaching of philosophy." Whatever may be the abstract theoretical aspects of the methodology of the two subjects, from the standpoint of the present teaching of philosophy, the subject of philosophy is intimately tied up with the conceptions

involved in the current teaching of psychology. It was pointed out that almost all the epistemological problems that are in the forefront of discussion to-day are what they are because of the fact that psychology is thought to afford scientific warrant for belief in a separate psychic or mental realm of existence, having its own self-contained entities, laws, and systemizations, and for the belief that these psychic existences are either the primary immediate data of knowledge or else the terms and units out of which knowledge is composed. Hence such problems as whether we can know an external, material world, and if so, how; whether there is any reason for believing in such a world; whether the psychic event or "consciousness" modifies the real object in the act of knowing it; how mind and body are connected in acts of knowing and willing; whether a psychic existence can have physical efficiency; whether it falls under the law of causality applicable to physical existence, etc. The genuineness of such problems and the significance of the philosophy that deals with them is absolutely dependent upon the standing of the primary conception brought over from psychology. It was pointed out that if the "behavior" movement made much headway in psychology, students (and future teachers) of philosophy would approach philosophy with such different preconceptions as radically to alter the subject-matter and method of philosophical discussion. In conclusion, the question was raised how far the fundamental assumption of current introspective psychology had itself grown up within psychology on the basis of its own scientific data and how far it was a heritage from the philosophy of Locke and Descartes. If it should turn out to be the latter, the circle of relationship between current psychology and current philosophy would be complete; so that however distant from the ideas of the seventeenth century philosophers prided themselves upon being, they would still be inquiring into their topics from the standpoint set by those ideas.

In animal psychology, which seems to be the field out of which the term behaviorism takes its rise, there were four papers. Mr. Craig reported on the attitudes of appetition and of aversion in doves. He defined an attitude of appetition as a condition in the bird which keeps the bird restlessly active, trying now this and now that, until at last he gets from the environment that particular stimulus which sets off a final reaction (*end-reaction*) after which the bird appears satisfied and restful. In some cases the appetitive attitude is an incipient end-reaction; in other cases it is different from the end-reaction. The stimulus sought, which is needed to activate the end-reaction, may be the stimulus of an entire situation, involving even memory factors. Many instincts of birds are of an opposite type, namely, attitudes of aversion, which keep the bird

restlessly active so long as a certain stimulus is present, but give him peace after he has succeeded in ridding himself of that stimulus.

It has been said erroneously that in animals there is no true distinction between work and play, that the animal's activities are all play. A dove may be observed to make repeated trials to overcome difficulties, enduring bodily injury, and continuing the struggle for a long period, urged on all the while by an appetitive (or aversive) attitude tending toward a certain end-situation. This is work. Doves exhibit also conflict of attitudes, hesitation, and a final overcoming of one attitude by the other. In certain cases the attitude which stimulates the agent himself serves to stimulate also other doves (patients) toward the same or correlative ends.

Regarded simply as observable motor phenomena (disregarding questions of intelligence, and of conscious states) these activities of birds seem to be the same, only more simple, as the behavior activated by desire, purpose, volition, in men.

Mr. J. F. Shepard contrasted the labyrinth learning of ants, rats, and cats with the learning of man. The former learn backwards while normal people learn more rapidly from the beginning of the maze. There must, therefore, be "some difference in organization which gives the ant, the rat, the cat, and the person different types of control of behavior. It is suggested that the theory which gives association a character of inhibition as positive as excitation may be a possible explanation of this organization."

Mr. Cole reported an investigation on color-blindness of cats. Two cats confused a yellow with a white paper of the same flicker equivalent. Two others confused Bradley standard blue with a dark gray cambric and with a blue cambric, with which in turn they confused the same gray. Two other cats confused red with black, and two others confused Bradley green with Bradley "cool dark gray." *Thus a gray was found which was confused by two cats with each of the colors yellow, blue, red, and green.* All confusions persisted for more than six hundred trials. Hering grays were found to be useless for the experiments. The two cats which had learned to select yellow as a food-color confused it with each of twelve colors of nearly the same flicker equivalent. In the same way blue was confused with three others colors, green with seven, and red with nine other colors.

As we worked through the spectral colors in order an area of "difficult discrimination" was found partially surrounding each "confusion area." Two persons with dichromatic vision were asked to sort these color-papers as Holmgren worsteds are sorted. Each of the dichromates made five confusions which had been made by the cats. Both of the dichromates and the cats agreed in the matches

(confusions) of two pairs of colors, and for each of these pairs the flicker equivalents were identical. The colors confused with yellow and green had almost the same flicker equivalents as yellow and green, respectively, while those confused with red and blue varied widely in flicker-value. This would suggest a shortened neutral spectrum, yet while red was confused with black, blue was confused with a very dark gray, but not with black. The work was done under natural, daylight conditions, and the fact that so many confusions were found suggests that, under the precautions taken, the visual sense alone could be employed by the animals. In the light of Ives's recent results,[1] which show that the flicker method is superior in both "sensibility and reproducibility" to the method of equality of brightness, flicker values can hardly be ignored in experiments on vision.

Mr. Cannon reported further on the physiological effects of fear and rage. In addition to restoring a fatigued muscle wholly or almost wholly to its original irritability, injected adrenalin markedly increases the speed of coagulation of the blood. The adrenalin liberated in pain and the major emotions hastens greatly the clotting of blood. This reaction would be serviceable in case of injury to blood-vessels in conditions which rage and pain might involve.

One session on experimental psychology was devoted chiefly to papers on vision. Mrs. Ladd-Franklin proposed to reform color terminology. It is wrong to permit the term *color* to be used with its present ambiguity,—as both including and excluding the series of grays. The term is needed in the inclusive sense, and there is a simple means at hand by which we may make it unambiguous,—for color proper, we should say *chroma*. We have already all its derivatives in common use, dichromatic, achromatic, tetrachromatic (for normal four-chroma vision). For the grays, including black and white, she proposed to make use of the term *achroma*. With these two names for the specific and the non-specific light-sensations, we have at once two good words for the *degree* in which each sensation-constituent is present in, say, a grayish blue: we can speak of its chromaticity and of its achromaticity.

There are four unitary colors proper, or chromas, and four series of color (chroma) blends. The words orange and purple should never be admitted into scientific speech,—non-unitary colors should not be given unitary names. Just as there exist no unitary names for the yellow-greens and the blue-greens, so we should, in the other two series of color-blends, speak always of the red-blues and the red-yellows.

The term *brightness* has been thoroughly vitiated for scientific

[1] *Phil. Mag.*, 1912.

use by the absurd color theory of Hering—his followers mean by it three things at once: (1) brightness in the real sense; (2) an assumed whiteness-constituent (though the color may be, for sensation, prefectly saturated); and (3) an imagined dissimilation-process which is taken to be its physiological correlate. Since it is impossible to rescue this word, at present, for its correct meaning, it is indispensable to discard it entirely. Its place should be taken by luminosity, or subjective intensity. Hering has said lately that those who can accept neither the psychological nor the physiological conceptions which lie at the base of his theory, may nevertheless be grateful for his terminology. But in fact his terminology, as regards "brightness" at least, is almost worse than his theory. His theory is, moreover, so bound up with his baseless terminology that the simple restitution of the term brightness, for instance, to its natural and unambiguous significance (subjective intensity or luminosity) would suffice, I have no doubt, completely to upset his theory. It is the surreptitious introduction of Hering's hypothesis as to the physiological substratum of brightness under this triply ambiguous term that permits one to be oblivious of the untenableness of the theory. A corrected color-terminology, therefore, far from being immaterial, is bound to have important logical consequences.

Miss Cook reported an investigation of the relation between the quality of colors which pair off as complementaries, and those which mutually induce each other in simultaneous contrast. The method was that of making color equations by means of rotating disks of colored papers. Both complementary and contrast colors were formed by the usual procedure. The results agree with those of Tschermak[2] in showing that the contrast color is both redder and bluer than the complementary. The discrepancy is slight for red and for green, large for yellow and for blue.

The anomaly is explained by Tschermak as being due to reddish-blue adaptation of the eye in ordinary daylight. If this were the case, the direction of the anomaly could be changed by artificial color-adaptation to different colors. Experiments under conditions of artificial color-adaptation, however, show no variation in the direction of the anomaly and only negligible variations in its amount, whether the eye be adapted to red, blue, yellow, green, gray, or to ordinary daylight. Evidently, therefore, Tschermak's explanation is inadequate, but the experimenters have no better one to offer.

Mr. Langfeld reported on a case of color hearing. The phenomenon of color hearing of a talented musician was examined twice, a period of seven years intervening between the two investigations. It was found that the colors agreed even to the

[2] *Pflüger's Archiv*, 1907.

subtler nuances. In the later investigation the colors accompanying certain chords and the difference between consonance and dissonance as regards the resulting colors were noted.

Mr. Ferree and Miss Rand have investigated the method of Flicker for the photometry of lights of different colors and find it deficient. The paper (1) briefly compared the relative advantages and disadvantages of the method of flicker and the method of direct comparison with regard to sensitivity; (2) showed that the method of flicker does not possess of itself the sureness of principle needed to justify its use in accurate work; and (3) showed that as yet its results have not been found to agree in the average with those of any method which can be shown to have this sureness of principle. It was pointed out that at the rate of speed at which the impressions are given in the method of flicker, the eye is very much underexposed to its stimulus. This underexposure has the same effect on sensation as a reduction in the intensity of the lights used, and the amount of this reduction is so great that with the intensities used in practical work the Purkinje phenomenon is involved in every judgment or comparison that is made. The third point was covered in the following way: (1) It was pointed out that the only method that has thus far been used as a standard with which to compare the method of flicker has been the equality of brightness method. (2) It was shown that the extension of the equality of brightness method to the photometry of colored light so far as that extension has been made to the present time, has been based on a false assumption with regard to the effect of colored and colorless light on sensation, and that the method, therefore, does not possess the sureness of principle needed for a standard method. And (3) it was shown both from experimental work and from a preponderance of the work done by others who have made the comparison, that the results by the method of flicker do not agree in the average with those obtained by the equality of brightness method, and, therefore, that justification for the adoption of the method of flicker can not be found, even could that method be taken as standard.

The after-effect of visual motion was discussed by Mr. Hunter. The visual motion was produced by black and white strips rotating about a horizontal axis. The motion was viewed through a screen with an aperture $4 \times 7\frac{1}{2}$ inches. Six subjects were used. The author obtained results which require an interpretation upon the basis of eye-muscle strain due to inhibited tendency to follow moving lines. The following facts may be given in support of the above: (1) The after-movement is, in general, in the same direction as this strain. (2) The appearance of the after-movement may be inhibited by vigorous straining of the eye muscles in the fixation during the

real movement. (3) Eye movements, confined to central area of drum, plus winking and general muscle strain, will prevent the appearance of the after-movement, though a negative after-image of the aperture is obtained. (4) If a mirror be placed below the rotating drum so that the motion is seen going in opposite directions, eye-muscle strain may prevent the appearance of all after-movement, or it may control the after-movement either on the drum or in the mirror. Often the after-movement which opposes the direction of strain is controlled, while that going in the same direction is affected. (5) If one eye is stimulated by the movement, an after-movement may be seen with the other eye either on the stationary drum or upon a printed page. No negative after-image of the aperture appears in the unstimulated eye. This after-movement is not sharply localized and can be accounted for on the basis of the harmonious action of the muscles of the two eyes. (6) The stationary drum may be made to appear to rotate either up or down by straining any eye muscles in the corresponding directions. It is not contended that the muscle strains alone are the effective conditions of all after-movements. Both the fading of after-images and association factors are influential as shown by data accumulated. Wohlgemuth has opposed the after-image theory on the ground that constant stimulation soon results in uniform fatigue. If this were true, no *movement* could be seen, as is evident from rapid rates of rotation.

Miss Fernald presented a study of color preferences among thirty-eight school children between the ages of six and eight. In a preliminary series of comparisons of the four colors of the Milton Bradley series (red, blue, green, and yellow) certain results appeared which seemed to require further confirmation, with control of certain factors, before they could be accepted as generally valid. The most striking of these results were a marked preponderance of preference for blue when standard colors were compared and a shift to red (pink) when tints were under consideration. It appeared from this that hue was not the only factor to be considered, since in the case of red and blue, at least, the preference changed from one to the other with a shift in brightness of colors compared. An attempt was made in this preliminary series to discover the effect of background by the use of white, gray, and black cards, but these did not appreciably alter the situation.

In a more careful attempt these points have appeared. (1) Under the conditions of the work the method of paired comparisons seemed applicable in the tests of a majority of children, though there were a few failures to make consistent selections. (2) The question of the particular red or blue or other color used seems important when any given series of colors, such as the Milton Bradley, is used. For

purposes of esthetic comparison with other colors, in the case of young children, the standard orange red seems the better qualified to represent the red group, and it is being so used in other tests at present. (3) In the red and the blue series, each containing three tints, three standards, and three shades, confirmation was obtained of the common statement that children like the more saturated colors, since the standards received the largest number of choices. Secondarily there was a selection of tints in preference to shades.

Two papers on hearing were presented. One by Mr. Rogers dealt with the binaural phase difference in sound localization. Previous investigators have argued that with sounds of low pitch coming from considerable distances the difference in intensity at the two ears would be too small to be used in localization of these sounds by binaural intensity ratios. They have shown, furthermore, that under certain experimental conditions the localization of low sounds is clearly controlled by phase relations, each sound being localized on the same side as the ear which receives its series of impacts ahead of the other.

Recent critics have explained the phenomena as due to interference of sound waves meeting within the head, and have concluded that the phase difference operated in these experiments only through producing intensity difference. Other critics have questioned the experimental data.

Mr. Rogers reported that the experiments have been repeated in modified form, largely through the work of Mr. Carl R. Brown, with corroboration of the previous positive results. It has also been shown that under the conditions of these experiments the proportion of sound conduction through the head is so slight as to make it improbable that it could produce such results as appear, that a serious error is present in the mathematics of the argument by which the operation of the phase difference is explained in terms of intensity differences, and that, rightly calculated, the sound interferences, if they were effective, would produce just the opposite results from those that actually occur.

He concluded that binaural phase differences do produce direct and specific effects in the nervous system, and that these are a genuine factor in the localization of sounds of low pitches, not only under the artificial conditions of these experiments, but under natural conditions as well.

In an investigation of pitch memory Mr. Baird found that absolute pitch memory is subject to wide individual variation; when the eighty-eight tones of the piano were presented in irregular order, nine observers made the following percentages of correct identifications (264 or more judgments by each observer): 99, 97, 89, 73, 62,

51, 41, 32, and 26. Tones from the middle region,—the once-accented and the twice-accented octaves,—are most accurately identified, and tones from the subcontra octave were least accurately identified. Relatively few errors were made with the piano tones; then follow, in order of increasing difficulty, pipe organ (diapason, reed, string, flute qualities) flute, clarinet, forks, voice (tenor, contralto, soprano, bass). A determination of the limits of pitch within which each tone of the octave (naturals only) is still identifiable shows an overlapping in every instance,—for instance, a tone of 545 vibrations is sometimes identified as *c*, sometimes as *d*. (These determinations, however, were made by means of the *Tonvariator;* and all of the observers reported that tones of this clang-tint were exceedingly difficult to identify). All observers agree in identifying the *note* more accurately than the *octave* to which it belongs,—a circumstance which seems to support the view (Revesz, Kohler) that tones possess an attribute of character in addition to their attributes of pitch and clang-tint. The testimony of all nine observers agreed in asserting that absolute pitch memory is not a product of deliberate training and practise.

Two studies on human learning were reported, one by Mr. Kirkpatrick on "Memorizing *versus* Incidental Learning." The particular thing learned was a portion of an advanced multiplication table. Normal students and sixth-grade children were subjects. The methods were (1) memorizing, then using; (2) using at once, guided by a key sheet of products; (3) computing the products. The memorizing or practise was continued eight and ten days. The final test of efficiency was writing as many answers without a key as possible in two minutes. The groups that practised computing averaged the greatest number of answers. Those that spent all the time in practise next, and those that spent part of the time in memorizing wrote the fewest. Those that spent eight out of nine days in memorizing were much behind those who spent only four or five days out of ten in memorizing. The results in this preliminary experiment suggest that the traditional practise of learning and drilling on facts such as the multiplication table, then using them afterwards is wasteful as well as wearisome.

In a contribution to the question of "quick learning," "quick forgetting," Mr. Woodworth stated that the contradictory results obtained, according as retention is measured by the saving in relearning or by the amount recalled, make it desirable to introduce further variations into the study of the above question. One variation consists in avoiding the matter of individual differences, and examining the learning and retention of *single associations* by the same individual. In one of the experiments reported, an Italian-

English vocabulary of 20 pairs of words was to be learned from auditory presentation. After one reading, the experimenter gave the Italian words as stimuli, allowing 3–5 seconds for each response, prompting and correcting, and so continuing till each correct response had been given once. Over-learning was avoided by dropping each pair from the list as soon as it was learned; but after all the responses had been correctly given, the experimenter read the whole list through once more. After an interval of 2–20 hours, the experimenter again used the Italian words as stimuli, and got the score of correct responses, and also a report of associative aids employed in remembering any of the pairs.

Under these conditions, the more quickly learned pairs were the better retained. Thus:

Of the pairs learned in 1	reading, 73 per cent. were recalled after the interval.
Of the pairs learned in 2	readings, 72 per cent. were recalled after the interval.
Of the pairs learned in 3	readings, 63 per cent. were recalled after the interval.
Of the pairs learned in 4	readings, 58 per cent. were recalled after the interval.
Of the pairs learned in 5	readings, 38 per cent. were recalled after the interval.
Of the pairs learned in 6–11	readings, 27 per cent. were recalled after the interval.

Since the aided pairs (pairs in which the subject saw some relation between the terms or developed some mnemonic to hold them together) were both more quickly learned and better retained than the unaided pairs; the advantage of quick learning probably lies partly in this association with aids. But this is not the whole story, for when the unaided pairs are considered by themselves, the quickly learned among them are better retained than the slowly learned; and, indeed, the quickness or slowness of learning makes more difference to retention where no aids are present than where they are present. We conclude that quick learning favors retention, and aided learning favors retention, each independently; but that the two influences work together, inasmuch as the best aids suggest themselves promptly and promote quick learning.

The order of merit method appeared in an investigation of composite group judgments by Mr. Scott. Students were told "to rank in order of importance the motives which determine the election of studies by your 1,000 fellow students (10 motives specified)."

"Rank in order of importance the qualities that give prestige to the 1,000 college students (provided with a list of 8 such qualities)."

"Who is most respected in your home community—the *successful* business man, lawyer, minister, physician, or professor? Rank the five in the order in which they are regarded in your community."

"The attempt to answer these questions," said Mr. Scott, "is not only a good exercise for the student in social psychology, but the answers are illuminating to the professor in charge."

In the use of the same method Mr. Hollingworth presented some characteristics of judgments of evaluation. He pointed out that the method has been used chiefly as an instrument in the investigation of some specific problem, such as family resemblance, interests of children, value of advertisements, measurements of school progress, distribution of eminence, etc. Little attention has been paid to the characteristics and behavior of the judgments themselves. When the various studies are considered together a number of interesting problems arise concerning the judgments themselves. He pointed out some of these problems, and reviewed the available material, suggesting tentative conclusions and further problems.

Mr. Rosanoff made a preliminary report of a higher scale of mental measurements. The special problem is to develop a simple method whereby a subject's mental capacity might be estimated from what he has acquired in the course of his education in comparison with the average acquisition of a large group of subjects of the same degree of education.

The method proposed consists in the employment of a free association test applied by means of a list of one hundred stimulus words gathered from the field of systematic education. The plan is to collect a large number of test records from subjects of various degrees of education and thus to develop a series of standards. The special object is to employ the test, when normal standards are available, in the study of native mental capacity in cases of insanity.

A small amount of material already collected seems to indicate (1) that the number of "appropriate" reactions is in correlation with degree of education, and (2) that, the factor of education being constant, there is great range of variation which is tentatively assumed to be in correlation with native mental capacity or at least with educability.

Mr. Cornell reported data on the influence of race, color, nativity, and truancy on the answers to the Binet tests. The evidence furnished by the statistics quoted is mostly negative. The statistics were taken from examination of delinquent boys at the Philadelphia House of Detention, boys between nine and sixteen years of age and mentally of inferior grade. Under these circumstances it is not possible to demonstrate the effect of home and neighborhood environment as it affects very young children in many cases. Nor was it possible to show the effect of truancy in a group of boys whose total mental equipment is usually the third or fourth grade at the age of 14 years. However, certain evidence in the case of younger children, not so detailed as the evidence in the principal group studied, is here presented.

The charts here displayed show the percentage of successful

answers to the questions designed by Binet for children of 9 years, 10 years, 11 years, and 15 years (Goddard's revision). Altogether, 24 test questions were reviewed, 5 questions being contained in the group for each year except year 15, in which there are only 4 questions. Of the total of 24 questions the answers by the white native group and the white foreign group were practically alike, and therefore practically similar to the percentage for the total of all children of that age. In only five cases was there any difference, and in these the difference was not marked. These five were the reasoning out of simple problems (IX., 4), answered slightly better by the white native children; placing three given words in a sentence (IX., 5), answered slightly better by the white native children; arranging weights in proper sequence (X., 5), answered better by the white native children; association test giving opposites, answered slightly better by the white native children; repeating six numbers, done better by colored children; and making change, answered better after ten years of age by the white native children, but at ten years of age by the white foreign children.

A corresponding attempt to demonstrate differences in the answers to the Binet tests in truant children compared with children of known good or fair school attendance proved similarly barren of startling results. In the 24 questions the answers of which were studied, 19 were answered equally well by the truants and by the boys who had been in fair or good school attendance. In three test questions, namely, interpreting pictures, and ability to write a message by the cipher code, and giving opposites in the association test, the truants did slightly better on the average than the others. In the problem stories requiring correct conclusions the truants did slightly worse.

Turning from these negative results to a study of younger children, the writer brought forward a study made on a number of small children attending the school of observation and practise connected with the Philadelphia Normal School. These children were all of a very good social station. The answers to the Binet tests averaged two years above the Binet standards for age.

The two studies bring out the general truth that differences in the Binet answers due to environment will principally be found in younger children.

Mr. Woods has undertaken a historiometric study of eminent scientists designed primarily to furnish an objectively derived working list of the leading names in the history of the natural and exact sciences. Three leading encyclopædias have been utilized as a standard for inclusion—the Encyclopædia Britannica, La Grande Encyclopédie, and Meyer's Konversation Lexikon. Out of these the 1,300

most prominent scientists have been selected from each encyclopædia, so that three lists contain the names of those to whom the greatest amount of printed space is alloted. About 300 names appear in all three lists, and are called class *A*. Class *B* consists of about 450 who appear in two of the three lists. Class *C*, those who appear in but one of the three lists (about 2,100). The rise and fall of scientific activity can then be measured. The most significant changes are the rise in Germany during the nineteenth century and the decline in France. These changes are probably due to environment and not to heredity, but the cause of the change is not quite evident. There is apparently little bias of the editors of the encyclopædia towards their own countrymen as regards scientists of the highest eminence or men long dead. This bias is much stronger towards living men and less eminent men. In historiometric work some triangulation or other method of objective proof is necessary. Conformation from various points of view and convergence of results will lead towards increasing certainty and a progressive inductive science.

Mr. Fernberger presented a study intended to determine, experimentally, the effect of the elimination of the two extreme intensities of the comparison stimuli. Two series of lifted weights were employed; one, an extended series of seven pairs of stimuli; the other, a reduced series of five pairs. These were mingled in such a way that the results from both were taken simultaneously. The space errors were eliminated and the time errors were kept constant. Six thousand judgments were taken from each of three subjects. The averages, for all three subjects, of the values of the interval of uncertainty for the extended and the reduced series, show a difference of only 0.07 gram. The point of the subjective equality shifts somewhat, being 0.34 gram lighter for the reduced series than for the extended series. Hence it would seem that the elimination of the two extreme values of the comparison stimuli makes practically no variation in the determination of the sensitivity of the subject. Such an elimination, obviously, reduces the time and labor necessary for the acquiring of the data upon which the calculations are based by nearly one third.

A second psycho-physical paper by Mr. Mitchell dealt with the influence of distractions on the formation of judgments in lifted weight experiments. The investigation involves the problem of attention and attempts to answer questions, similar to those raised by Münsterberg, Titchener, Wirth, and others, by the use of a technique and methodology much more refined than these workers had at their disposal. The judgments in experiments with lifted weights, obtained and treated by the method of constant stimuli as developed by Urban, are the basis of this discussion. Two kinds of distractions were used: (1) While the subject gave all attention to the judgment

of the weight, a distracting sound stimulus was presented. (2) At the same time that the subject lifted the weight he had to count discrete sounds, that is, a second operation was carried on. During the investigations approximately 75,000 judgments were made and on the basis of these the following conclusions were given.

First, contrary to the traditional view, distractions (*a*) increase the precision of judgment, that is, the subject's judgments are more consistent, and (*b*) cause an overestimation of the weight, or in other words, with a decrease of attention there is an increase in sensation intensity.

Second, with distraction the sensitivity of the subjects is increased, the upper and lower difference thresholds being nearer together.

Third, the current division of attention into voluntary and involuntary may not be valid, the method used here suggesting a more satisfactory way of evaluating such psychical processes.

The vagaries of Freudianism were criticized in two papers. Mr. Dunlap contended that under the caption of "The Pragmatic Advantage of Freudo-analysis" successful psychoanalysis by Freudian methods does not necessitate the discovery of the actual association at the base of the patient's trouble, but merely the building up of a new association which supplants the old and the final breaking up of the substituted association. The conventionalized sexual symbolism is an admirable device for the formation of strong associations, but a long period of time is necessary.

In a paper on "The Freudian Idea of Ambivalence," President Hall said that neither paidologists nor pediatricians have ever ascribed such importance to childhood as do the Freudians. Every dream, neurosis, or psychosis, if only analyzed, reveals infantile determinants. Every form of Janet's "flight from reality," autism, normal day dreams, every lapse from apperceptive to associative thought, from the abstract to *anschaulich,* is a retreat towards the state of infancy. Art, poetry, myth, religion, are largely realizations of childish wishes. Thus the first three or four years of life are fateful for health, virtue, and success. The Freudians can not apply psychoanalysis directly to infants. In fact, only two have been studied with any detail. But they construct their child from the lives of great men and from pathological cases. Ferenczi and some others find in prenatal life the basis of a solipsistic *"Allmacht der Gedanken"* seen all the way from magic to ultra idealism later. We sympathize with Stern's protest, endorsed in the Breslau meeting of physicians, against turning the analyst loose on children. Now, Freud says, *"Das Unbewusste ist das Infantile,"* or that part of it which is repressed. It is where complexes are performed, and these

are mainly unconscious, and psychoanalysis is only a method of getting at them. Yet we are now told that the future of psychoanalysis rests more with psychologists of the normal than with psychiatrists. The writer protested against Jung's large use of "libido" to include even appetite for food, insisting that the autos preceded the eros, pointed out that the Freudian child was only a fragment of a child, that the traits studied were abnormal, and that the tendency to apply them to normal children was the great error of the Freudians, that a child in whom they were much developed was *per se* abnormal.

In a paper on "Intoxication and Ecstatic Trance in Religion" Mr. Leuba attempted to establish three theses:

1. In all, or nearly all, non-civilized peoples states of intoxication are looked upon as religious states *par excellence;* they are described as God-possession.

2. In the religions of civilized nations, and in particular in Christianity, similar states, *i. e.,* ecstatic trances, are likewise looked upon as union with the divine.

3. The reason commonly offered for the identification of intoxication and trance states with divine possession, namely, the apparently superhuman character of these states (vision, anesthesias, etc.), and the alleged superhuman powers and knowledge which come to man when in this condition, do not account adequately for the amazing attractiveness of intoxication. This is apparent in the fact that intoxication retains its hold upon man when it ceases to be regarded as divine.

In an analysis of intoxication consciousness, the author uncovers the more fundamental reasons for the place secured by intoxication in religion.

Three methods of producing religious intoxication are described, the chemical (various drugs: peyot, soma alcohol), the mechanical (rhythmic dancing), and the psychical (as in the Yoga practise and in Christian mysticism).

A supplementary report on the effect of a prolonged fast was given by Mr. Langfeld.

At the time of making a series of psycho-physiological tests upon a man fasting 31 days, a report of which was given at the last meeting of the association, it was not possible to conduct experiments after the subject had begun to take food. A year later, however, the opportunity was given to make similar tests covering a period of six days on the subject under normal conditions. The tests used were the hand dynamometer test, the tapping test, the space threshold test, the cancellation test, memory tests, and association and reproduction tests. In all of these the records were as good if not better than at the end of the fast, and it must be remembered that at that time

many of the tests showed improvement. As might be expected, the strength tests showed the greatest improvement, being even better than at the beginning of the fast. It seems, therefore, from these results that the fast did not have any ill effects and certain facts may indicate beneficial results.

A distinction between images and ideas was set forth by Mr. Dunlap. Images are not contents modally resembling the special sensation of vision, audition, etc., but are muscular sensations. They may, therefore, be observed directly only by introspection, although other means of observing the total complex (muscle contraction), of which the image is a part, are important for the investigation of the conditions of thought. "Introspection" as here used signifies nothing more than the observation of images (muscle sensations) and feelings. Perceptual consciousness is conditioned by the arc reflex from non-muscular receptor to muscle; consciousness of pure feeling by the reflex from receptor to gland. The reflex from striped muscle to striped muscle conditions directly the consciousness of muscular action, and derivatively the thought of the object given originally by the perceptual reflex whose *terminus ad quem* is the *terminum a quo* of the thought-reflex. The idea is, therefore, the derivative content of the thought consciousness, and does not include the immediate content, or image. The image, as it is conventionally described, masquerades in plumage stolen from the idea.

Mr. Jared S. Moore discussed the articulation of the concepts of normal and abnormal psychology. He pointed out the striking difference in terminology and point of view between the literatures of normal and abnormal psychology as we find them to-day. Especially, the doctrine of the complex, which is so important for abnormal psychology, is disregarded by writers on normal mental processes. This is unfortunate and unreasonable, and detrimental to the student of psychology. A complete understanding of mental disorders involves an understanding of the complex as a normal factor in mental life.

The psychological problem is threefold—structural, genetic, and dynamic. Structurally, the complex is composed of cognitive and affective elements—the cognitive elements being grouped into ideas, and these into systems of ideas. So, again structurally, personality is an integration of systems of complexes—the individual complexes being grouped into systems, these into systems of a higher order, etc. The genetic problem is itself twofold—the problem of the development of complexes out of their elements, and the problem of the development of the personality by the accretion of new complexes. The dynamic problem is concerned with the conative aspect and motor tendencies of the complex, and leads to the distinction between normal and abnormal psychology—normal psychology treating of

the harmonious activity of complexes, abnormal psychology treating of conflict, repression, and dissociation.

Mr. Coe discussed the psychology of having friends. Friends' mutual enjoyment of each other offers for analysis a social experience that is easily accessible to the psychologist, and that is rather promoted than hindered by reflection upon it. The naïve understanding of this experience asserts: (1) That which each friend enjoys is the other friend, not merely goods to be mediated by him, and (2) that the reason why a giver is valued above his gift is that a giver has experience. Apparently, then, we value objects not only as experience, but also as experiencing.

What has psychology done with data like these? In general, it has investigated social intercourse from the standpoint of the mechanism of the process, and from the standpoint of knowledge, but in only a minor degree from the functional standpoint. Particularly, the kind of value realized when a friend simply "has" his friend, and the kind of adjustment therein achieved, have received scant attention. (*A*) Something has been done with specific phases of social intercourse, as suggestion and imitation. (*B*) Genetic study has shown that the process of attaining self-consciousness is at the same time the process of defining our social objects. (*C*) Eight kinds of answers have been given to the question, "How do I know that any other mind exists?" They range from "I see and hear my friend"; through "I infer by analogy," "I postulate," "I intuit," all the way to "There is continuity of substance between minds," and even "Individuals overlap." None of these theories gives a sufficient account of the kind of value involved in "having" a friend, or of the relation of this value to the "having." (*D*) Psychology has determined that other-regard is not merely refined self-regard. This is one step toward a psychology of social values. (*E*) Psychology has raised the question, What is the "psychological" point of view with respect to such multiple experiencing as friendship asserts itself to be? No decisive answer has been given. If I as psychologist consider myself and my friend merely as content of experience-in-general, conversation being treated as internal discourse, and conversely as merely slower parts of the conversational flow, I am unable to construe "having a friend" in any sense that I can recognize as true description when I enjoy the experience itself. It does not appear that psychology can either deny or translate into anything else the naïve assertion that I enjoy a second experiencing.

Mr. Faris, choosing the case of a Congo tribe which does not punish certain of its members, attempted to show the relation between punitive justice and the social consciousness.

There are three possible reactions of a group toward an offender

against social customs. There may be an immediate and instinctive attack with no thought of limit or measure. There may be a social reaction in which the culprit is considered a member of the group with interests that are identical with the interests of the rest. Or, thirdly, an intermediate attitude is possible where some consider the culprit as a friend and others as an enemy, in which case the friends will see that the enemy does not go too far. The first of these attitudes is war, the second is a social attitude, and the third alone can be properly designated as punishment.

It is owing to the absence of foreign members of the community that some tribes do not punish. To the homogeneous tribe, there are only two classes of people: kin who can not become enemies, and enemies who can not become kin. If one of the enemy attack, there is an immediate and instinctive retaliation with the destruction of the foe for its object. The attack is made even when self-interest dictates otherwise. But this can not be called punishment. Punishment does arise among the slave-holding tribes where the group is complex. It is possible to break some of the bonds of union, leaving others intact.

An historical survey of psychological methods was given by Mr. Ruckmich. Four different interpretations are found in the usage of the word "method" in a study of more than a score of systematic works in psychology: (1) general mode of investigation of phenomena, *e. g.*, "experimental method," "introspective method"; (2) a specific type of procedure for purposes of control or treatment of data, *e. g.*, "method of impression," "statistical method"; (3) point of view taken or intention assumed in an investigation, *e. g.*, "genetic method," "descriptive method." These three are methodeutic, but the last is logical in nature: (4) the type of reasoning involved in the pursuit of any of these three or in the systematization of the results obtained, *e. g.*, "inductive method," "synthetic method." The use of the first three classes of method is traced through the history of psychology from Aristotle to the beginning of the nineteenth century by interpretation of the works of representative psychologists, and from that time to the present by a classification of the expositions of method as given in the systematic treatises of the leading authorities. The most important feature of the development of method is its derivation, on the one side, from casual observation and occasional experiment, and, on the other, from the functions of the "inner sense." A constant shift of emphasis on one or the other of these factors is marked. The final movement toward experimental procedure took place soon after Kant's refusal to admit psychology to the rank of a science. From that time on, with the refinement of experimentation, the use of "method" was broadened to

include the second meaning in addition to the first and third. The modes of investigation, however, also received critical treatment and became more sharply defined. The establishment of psychology on an empirical basis as a science took two directions: (1) the widening of the scope of psychology to include comparative and physiological aspects, and (2) the application of quantitative methods. At present, the main differences between the various systems which grew out of this development of the science lie in the several senses in which the principal methods are used, and in the several evaluations of the methods. Uncontrolled introspection, for example, is considered by one group of authorities as a method which may contribute facts to the science, by another, as wholly useless to the science. Again, some authors maintain that experiment can control conditions affecting both introspection and general observation of organic movements, while others declare that its realm is psychophysics, physiology, or the simpler mental processes and complexes. It is essential that systematic writers come to terms on the evaluation and interpretation of the various methods, and also on the usage of the word "method."

Miss Washburn, in discussing the *Aufgabe* and intellectual inefficiency, pointed out the relation of the *Aufgabe* and bodily attitude of activity. This activity attitude tends spontaneously to relax sooner or later. Its duration is in part determined by physiological conditions, but is influenced also by a psychological factor. The relaxation of the activity attitude is hastened by too much attention given to the sensory accompaniment of the attitude to the attitude of working rather than to the work itself. Three types of intellectual inefficiency may be explained on this hypothesis as to the nature of an *Aufgabe:* the lazy person, the spasmodic worker, and the fickle worker. The lazy person seldom assumes the activity attitude. The spasmodic worker quickly releases it, although he may recur to the same task repeatedly after intervals of relaxation. His activity attitude relaxes too soon, partly, at least, because he gives too much attention to the attitude itself and thus lowers the threshold of fatigue. The fickle worker is characterized by long-continued single periods of activity, but when he has once dropped a task he tends not to recur to it. His activity attitude has been so long continued that the unpleasantness of extreme fatigue associates itself with the ideas of the *Aufgabe,* so that subsequent recurrences of the activity attitude fail to recall effectively this particular task.

It becomes more and more evident that to equate psychology with the study of consciousness is unsatisfactory. Mr. Frost attempted by definition to eliminate consciousness altogether. He attempted an explanation of what is usually ascribed to consciousness, on a strictly physiological basis. How can we explain the fact that things not

only are, but that they get reported? If we consider "awareness" as a physiological and not a psychological term, a start will have been made.

"Awareness" shall then characterize the response of neural mechanism to stimulus. Iris reflex is a simple illustration. Such a sensori-motor arc may be called an "alpha-arc." An alpha-arc shall then characterize any simple, single, sensori-motor path initiated by a peripheral stimulus, and resultant in some end-effect. When alpha-arcs involve higher cortical centers, a further neural beta-arc *may* be aroused in the association centers. Beta-arcs are then like alpha-arcs, save that they take for their objects just prior alpha-arcs, and the end-effect is modified by complication in terms of previous neural experience.

Such beta-arcs the writer terms "consciousizing processes." Their biological significance is to allow of the modification of ordinary reflex behavior in terms of the past experience of the organism. No arcs, alpha or beta, are self-sensing, but any arcs (beta, gamma, etc.) may become aware of any previous arc (alpha, beta, etc.). Such awareness is what is commonly termed "consciousness."

Alpha-acres, not arousing beta-arcs, are called "pre-consciousizing processes" (reflexes); while arcs that once aroused such beta-processes, but no longer do so, are called "consciousized processes" (habits). Behavior would appear to be completely and most simply explained by the mutual functioning of groups of alpha- and beta-arcs, without the confusion of the hypothetical "consciousness."

"Sensations," then, are not "first things in the way of consciousness," but the second. There must always be at least two physiological processes, successive in time, for one to be a consciousizing process, or "sensation." The iris can never get a sensation. An alpha-arc might give "red-awareness"; the subsequent beta-arc, if aroused, would then give "sensation-of-red." Can either introspection or logic demand any further characterization of "sensation-red experience" than to say that a nervous impulse has passed through the cortex, and there aroused a second impulse which takes it as its object?

Physiological processes are not the *vehicle* of the psychic, but are themselves just what and all we can mean by consciousness. Neither introspection nor logic can demand any further "elementary psychic process," or "knowing function."

Mr. Dearborn made suggestions as to the possible neurility of euphoria and the sthenic index.

I. The basal feeling-tones (euphoria and dysphoria), so far as physiological, are more or less determined by the environment of the receptors, euphoria representing relatively perfect adaptation.

II. Three chief factors seem contributory to the euphoric cenesthesia: (*A*) nutritional and sympathetic influences from the intestinal villi; (*B*) kinesthesia proper; and (*C*) the epicritic (dermal) impulses.

III. The four million villi of the intestine, rich in muscle and sympathetic nerves, probably adapt the blood's content of the nutritive "lipoids" and protein to the immediate needs of the nerve-cells, and besides may send inward sympathetic influences which in the brain become euphoric.

IV. The tonus and the active contraction of the voluntary musculature make variable, but essential contributions to the dynamic reservoir of the central nervous system. Moreover (Bergson) kinesthesia undoubtedly adds much of euphoric trend to the cenesthesia by providing in part both intensity and extensity to the other senses.

V. The integrated epicritic impulses appear to predominate in human physiologic euphoria, and there seem to be two chief modes of stimulation, *evaporation* and *oxidation.*

VI. Air that is dead, *i. e.,* not moving, humid and too warm, humid and too cold, or lacking in oxygen, is a chief occasion of physiologic dysphoria. Physiologically, these conditions probably are lacks,—lack of movement over the skin, lack of dryness (evaporation so being lessened), lack of the physiologic temperature, and lack of dermal oxygen-reflex determinants of respiration.

VII. Adopting for the nervous system the all-or-none principle, the actual neurology ("viatility," Morat) of the euphoric and sthenic balance becomes an interpretation of the "synaptic" relations in the action-system.

VIII. Physiologic euphoria is, then, more or less determined by ample, unimpeded, and undeflected neurokinesis. This unimpeded flood of ample neurokinesis is a condition of a high sthenic index capable of factuating (or inhibiting) vigorously a rapid succession of motor paths.

Under the title "Notes on The Mechanism of Continence," Mr. G. V. N. Dearborn presented the following:

The problems most pressing for practical solution are psychological. As analysis of contrectation (Moll) at once shows, the genesial impulse involves potentially the entire epicritic receptive field, and this cenesthesia provides the neurobinetic tonus of part of the voluntary behavior, involving the whole brain. By association among the thousands of millions of neurones, this desire is normally in humans sublimated into love. In the subconscious, as well as out of it, this tonus of impulsive cenesthesia flooding the psychomotor cerebral neurones with energy is often a powerful initiative force in the constructive behavior of young adults,—its leading motor idea, involving

the whole organism more or less. Repression by way of secrecy and false shame keeps active that which should usually be quiescent and latent; and makes that which should be, by knowledge—base habit, subconsciously under control, often strongly aggressive, incontinent.

The neurology of voluntary movement involves factors more or less like the following:

1. *The Nervous Circuits; Kinesthesia.*—(*A*) Between muscles and gray cord. (*B*) Between cord and brain.

2. *The Cerebral Influences of Spatiality.*—(*A*) Ocular and other visual muscles. (*B*) Retinæ. (*C*) Semicircular canals. (*D*) Active muscles of limbs, etc. (*E*) Local signs.

3. *The Gray Fabric of the Hemispheres.*—(*A*) Ideas of usefulness. (*B*) Memory-images of movements, etc. (*C*) Awareness of ability. (*D*) Interests and emotional tones. (*E*) Inhibition.

Skill apparently may be considered a generalized or localized voluntary control based on the current fusion (at first conscious) of the two opposed, but complemental phases of kinesthesia, one actuating, vegetative, and generally unconscious, the other inhibitory, personal, and conscious,—both subject to habituation, originating at adolescence, by stimulating the development of the voluntary musculature, provide with the sexual impulse the means of its control. Continence, then, appears as an inhibitory generalized skill, grace, and cleverness based in adequate conscious correlation of the lower centers with the higher, and in extensive and intensive voluntary and habitual control not only of the skeletal muscle, but of the vegetative effectors to some extent. Continuence is not wholly an ethical and an esthetic matter, but one inherently and most intimately related to (and even an index of) the most *practical* phases of life—capability, efficiency, competency, self-knowledge, initiative, personality, manhood, and womanhood. Scientifically, then, incontinence appears as an index of a lack of personal culture, as clumsiness, inefficiency, stupidity, and failure. The genesial impulse developing in the adolescent is normally safeguarded by the simultaneous development of a consciousness of general voluntary bodily control and of the surpassing efficiency of his organism both actuative and inhibitory. This experience of "finding oneself" constitutes a criterion of physiologic age which, partly because functional rather than structural, is more significant than others so far suggested. Appropriate tests for its determination would make it as definite a criterion, too, as any now in use.

M. E. Haggerty.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Psychology of Insanity. BERNARD HART. New York: G. P. Putnam's Sons. 1913. Pp. vii + 176.

This small volume is devoted to the various mental mechanisms in insanity. It presents in a remarkably clear manner that important recent development in abnormal psychology, namely, the influence exerted by the unconscious mental processes in the formation of the delusions, hallucinations, and conduct of the insane individual. It demonstrates in mental diseases, as Freud has done for the symptomatic actions of every-day life, that the various delusions and hallucinations are not due to chance, but are caused by the rigorous deterministic action of the unconscious upon the conscious. This deterministic mechanism shapes and directs the various pathological ideas of the mentally diseased, so that if a mental disorder is carefully analyzed, as, for instance, *dementia præcox* has been analyzed by Jung and Bleuler, or, in fact, if any case of insanity becomes accessible for a psychoanalysis, it will be found that the delusions, hallucinations, depression, negativistic behavior, etc., are all due to the action of certain unconscious complexes.

Hart attempts to answer the question, what are the various unconscious mechanisms at work in the formation and action of these complexes, and as indicated in the preface, he follows the fundamental conceptions of Freud, whom he characterizes as "probably the most original and fertile thinker who has yet entered the field of abnormal psychology." He gives, however, but little attention, or even credence to the sexual conflicts and repressions in childhood upon which Freud and his school have laid so much stress.

After a brief review of the history of insanity, in which he outlines the conflict between neuropathology and psychopathology and the struggle of each for supremacy in the field of modern psychiatry, he passes to the fertile ground of the psychological conception of mental disease. The various phenomena of insanity are treated as states of mind rather than as manifestations of physical changes in the brain, although he very reasonably admits that in modern psychopathology conceptions are employed which have no actual phenomenal existence. For instance, such terms as "complexes" and "repression" merely explain mental phenomena, just as "force" and "energy" explain physical processes. Or, in addition, these may be merely symbols of mental states, just as mathematical signs may signify symbols of quantity.

The author then passes to a brief description of the various clinical phenomena of insanity and of the mental mechanisms themselves, such as dissociation, conscious and unconscious complexes, mental conflicts, repression, projection, etc. These terms have now become the every-day language of modern psychopathology. The data given in this little volume clearly demonstrate "that the thoughts and actions of the insane are not a meaningless and inscrutable medley, but that cause and effect play as considerable a part in the mind of the apparently incomprehensible lunatic as in that of the normal man." The antecedent soil (or

process) for the insane delusions or hallucination lies in the unconscious, in a group of ideas or beliefs known as a complex, perhaps partially or completely stored up in childhood, and by means of the association tests or through an analysis of the dreams, the delusions or hallucinations, which are frequently merely a disguised or symbolized projection of the complex, can be traced to their original sources. These unconscious complexes may be repressed or an unconscious conflict may arise leading to a mental dissociation, as shown in cases of hysteria, multiple personality, or in extensive amnesias. If the complex is incompatible with reality, a defense reaction takes place, and outbreaks of delirium or somnambulism arise. It would lead us too far into detail to present further examples, as the book furnishes so admirable a condensation of an important trend in psychopathology. It is written in a pleasing style and is a distinct contribution to the mental mechanisms of insanity.

I. H. CORIAT.

BOSTON, MASS.

The New Philosophy of Henri Bergson. E. LEROY. Translated by VINCENT BENSON. New York: Henry Holt and Company. 1913. Pp. x + 231.

An added evidence, if one were necessary, of the popularity of Henri Bergson with the reading public could be cited from the prompt appearance of Mr. Benson's translation of M. LeRoy's excellent popular exposition of this difficult, but fascinating philosophy. Mr. Benson's translation is in good literary taste, and if his version does not always carry over the vivacity of the original, it has a certain life of its own, and that is the most that can justly be expected under the exigencies of dealing with the clarity of LeRoy and the opulence of Bergson. Quotations of the latter are translated afresh, but references are made to the standard English translations.[1]

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. September, 1913. *Recherches sur le mécanisme de l'imagination créatrice* (*fin*) (pp. 225–251): N. KOSTYLEFF. – In literary inspiration, conscious activity decidedly preponderates over the unconscious. Chains of associations whose origins are (perhaps) forgotten, verbal reactions to suggestions, observation and study, and ability to assume the character of the created personality, form the basis of creative imagination in literature. *Du métamorphisme d'une nationalité par le langage* (pp. 252–268): RAOUL DE LA GRASSERIE. – Language is the most powerful instrument making for the assimilation of a lesser by a dominant race; in cases where such assimilation fails, the preservation of its idiom by the lesser race is seen to be the most effective agency in pre-

[1] The original was reviewed in this JOURNAL, Vol. X., page 192.

venting assimilation. *Notes et documents. La timidité chez les aveugles:* M. DESAGHER. *Une hérédité psychologique par contraste:* L. DUGAS. *Revue Générale. Les revues allemandes de psychologie en 1910:* FOUCAULT. *Analyses et comptes rendus.* John Watson, *The Interpretation of Religious Experience:* J. BARUZI. Emile Brehier, *Schelling:* LIONEL DAURIAC. Oscar Kraus, *Platonis Hippias Minor:* C. HUIT. Elisabeth Rotten, *Goethes Urphaenomen und die Platonische Idee:* C. HUIT. *Notices bibliographiques (psychologie). Revue des périodiques étrangers.*

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NOTES AND NEWS

The current year marks the seven hundredth anniversary of the life and activities of Roger Bacon. This most "disparate genius of the Middle Ages," as Mr. Taylor calls him, was, none the less, one of the most typical representatives of his time. For we have come to appreciate that the Middle Ages were not years in which scholars blindly followed tradition and authority, but were rather years in which they actively and curiously tried to cope with the problems of a growing civilization. There we find the modern spirit beginning its own education, the past its teacher, the future its prospect. Roger Bacon may well be honored as chief among its patron saints. It is proposed at Columbia University to set aside a day in October to commemorate him, and a committee consisting of President Butler and Professors Robinson, Montague, and Woodbridge have the arrangements in charge. There will be a number of addresses which will be published in a volume illustrative of the scientific attainments and outlook of the thirteenth century.

M. Emile Boutroux, president of the Fondation Thiers, was elected on January 22 membre de l'Académie française, the first philosopher since the reception of Caro, more than twenty-five years ago, to receive this honor. M. Boutroux, who was presented by M. Paul Bourget, fills the chair left vacant by the death of General Langlois.

Ezra B. Crooks (Ph.D. Harvard, 1910) has been called from the assistant professorship in philosophy at Northwestern University to the professorship of philosophy and pedagogy in Randolph-Macon Woman's College, Lynchburg, Virginia.

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AN EMPIRICAL DEFINITION OF VALUE[1]

WHAT is the meaning of the term value and what part, if any, does value play in the real world? This is the question which philosophy seeks to answer under the heading, Theory of Values, or Axiology. And the answers which have been given are as diverse and conflicting as in most philosophical problems. The factions which have arisen in ontology are but transferred to the field of axiology. We find that one view regards value as an objective indefinable property, having no necessary connection with the existing world,[2] while another believes all values to depend upon being felt by somebody;[3] whereas a second pair of views deny at least one of these, as well as each other, yet agree that value is a more ultimate category than fact, and define fact in terms of value: the Fichtean and the instrumental theories.[4] Still another opposition holds between the position of Royce, that value is object of appreciation and not of definition,[5] and that of Bosanquet, which refuses to separate, hardly even to distinguish, value from rationality and reality.[6] These are simply the modern realistic, subjectivistic, voluntaristic, pragmatic, idealistic standpoints, applied to this particular problem. And if in the field of ontology there is no agreement of experts, it is hardly likely that there will be here. Thus at the outset it seems impossible to give an account of value which has the slightest prospect of general acceptance.

In such a situation it is our plain duty to seek the reasons for the disagreement. If we examine the interpretations of value which have been profered it appears that none of them contains, or is based upon, an unambiguous, non-circular definition. For example: suppose value is defined in subjective terms as, let us say, that which

[1] Read at the meeting of the American Philosophical Association, December, 1913.

[2] B. A. Russell, "Philosophical Essays," pages 4–15.

[3] W. M. Urban, "Valuation," Vol. III., page 9.

[4] H. Münsterberg, "Philosophie der Werte," 1er Theil, 4ter Abschnitt; J. Dashiell, *Philosophical Review*, September, 1913.

[5] "Conception of God," pages 247–265.

[6] "The Principle of Individuality and Value," Chapter 8.

gives pleasure. This is no real definition, because it does not account for the valuableness. Why should pleasure confer value? It is obvious enough that here is a vicious circle. Or suppose we say, value is whatever increases life. The statement may be true, but it assigns no ground for the ascription of the predicate "good"; for why should increase of life be good? Similar criticism may be made of views which make value primary and define being in terms of value. They do not increase our knowledge of what value is: they rather give up the real problem by pronouncing the category indefinable. Those who allege indefinability, however, do not, so far as I know, make any thoroughgoing attempt to consider all possible definition. It is, in general, impossible to prove a given term indefinable: such a universal negative can have only inductive warrant. The most we can say is that no definition yet given is sufficient. And where no sufficient definition is, there conflict will break out, because liberty of interpretation is more or less unrestricted. The only way to deal with this state of affairs is to search further, until we can furnish a non-circular and positive definition. And for this no method is satisfactory but to trace out the common structure of all the valuable objects known to our experience, *i. e.*, to treat value as a "concrete universal" rather than an abstract one, and to obtain a definition in terms of the specific situations in which values are found. From such a definition alone may we learn something of the status of values in reality.

It is, no doubt, to a certain extent absurd to attempt a problem of this size and importance in a brief paper. Only the roughest kind of a sketch can be given with many gaps in the evidence. A first essay in this direction must be imperfect; but let us hope that its errors will be corrected, and the way be pointed to further results.

The objects which are considered valuable, good or bad, worthy of approval or disapproval, are generally acknowledged to belong to at least one of the following six classes: (1) those which "satisfy immediately any *fundamental* instinctive sense-tendency" of a living organism,[7] (2) economic commodities, (3) esthetic or beautiful objects, (4) moral conduct, (5) religious objects, (6) intellectual values. This classification differs from Urban's, though not, I think, disagreeing with it; his analysis being psychological and genetic while ours is of objects rather than psychoses, following the scheme of G. Fonsegrive.[8] Let us consider these classes in turn.

[7] W. M. Urban, "Valuation," page 192. Also, "there are certain fundamental connative tendencies, such as hunger, sex, expression of bodily energy, etc., the satisfaction of which gives immediate and unconditional . . . worth" (*ibid.*). Professor Urban calls these "condition worths," since their value is dependent upon the condition of the organism.

[8] *Revue Philosophique*, Vol. 69, page 553, and Vol. 70, page 43.

1. The first class contains, in the main, objects of sensual pleasure, and *prima facie* their value is dependent on some organism. We may fairly say that pleasure connotes normal, unhindered functioning of a living organism. If the value of these objects lies in the pleasure they afford, then their value lies in the fact that they contribute to the normal, unhindered functioning of the organism. Now such behavior of the organism is an essential part of its own continued life. The definition of life is not yet furnished by biology, but some of its essential characteristics are agreed upon, and one of them is that a living organism tends to perpetuate its own life, to prolong it. That is, a living organism tends to perpetuate its own normal, unhindered functioning. The objects of instinctive sensual desire, when attained, help to fulfil that tendency. When the organism is conscious of them, it feels them to be good (or if painful and thwarting the tendency, bad). But even if it were not conscious, as perhaps some lower organisms are not, any object that called out a reaction agreeing with this fundamental tendency of an organism would be to that organism a good. What an amœba ingests may be to the amœba a good, though the amœba takes no conscious delight in it. The specific *quale* of this type of value lies in its helping to fulfil a certain fundamental tendency resident in the organism.

2. Economic values. In the field of economics, "value [of an article] is always and only the power to command other desirable things in peaceful and voluntary exchange."[9] A value is distinguished from a utility. The latter has a certain kind of value in that it is useful to the one who wants it; but it is useful merely because wanted, and not as having any power of exchange for other utilities. Hence a utility might come under the first class of values, the "condition worths," whereas value as used in economics forms a distinct type, owing to its possessing exchangeability. Now there are two laws that apply to value in this field—the law of the threshold and the law of diminishing values. Important though they seem, however, they are for our purposes inessential. The law of the threshold states that there is a certain least amount, and a certain greatest amount, of a given article, beyond which value disappears. As Urban has shown, this is a psychological law pure and simple, analogous to Weber's and Fechner's laws; it applies to utility as well as to value. "This principle is an expression of the fact that the power of an object to call out a feeling of worth . . . depends not upon the object alone, but upon the feeling or connative disposition of the subject as well."[10] The familiar concepts of the "existence-minimum" and "marginal utility," and the whole field of this

[9] T. N. Carver, "The Distribution of Wealth," page 3.

[10] "Valuation," page 146.

law, do not then constitute part of the *differentia* of value. The same may be said of the law of diminishing values. It, too, has a psychological origin though not reducible to terms of stimulus and sensitivity. "It is a phenomenon of limitation of judgment capacity, rather than of capacity of stimulation."[11] It is not because economic values are values, rather than utilities, that these laws hold, but because, like utilities, they are relative to human appreciation. What, then, are the positive *differentiæ* of economic values?

One specific property of value is exchangeability; another is that value is a function of scarcity.[12] The less gold there is the greater is the value of gold; if there were an infinite amount of it, it would have no value. In other words, value exists only when the amount of the valuable article is limited; and the more it is limited, the greater the value (up to the psychological threshold). If we may call up a simile to help us interpret this fact, it is like the pressure of a gas, which exists only when the gas is confined, and increases as the volume is diminished. Indeed, the analogy between value and pressure is rather close. If a certain book has great value to me, I am willing to pay high for it; it dislodges from my purse an amount of money proportional to its value. So the pressure of a gas is measured by the amount of mass it dislodges. Again, as pressure of a gas means tendency to expand and occupy the space filled by other physical objects, so economic value of an article means a tendency for it to take the place, by purchase or exchange, of other articles. The fact that the valued article is desired by somebody makes this tendency no mere figure of speech, but a psychological, or even a physical, fact. Value here seems, then, to mean a real potentiality or tendency of the economic object to come, by replacing another object, into the possession of somebody who desires it. If every one has it, if there is no scarcity, there can be no desire, and the tendency, because already fulfilled, does not exist; hence scarcity is necessary to value. Now it follows that economic values tend to do two things: they tend to enhance the life of the prospective buyer by ministering to his wants, and they tend to enrich the economic life of the community by promoting trade. The former is not peculiar to value, since utilities do the same thing; the latter *is* peculiar to value, and must constitute the result we are seeking. A commodity has economic value because it tends to be exchanged and thus to perpetuate or increase the economic life of the community. From the point of view of that economic life it thereby becomes a good, because it contributes to that life. This result is similar to the one we obtained from the study of the first class, the simple "condition worths." The

[11] W. M. Urban, *op. cit.*, page 173.

[12] T. N. Carver, *op. cit.*, page 12.

value of the valuable object consists in contributing to an already existing tendency, or group of tendencies.

3. Esthetic or beautiful objects. The problem of a definition of beauty is extraordinarily difficult; there is no generally accepted solution. There are, however, certain fairly well-established attributes of beauty, and we must simply do the best we can with these.

Beautiful objects seem to be of two kinds, roughly distinguished as classic and romantic. The former have beauty of form and structure; their elements display harmony, economy, or in a phrase whose significance is even greater than its triteness, unity in variety. It was the type most admired in classical antiquity. The second, romantic beauty, may be defined as laying stress "on the idea of significance, expressiveness, the utterance of all that life contains; in general, that is to say, on the conception of the characteristic."[13] It is "accompanied by the craving for free and passionate expression."[14] This is preeminently modern, connected with the modern interest in personality, man, and the subjective generally. The play-impulse, "semblant modes," imagination, freedom, are expressions of this type. The two classes are related somewhat as static and dynamic. The distinction is not confined to works of art, but extends to natural objects as well. Human beauty, for instance, as Plato saw, divides approximately into these two kinds; feminine beauty being in the main static, a beauty of repose, of symmetry and composition; masculine being rather dynamic, active expression of inner potency in deeds, virility. Let us now consider the nature of each type.

Unity in variety appears superficially to be the most meaningless of phrases. A heap of gravel has unity, being one heap, and variety, having many pebbles of different sizes and shapes; but it has no beauty. This, however, is not unity in variety, but unity and variety. The preposition "in" signifies that each implies the other. A true case would be one in which each particular element clearly contributes to the being and character of the rest, as in an arch or a living organism. It is this quality of mutual support and contribution that characterizes the classic type. Though the type is static, it is not inert, for each element has a positive and discernible effect on the others. Just as in the science of statics equilibrium is by no means *mere* absence of motion, but rather a balance of pressures, attractions, or repulsions, so here then is, if anything, more than if it were dynamic. We may commend this fact to those philosophers who are inclined to condemn the static as being lifeless and unproductive: *e. g.*, using "static absolute" as a term of reproach, refusing to

[13] Bosanquet, "History of Æsthetics," pages 4–5.

[14] *Op. cit.*, page 5.

believe in substances, or anything but process. The ancient doctrine of repose was, indeed, far from being a counsel to death. Now it is in this mutual support that we find the clue to the ascription of worth. Each part of the beautiful object is implied by the others; each part is thus the fulfilment of the meaning which the others tend to express,[15] but can not by themselves fully express. The whole object is the fulfilment of the tendencies resident in each of its parts; from the point of view of those parts, then, it has worth or value. This is analogous to the result obtained in economic values and sensual values. But because the value here is wholly between the object's own parts, it becomes intrinsic and the beautiful object's beauty lies wholly within itself. Hence it is independent of the particular observer of practical results, or of mere liking.

Romantic beauty seems to be quite different. The mutual determination of part by part, as in a statue or a painting, is subordinated to "free and passionate expression." The contrast is analogous to that between determinism and freedom. Romantic beauty is measured by the depth, sincerity, intensity of emotional appeal; not structure, but function, the dynamic side, is most in evidence. I do not, of course, mean that structure and form are absent, but—as seen in the modern and mainly romantic art of music—they are present as a necessary background rather than as the immediate source of the esthetic thrill. What is it, then, that moves us to say of romantic beauty, "it is good"? Is it not that it reveals depths within the personality which are throughout life struggling for expression? I do not think we should consider music, the novel, the drama, more than merely pleasant if they did not show us, however inarticulately, the nature of our own personal life.[16] Personal life is always endeavoring to express itself: romantic beauty succors and fulfils that endeavor. But such endeavor need not always be personal. The wild beauty of a winter storm, of a volcanic eruption, or any dynamically sublime event in nature, reveals hidden and restrained forces of nature as free and unconstrained. We may then venture to define romantic beauty to be the portrayal of an object as realizing, without restraint, what its inner nature tends to accomplish. The realization is good from the point of view of the object. And because the value

[15] Thus, it is said of Bach's works in the polyphonic style that "they have that delicacy of inner adjustment more usually found in the works of nature than in those of man; their melodies grow out of their motive germs as plants put forth leaves and flowers; their separate voices fit into one another like the crystals in a bit of quartz; and the whole fabric of the music stands on its elemental harmonies as solidly as the mountains on their granite bases" (T. W. Surette and D. G. Mason, "The Appreciation of Music," page 33).

[16] *Cf.* Surette and Mason, *op. cit.*, page 203, remarks on the universality of Beethoven's genius.

lies in the relation of the object to its own inner tendencies, the beauty is intrinsic and independent.

At this point it may be well to meet a certain natural criticism. We shall probably be accused of speaking in mythological terms. Is there any such "inner nature," "tendency to express itself," "endeavor," etc., as we have spoken of? Nominalists do not like these words. But it is not necessary to prove that they are objectively true. "In esthetic enjoyment, we do not distinguish reality from semblance."[17] In romantic art, the object is portrayed as expressing what we *feel* to be the inner nature of the object. The question of illusion is irrelevant. In reality this objection is another form of the vulgar objection to novel-reading on the ground that the novel is only fiction.

On the psychological side of esthetics we find a parallelism which confirms the above. "The diffusion of stimulation, the equilibrium of impulses, life-enhancement through repose!—this is the esthetic experience."[18] Or as Fonsegrive says, "*Toutes les valeurs ésthetiques correspondent à des accroissements, toutes les non-valeurs à des diminutions de vitalité intérieure.*"[19] Looking at the matter genetically, Urban finds that the well-ordered object of civilized art must, indeed, minister to this equilibrium of impulses, this balance and repose of connative tendencies; as otherwise it could not have been developed. In the absence of such repose, some one impulse would prevail and there would follow a practical attitude, desire, or judgment.[20] ". . . the formal element of order is significant only as a means of securing repose in the object (or content) which, when unesthetically experienced, is the object of explicit desire and judgment" (p. 229). In fact, as Urban shows, this ordering and balancing is a case of a general psychological law, that of complementary values. Now this simply means that the impulses combine into a whole such that each member affects and influences the others. It is quite analogous to the definition given of classic beauty, though couched in terms of impulses and feelings.

4. Moral values. "Our moral judgments are ultimately judgments of value,"[21] and "by moral value we generally mean the particular kind of value which we assign to a good character" (p. 138). Notwithstanding the vast amount of conflict and disagreement between ethical systems, we may deal with this province briefly. For the disagreements do not so much concern the concrete description of

[17] Baldwin's *Dictionary,* Art. "Æsthetic."

[18] E. Puffer, "The Psychology of Beauty," page 55.

[19] *Revue Philosophique,* Vol. 69, page 572.

[20] "Valuation," page 225.

[21] *Cf.* Rashdall, "Theory of Good and Evil," page 137.

a good character as the ultimate metaphysical formulation of it. In practise there is a fair agreement that it is a character which tends to preserve, so far as possible, the acknowledged values of life, for society and for the individual. Its own value would then lie in its contributing to personal life as a whole. It has been found impossible to define a good character in abstraction from the concrete values of personal life; even Kant's autonomous will must act so that its maxim could, in actual life, become a universal law. And it could become so only by ministering to the welfare of society and the individual.

5. Religion and morality should hardly, I think, be identified, even though they may in the long run be inseparable; but the religious values seem to me to be of the same character as the moral values. Perhaps the definition of religion which assumes the least is that of Höffding: "the fundamental axiom of religion, that which expresses the innermost tendency of all religions, is the axiom of the conservation of value."[22] While one may personally believe that religion is much more than this, it does not seem possible that it could well be less if it is to be a worth-attitude rather than an ontological one. But even from this minimum of character we may see why religion has itself the highest of all values to the devotee. It is because it appears to him as that which contributes to the maintenance of all the values, whether in this life or another one. There seems to be no difference between this type of value and the moral, except one of degree: the religious being the greater and being guaranteed by a higher power than human will. And both the religious and the moral values are those which assist in promoting those more ultimate goods which persons inevitably endeavor to secure.

6. Intellectual values. To most human beings, the truth about things is a value: the proof is that they try so hard to get it. As we might expect, philosophers differ on the nature of this value. One party holds that it is relative to other and practical values; a second party, that it is instrinsic, good for its own sake. If the former view is correct, the value of truth is analogous to that of morality; it consists in ministering to increased life. If the latter view is correct, truth is similar to an esthetic value. Here we are met by another conflict of views. Non-pragmatists are generally either idealists or realists; the idealists declare truth to be a coherent *system* of propositions, the realists believe that its essence lies in its correspondence with external reality. On the idealistic view we have in the value of truth the same structure as in that of classic beauty: a system of mutually determining parts, harmonious, economic. On the realistic view truth consists in the expression of what

[22] "Philosophy of Religion," page 215.

is real in terms of human knowledge. The value of the truth lies in its trueness, *i. e.,* in the fact that it expresses to us the nature of reality. This is comparable to romantic beauty, which we found to consist in the expression of the inner nature of an object. The search for truth by us human beings is the endeavor to get this reality expressed in our experience. Truth is the fulfilment of that endeavor after expression, and its value must then be said to be definable in the same terms as romantic beauty. Oddly enough, the usual view is that idealism is nearer to romanticism than is realism: but that is, I think, not true of modern objective idealism. It is akin to classicism, system, order; while realism seeks the expression of the tendency to independence and freedom, and is thus essentially romantic.

The material for a definition of values is now at hand. We have found in all cases that the value of an object consists in its helping to complete or fulfil some tendency already present. In most of the cases that men consider values, it is the fulfilment of tendencies in the human organism, physical or conscious. Hence values are generally considered dependent on some personality.[23] But that would seem a hasty generalization. The elegance of a mathematical proof—a form of classic beauty—consists in the economy of its structure, the mutual determination of its parts; and it continues just as elegant when no one reads it, for it is constituted by objective logical implications. The beauty of the proof is universally valid and independent of changes in the percipient; which is what objectivity means to subjectivist and realist alike. And it is in unconscious accord with our impersonal definition that we say sunlight is good for a plant, or injurious to a photographic negative. If we do not speak thus of inorganic nature, it is because persistent and dominant tendencies, such as appear in living things, do not there obtrude themselves upon our attention. We are so used to thinking of nature as a cut-and-dried system, so intimidated (shall I say?) by the triumphs of the exclusive scientific attitude, that we dare not find an analogy between our own values and the processes studied in physics. But there is, I believe, a close analogy. We saw it explicitly in the economic values, and the other cases showed the same logical structure. Given any tendency, in dead nature, in living organisms, in conscious minds, which presses toward a certain end: any other tendency that furthers this is for it a good, and any that resists it is for it bad.

May we here claim to have deduced the notion of value from purely factual categories? The specific *qualia* of the good and bad were empirically found to be furthering and hindering of some tendency. Now this statement is couched wholly in terms other than

[23] Höffding says: "It is personality which, in the world of our experience, invests all other things with value," "Philosophy of Religion," page 279.

those of value; yet we may be accused of a certain vicious circle. For, to say that the furthering of a tendency is to that tendency a good is to imply that the *fulfilment* is good; and why, after all, should it be so? Have we really deduced the notion "good" from the notion "fulfilment"? The accusation certainly looks plausible, that we have simply begged the concept "good," and left value, or at least the core of value, undefined.[24] Now, even were this the case, our definition should still have much utility, since it reveals certain characters intrinsic to value; and this knowledge is indispensable to any metaphysics on the subject. That within these characters might lie an indefinable, inaccessible core, could not deprive the definition of truth or of usefulness so far as it goes. But to me, I admit, the above formula seems to have laid bare the very innermost core of value; and for the following two reasons. (1) There is, so far as I can see, no further namable, identifiable *quale;* to allege it seems to me an unwarrantable mystification, setting up an unknowable from which nothing can be learned. "Good" is, no doubt, a *different* notion from "fulfilment" and therefore appears to contain something not authorized in the content of the latter notion. But (2) that is because "good" is the *relation between* the fulfilment (or furthering) and the tendency; a relation uniquely determined, and sufficiently determined, by the two. And because of this unique and sufficient determination, we have, I think, a right to say that the notion of "good" is not begged, but deduced. Accordingly, I venture to offer the above definition as the only non-circular, positive one that I have yet seen. The objections which common sense perhaps feels, to any such claim of deduction of value from fact, would be perfectly sound, did fact not contain the category of tendency or potentiality. Without that category, we may admit, there would be a chasm between value and fact. A world whose only predicates were those of actual existent terms and relations, whether permanent or changing, would be a world in which no values could arise. We could say that so and so is, was, or will be, but we could say no more. But potentiality implies an end; though not necessarily in the teleological sense. And potentiality is a category in good use in the field of statics, theory of heat, and other branches of physics. Now it is in this region of the factual, and in this alone, that the notion of good or bad, of value, can arise.

There is, however, a further objection to our definition, drawn from its consequences, to leave which unmentioned might seem the concealment of a fatal weakness. Our formula appears (and I think the appearance is truth) to commit us to a merely quantitative view. If a value consists in contribution to the fulfilment of a given tend-

[24] I owe this objection to Professor Urban.

ency, then the only sense in which one value can be greater, better, or higher than another, is in contributing more powerfully to a given tendency, or in contributing to a greater number of tendencies. To many this would appear a *reductio ad absurdum;* for it is widely believed that Hedonism has fallen before an analogous objection, and that values, like pleasures, are qualitatively higher and lower. But, in the first place, appeal can hardly with justice be made in philosophy to any doctrine, in order to confute another. The qualitative view, like most philosophical views, can not be regarded as established by consensus of experts; and if empirical evidence conflicts with it, and shows value to be a quantitative affair, the presumption would seem to be against the qualitative view. But further, the appeal to qualities is, in general, the appeal to the indefinable. It is not a source of strength, but of weakness; a giving up of problems, or a refusal to analyze. We wish to know *why* a good moral character is better than a good dinner. Our view indicates that it is because the good character contributes to a vastly greater number of tendencies, in living organisms, than the dinner *per se* can do. That which is the more inclusive or the more intense is, other things being equal, the higher and better. This sort of account explains the degree of a value while the qualitative account explains nothing. But a detailed working out of this statement's consequences for the theory of the scale of values is here not possible.

Do values then exist? Yes, if they are felt; just as much as gravitation, pressure, collisions exist. They may be physical tendencies, or any other kind; so long as they are verifiable as aiding or hindering other tendencies of any kind whatsoever. There is no gulf between value and fact. Let it not be objected that we have made value so ubiquitous as to lose all significance. One might as well say that gravitation is meaningless because it applies to all bodies. Of course, not all imagined values are real tendencies. A man's own wealth may be to him an imaginary value, but without any concrete evidence of its potency. But though this holds of particular and lesser values, it is of diminishing force with the greater and more universal values. Here we come in sight of a metaphysical consequence of our definition which shows it to be, I think, a fertile and suggestive one.

Some values are higher, more inclusive, than others. Thus, a person has great value, because by foresight he is able to further so many tendencies; those of the physical organism, of intellect, morality, art, etc. We may imagine a super-personal value which will include a much greater potentiality of this sort; even an all-inclusive value which will tend to fulfil all the tendencies in the universe. The

more inclusive this value is, the fewer tendencies are left outside which might oppose its complete realization of itself. If it were all-inclusive, there would be nothing left to prevent its passing from potentiality to actuality. A perfect value, or a perfect being, consequently, must be actual—as the ontological proof said. But the question remains, is there any empirical evidence of such an all-inclusive or perfect value, even as merely potential? Does the ideal of perfection show itself as a real tendency, working in experience? Religious people claim that it does so, in their own personal experience. It is outside our province to discuss this question. But it is, I think, a wholly empirical one. The definition of value obtained above would seem to show that if such an ideal is verifiable as a working tendency in our lives, the ontological proof would hold. Kant's refutation of that proof was based on the assumption, inherited from Descartes, of a gulf fixed between subject and object, value and fact. But our definition has crossed that gulf; or rather has shown that there is no gulf. Something of the fertility of the definition lies, I believe, in that closure of a long-established breach.

One more application of the definition may be made. At bottom, all reasoning, thinking, proving, knowing, is based upon certain principles which carry with them their own evidence. Such are the axioms of logic, the axiom that reality is accessible only in experience, etc. These are accepted because they are "deemed worthy." They alone make knowledge possible, and thus contribute to our desire for knowledge. They are to knowledge what God is to the religious devotee: they are all-inclusive cognitive values, grounding all particular judgments and their connections. Because they ground *all* knowledge, there is nothing to contradict them; their mere appearance guarantees their truth; they are, to us, methods of immediate insight. Their value is then more than potential, and they become truths. This is not the case with any less fundamental propositions, however useful they are; for the latter do not ground all knowledge, and some other propositions might contradict them. The fundamental axioms of all knowledge constitute a special case, like the perfect being, where value implies objective realization.

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TWO FACTORS WHICH INFLUENCE ECONOMICAL LEARNING[1]

THE formation of a new habit—which is the process of learning—offers many problems to the experimental psychologist. Recently there has been considerable discussion as to the proper distri-

[1] Read before the Atlanta meeting of the American Association for the Advancement of Science, in Section H. (One correction due to information more recently supplied me by letter has been made with reference to Pyle's work.)

bution of working periods in such formation. Such questions have been asked as, "How long should one work at any one period?" and, "How long an interval of time should intervene between successive periods?" That is, what is the relative value of short periods of work as compared with longer periods? And again, what is the value of short intervals between working periods as compared with longer intervals?

These questions have not only been asked, but already answered, at least in part. The experimental investigations of Ebbinghaus,[2] Yost,[3] Dearborn,[4] Starch,[5] and Pyle[6] all agree in the main that short working periods are superior to longer periods, and that intervals of a day are superior to longer or shorter intervals. But just how much more efficient certain periods are than others has not been worked out with anything like the accuracy that we need. And more important still, we do not know, except in a very general way, what the factors are which go to cause the results so far obtained.

I am interested in these same questions, but from an entirely different standpoint from that of the above-mentioned experimenters. And though my work has been rather more concrete than theirs, I have arrived at conclusions absolutely confirmatory of this previous work. I have been endeavoring for some time to determine how different intervals of time between presentations of a firm's advertisements affect the final permanent impression. My special problem has been to determine the relative effects produced upon a reader, (*a*) when four advertisements of one firm are seen within a few minutes of each other, (*b*) when four advertisements are seen at intervals of one week, and (*c*) when four advertisements are seen at intervals of one month.

In systematizing my results I have used as a standard the average strength of a reader's retention of an advertisement four months after it was seen. This ability then is represented by 100. In Plate I. all my other measurements are shown in terms of this 100, and by it we can see how successive repetitions of advertisements affect permanence of impression. When the four advertisements are seen within a few minutes of each other the four create an impression that is 82 per cent. superior to that created by but one advertisement.

[2] H. Ebbinghaus, "Gründzuge der Psychologie," Zweite Auflage, page 657.

[3] A. Yost, "Die Assoziationsfestigheit in ihrer Abhängigheit von der Verteilung der Wiederholungen." *Zeitsch. f. Psychol.*, 1897, 14, 436–472.

[4] W. F. Dearborn, "Experiments in Learning," *J. of Educ. Psychol.*, 1910, 1, page 373.

[5] D. Starch, "Periods of Work in Learning," *J. of Educ. Psychol.*, 1912, 3, pages 209–213.

[6] W. H. Pyle, "Economical Learning," *J. of Educ. Psychol.*, 1912–13, pages 148–158.

When the four advertisements are seen at intervals of a week the four create an impression 90 per cent. greater than did one. But when the interval is still further lengthened to one month the total impression from the four advertisements drops to only 45 per cent. more than from one advertisement.

Such a result is rather surprising when it is recalled that in the first case all the advertisements of a firm are seen fully four months before the test, in the second case the last advertisement of the firm is seen three months before the test, and in the last case the last advertisement is seen but one month before the test.

These figures indicate, then, that a firm's advertisements repeated at intervals of a few minutes or of a week create a very much greater permanent impression than they would if they were repeated at intervals of one month.

Thus far, I have secured no data concerning repetitions a day apart. All the work done on the subject, however, has been so strong in favor of the day interval, that I feel no hesitation in judging that I shall probably find it superior in my case.

But now there is another factor which influences learning, which enters into the general problem before us. How long should one work at one time in order to secure the greatest returns per minute spent? The workers on this question so far, with the exception of Pyle, have complicated their results by asking, for example, which is better: 2 repetitions a day for 12 days, or 4 repetitions a day for 6 days, or 8 repetitions a day for 3 days. Here two factors, "length of working period" and "the number of presentations," are involved. Pyle tells us that a 30- to 45-minute period is superior to a 15-minute or a 60-minute period. That is, if four individuals of equal ability work each day, respectively, 15, 30, 45, and 60 minutes, the second, by one calculation, and the third, by another, do the greatest amount of work. Pyle was presumably interested in the proper length of a recitation period and so gave his results in this way. But his data, as given, do not tell us how much work has been done by the four individuals if we consider the amount of time spent by them, minute per minute.

After simply reading his article I imagined that the 15-minute worker had probably accomplished more per minute than the other three workers. A recent letter has, however, made it clear that those who worked 30 minutes a day accomplished more per minute than those who worked 15 minutes a day, or those who worked longer periods than 30 minutes.

Now let me report some recent work of my own which, though it seems to have little in common with the just-mentioned investigations, touches intrinsically the same problem.

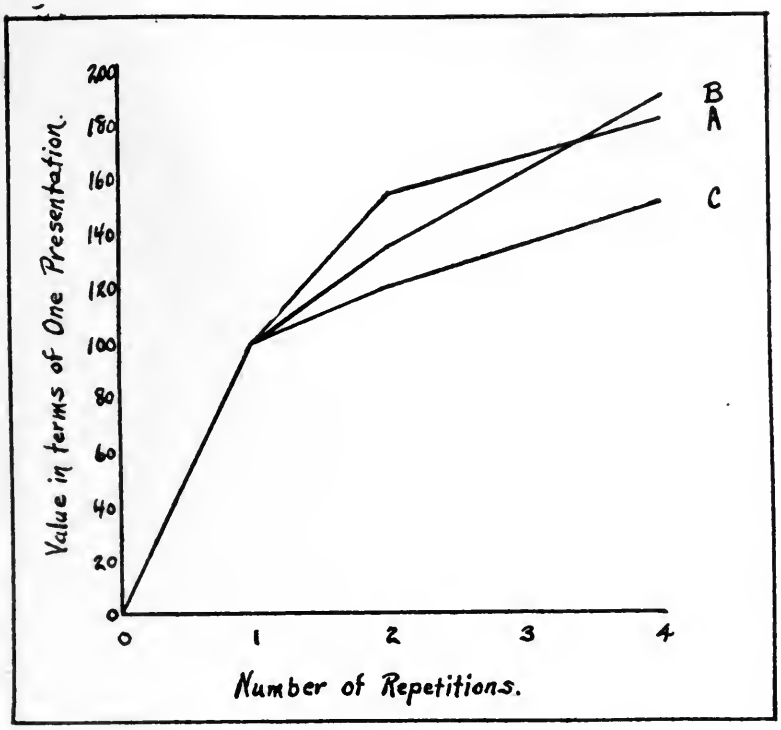

PLATE I. Showing the *Increase* in Effect of Seeing Two Advertisements or Four Advertisements over that of Seeing One Advertisement when (*a*) the Advertisements Follow One Another at Intervals of a Few Minutes, (*b*) the Advertisements Follow at Intervals of One Week, and (*c*) the Advertisements Follow at Intervals of One Month.

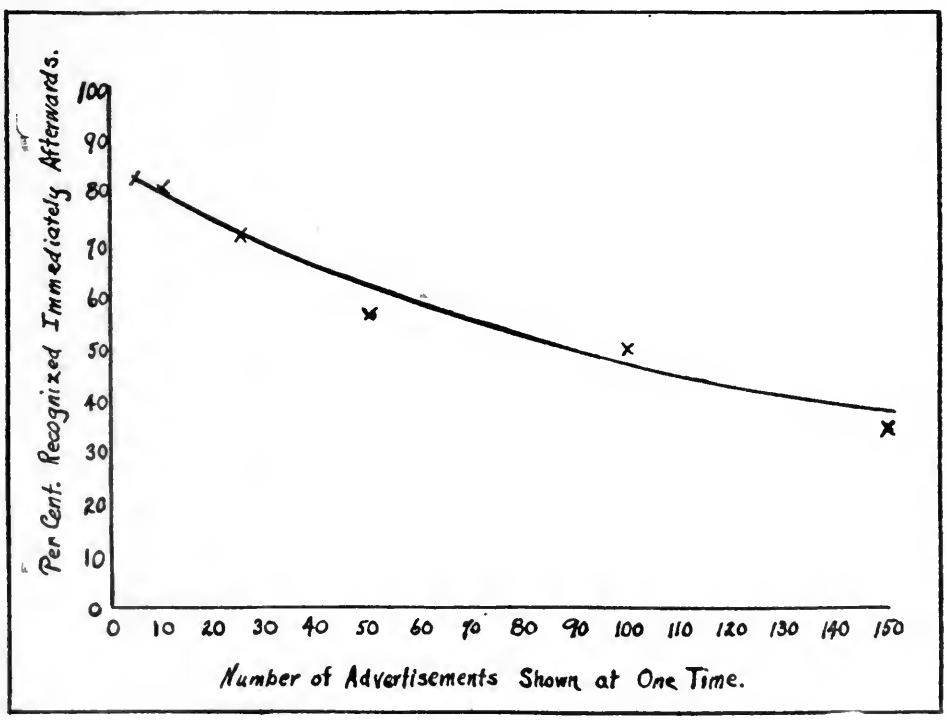

PLATE II. Showing the Decrease in the Number of Advertisements that can be Recognized Immediately Afterwards as the Total Number of Advertisements Shown at One Time is Increased.

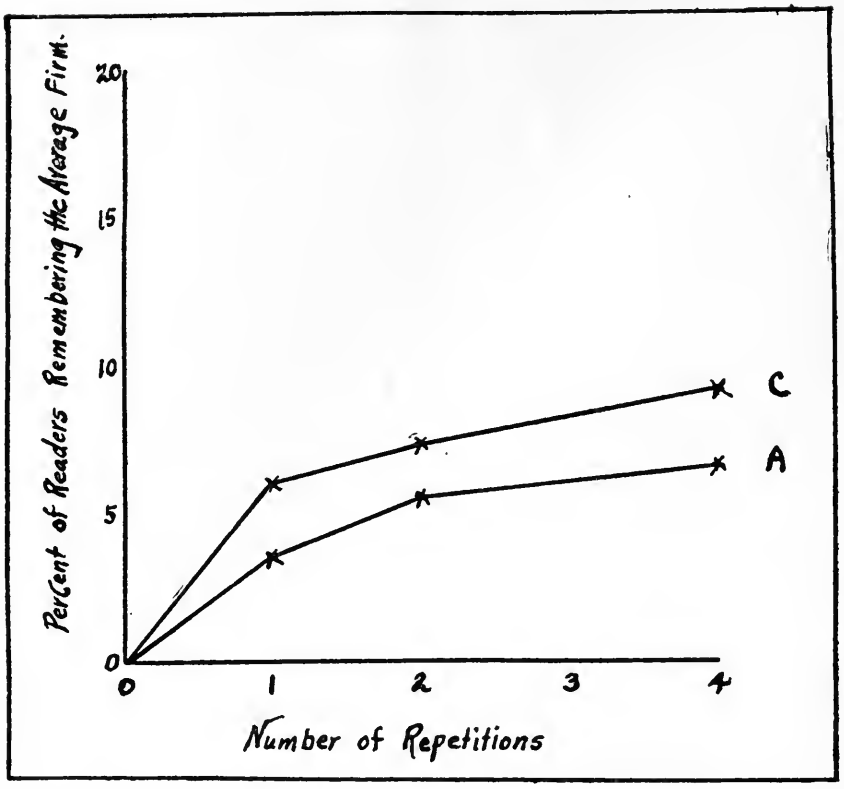

PLATE III. Showing the Per cent. of Readers who Remember a Firm Four Months after the First Advertisement is Seen when, (*a*) the Advertisements Follow One Another at Intervals of a Few Minutes and 168 Pages of Advertising are Seen All at One Time, and (*b*) the Advertisements Follow at Intervals of One Month and but 42 Pages of Advertising are Seen at One Time.

I have already shown that as you increase the number of advertisements that are seen at any one time, you correspondingly decrease the total number that may be recognized immediately afterwards.[7] In other words, this means that the larger the number of objects attended to at one time the smaller can be the impression from any one of them. The curve is shown in Plate II. Now this law holds true in advertising, as I have sufficiently shown in some experiments done for practical advertising men. For example, the average full-page advertisement in *Everybody's Magazine* with its 144 pages of advertising is remembered by 6.8 per cent. of the readers, whereas such an advertisement in the *National Geographic Magazine* with but 24 pages of advertising is remembered by 12.4 per cent. of its readers. In both these cases the persons tested read the magazines at their leisure and were tested one week after—none of them ever dreaming that he would be tested. The advertisements in the smaller advertising section, where but 24 pages of advertising were to be seen, were remembered by 84 per cent. more individuals

[7] E. K. Strong, Jr., "The Effect of Length of Series upon Recognition Memory," *Psychol. Rev.*, 1912, 19, pages 447–462.

than in the larger magazine with its 144 pages of advertising. From our curve we find that one advertisement in 24 can be remembered by 73.5 per cent. of the subjects immediately afterwards as compared with but 38.0 per cent. when 144 advertisements are seen all at once. In this case the superiority is 94 per cent. A difference of but 10 per cent. between these two investigations, widely different in character as they are, is of no great moment.

Let me give you another example. Recently I tested two groups of individuals—one group looked through a magazine containing 42 advertising pages, the other looked through this same magazine and 3 others with a total of 168 pages of advertising. One month later they were tested as to the advertisements they noticed. The second group remembered 7.8 per cent. of the advertisements in the first magazine, whereas the first, who saw only one magazine, remembered 14.9 per cent. of the advertisements in it. Increasing the number of advertising pages from 42 to 168 resulted in a decrease in the per cent. remembered among the 42 pages from 14.9 per cent. to 7.8 per cent. That means that the situation in which but 42 pages are read allows a 91 per cent. greater impression to be made than the one in which 168 pages are read. Now what do we find from our curve (Plate II.)? The superiority of 42 pages is just 95 per cent. greater than 168 pages. Here the difference between these two entirely different experiments is but 4 per cent. Let me emphasize this. In the experiment on which was based the curve in Plate II. the individuals were allowed but one second a page and were tested immediately afterwards. In the just mentioned experiment the individuals were allowed to look at the magazines as they ordinarily do, spending as much time as they wished to. And here they were tested one month afterwards. Yet in both cases the relative superiority of the impression made from each one of 42 pages of advertising over that of each one of 168 pages was practically identical—being, respectively, 95 per cent. and 91 per cent.

I think there is no doubt I have proved my point—that the smaller the number of objects attended to at one time the greater the impression each can and does make.

Here it seems to me my results parallel those of Pyle to a considerable degree. After a certain length of time he finds that further increases of time do not give corresponding increases in amount learned. In his work other factors, such as "warming-up," etc., may be present to prevent the shorter time intervals from being so effective as intervals which are a little longer. My work certainly shows that the fewer advertisements seen at once the better chance each has to be remembered.

But why is this so? I feel myself that an answer may be found

to this query by a scrutiny of some work along a rather different line.

Müller and Pilzecker first emphasized the fact that, in memorizing, the best results could be obtained by resting after learning instead of going on to other work. When a second stanza was learned immediately after the first, the retention of the first was injured to a considerable degree as compared with the case where an interval of rest was allowed before the study of a second stanza. For example, a score of 56 was thus lowered to 26. This inhibitory effect has been referred to by the term "retroactive inhibition." Book told me a few days ago of some work he had just finished. He found that nonsense syllables were best retained if a short period of rest followed the memorizing. If a problem in arithmetic followed the memorizing, the syllables could not be remembered so well as if the memorizer had rested instead, but they could be remembered better than if a second series of syllables were studied during that period.

It is apparent from these studies that strenuous mental work following immediately a mental process of learning acts in an inhibitory manner upon the already formed associations. Possibly, indeed, we should speak of such associations, not as formed, but still forming. For apparently we must look upon the learning process as a formation of new associations which require some time in which to "set" or become "consolidated." Immediate subsequent activity seems to inhibit such consolidation. Moreover, the more similar the subsequent activity is to that which has gone before, the more serious is the injury to the earlier work.

With this in mind it is very easy to see a good reason for the results I have been obtaining in my work in advertising. The impression from the first advertisement seen in a magazine requires some time in which to set. But the impression made from the second advertisement follows it immediately and inhibits the first. A third impression follows and inhibits further the first two, and so on. And so we find that the more advertisements seen at any one time the slighter the permanent impression from any one of them.

Coming back now to the work of Starch and Pyle, we must see in their work the same situation that has faced us in advertising. In learning of any sort the more new impressions made one after the other, the less can be the permanent retention from any one of them. And this is the reason that Pyle can find the surprising fact that an individual can actually learn more working 30 minutes a day than when working 60 minutes a day.

To return to the results of my own investigations. I have one more point to bring out. I have shown that intervals of different lengths between repetitions are of different values, and that the greater the number of impressions received at any one time the less

permanent any one of them can be. Now of these two factors in the learning process the second is by far the more important.

By combining the results of two experiments we have this situation. One group of individuals saw four magazines one right after the other. The other group saw the same four magazines at intervals of one month. Both groups were tested four months after the first magazine was seen in each case. Plate III. shows the results. It is very evident that the second arrangement is better than the first. Now we have already seen that repetitions separated by a few minutes are very much more effective than repetitions a month apart. The trouble here is that the first group saw 168 pages of advertising at one time, whereas the second group saw only 42 pages of advertising at any one time. The slight impression possible from any one advertisement among 168, as compared with the impression received when among 42 advertisements, has far offset the advantage from having the repetitions within a few minutes as compared with one month.

Summarizing, I have hoped to make clear in this paper:

First. Of all intervals between successive repetitions that of a day's length will give us our maximum results, and those of a few minutes and of a week are much superior to that of a month.

Second. The more impressions made at one time, the less is the permanent retention of any one of them. This is probably due to the effect of retroactive inhibition.

Third. In any situation when both length of interval and the number of impressions to be made at any one time are concerned, it should be borne in mind that the second factor is far more important than the first.

This means that further work should be directed more particularly to a better understanding of how many impressions can be made to advantage at any one time, rather than to the proper interval of time between their successive presentations.

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CONCEPTS AND EXISTENCE

PROFESSOR BUSH'S discussion on "Concepts and Existence"[1] provokes me to violent agreement with every point he there makes, save one. And that one is, I believe, not at all vital to Professor Bush's central thesis. It is, however, important enough to be cleared up. For upon it alone Professor Bush rests his argument

[1] This JOURNAL, Vol. X., page 686.

against one side of my attempt[2] to expose as erroneous the ancient distinction between "noused" things and sensed things. The particular distinction I am interested in overthrowing is the Platonic one which makes the senses the organs of experiencing particulars and the intellect the organ of experiencing universals. To avoid needless misunderstanding, I ought to reaffirm what I said in my recent article on the subject: how and where and under what conditions any given entity is experienced is a purely empirical question which can not be answered by inference from any purely logical propositions and distinctions (such as the distinction between "*genus homo*" and John Smith of Smithville). I do not believe that all universals can be perceived, any more than I believe that all particulars can be. Furthermore, I am quite willing to agree with Professor Bush when he says that "the ancient distinction between noused things and sensed things can not be made quite to disappear," if by this statement he means that most universals are not given in simple perception, and that especially most universals of the I_v order are never so given because they are not existential at all.

But Professor Bush adds to this meaning another one which he establishes through an entirely different argument. Taking the geometrical straight line as an illustration, he seeks to show that "that which now appears in a definition reached after many years of highly expert use is surely a different thing from the straight edge of a particular object. Rules for construction need not be identical with empirical descriptions of what is beheld after construction." Geometrical entities, says Professor Bush, are reached through a long process of trial and error by experts; and the experts construct their definitions with an eye to particular results and manipulations; so they finally construct concepts which are quite different from the things we perceive. How great this difference is, Professor Bush indicates in the following passage:

> "In geometry, the line *is* the definition, although in architecture it is a straight edge of structural matter. We speak of the plan of the roof, the lines of the roof, the system of lines, etc., but what is a definition doing with a preposition *of?* The selected property *of* a thing becomes an instrument in geometrical operations. . . ."

What, now, is the nature of such a definition? It is as follows, according to Professor Bush:

> ". . . Isolating this property (of straightness), . . . how shall we describe it? It will not help us to say that a straight line is a bee line. We must describe it after the *if-then* fashion. In any case, we seek a formula, a concept for bringing a straight line into existence. When we have done so, we have another object which repeats the property. . . . Is there, however, no difference

[2] "The Empirical Status of Geometrical Entities," this JOURNAL, Vol. X., page 393.

between the formula of a railroad curve and the curve of the track when laid down? It would be a little unusual to say that we perceive the curve of a track that doesn't yet exist. The curve is, meanwhile, the plan of the engineer. . . ."

Here I begin to grow troubled. It seems to me that this entire line of reasoning proceeds from a wrong assumption about the straight line (and all other geometrical entities). We are told that "the line *is* the definition." But I certainly can not agree to this, nor could a geometer, *so long as he wasn't trying to be a metaphysician.* Indeed, the very wording of the definition is, as Professor Bush says, a formula, one "for bringing a straight line into existence." Now, if this is true, how can the definition be identical with that which it is to bring into existence?

The definition, insofar as it is a pragmatic entity, is related to the straight line precisely as the recipe of a cake is related to the cake. I wish some of our champions of pragmatism would say this quite boldly. It would help clear up an unnecessary confusion, notably the one into which, as it appears to me, Professor Bush has lapsed. The cake is not the recipe, and the recipe is not the cake. Each has properties which the other lacks, consequences which the other never can bring to pass. So, too, with the definition and the straight line. The former is (or may be) a recipe which, *if* used upon suitable material, will *then* produce a straight line which you may see and feel and perhaps use in building a house.

Grant this, and does it not follow that *the relation between formula and thing to be made has nothing to do with the relation between universal and particular?* For the formula is not the universal and never can be, any more than the recipe is the cake. One way of proving this is as follows: We perceive genuine straight lines. (Here, I take it, Professor Bush agrees with me.) But we do not perceive them as definitions (there is no *if-then* relation in them, nor are the implications of the preconditions of straightness visible). Hence what we perceive is not a definition. Hence, if what we perceive is identical with what the geometer's recipe *produces,* the straight line is not a definition, nor is the definition the line. What, then, is a formula? It is precisely what people have always supposed it to be; a statement of the materials and methods for bringing about a certain state of affairs. The state of affairs may be anything you please *except the formula itself.* There is a formula for curing hams, a formula for paying your income tax, a formula for making automobile tires, a formula for launching a stock company, and so on, formulas without end. Now, I have not heard anybody suggest that an automobile tire is identical with its definition. Certainly a man who found himself ten miles from the nearest garage, and with the rear tires of his car punctured, would not feel that he

could slip a couple of definitions onto the wheels and spin merrily onward.

I do not see in what respect straight lines differ from tires, in their respective relations to their generating formulas.

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REVIEWS AND ABSTRACTS OF LITERATURE

Questions of the Day in Philosophy and Psychology. HERBERT LESLIE STEWART. New York: Longmans, Green, and Company. Pp. ix + 231.

In a foreword the author writes: "A considerable proportion of the audience to which the lectures were addressed consisted of persons possessing little previous knowledge of the subject, and the essays, as now published, are intended to be intelligible to the general educated reader. To those versed in the technicalities of philosophical discussion this must be my apology for the popular style in which these papers were written." There seems to be little occasion for this apology.

The following subjects are treated in the order given: "The Reform in Psychology," "The Present Position of the Hypothesis of Sub-consciousness," "The Interpretation of Genius," "The Growth of Public Opinion Psychologically Considered," "Pragmatism," "Recidivism," "Pessimism," "The Value-Judgment and The Independence of Ethics" and "The Cult of Nietzsche."

In the first essay, in which the author undertakes to appraise the "new psychology," we find the following remarkable statement: "One of the best fruits of this independent psychological movement has been the establishment of the Society for Psychical Research." Such a prop for psychological science would not be highly regarded in America. And again we read (p. 17): "Already amid many protests whose echoes have yet scarcely died away it has established telepathy as a principle of explanation." When due allowance is made for philosophical hospitality such a statement still appears sanguine. On the other hand, generous welcome is accorded animal and comparative psychology. A clear statement is given of the relation that that psychology should sustain to ethics, jurisprudence, and politics. The fault with Mill and his school was not that they used psychology in the manner that they did, but that they had a bad psychology. It is the author's desire that the "new psychology" may be "applied to these studies with Mill's logic and lucidity." After reading the volume through one is disposed to doubt whether the writer fully recognizes the implications of what he so generously accepts in his initial address.

The essay on pragmatism is characteristic of the writer. The leaders of the pragmatic movement are praised for the important service that they have rendered to clear thinking, a service rendered in three ways. First of all in their critique of concepts they "have helped us to escape the difficulties in which an epistemology like Mr. Bradley's must

be entangled, by substituting the idea of a science that advances by provisional hypotheses brought constantly to the touchstone of actual 'working' for the idea of a mental process whose stages correspond bit by bit to the processes of nature." Again in their attack upon the British philosopher's "habit of recognizing difficulties;" pragmatists have refused to believe that any higher synthesis can justify "us in saying two contradictory things at the same time, and every reader of the philosophical literature of which I am speaking knows how sorely the admonition was required." Furthermore, they have forced philosophers to reopen the much-vexed question as to the relation between the psychology of cognition and epistemology and metaphysics. While they have done no more than merely force the reopening of this question, they have done this at a most opportune moment. But while these things may be said in favor of pragmatism, there is "no real justification in the evidence that has been adduced" for the thesis that the movement exists to enforce, *viz.*, "that truth is not a purely intellectual ideal and that it is to be recognized by other than intellectual tests." Laying verbal difficulties aside, we do not have to believe certain things because we feel and will in certain ways. As to the dictum of Schiller, "The foundation truths are at bottom postulates which we must accept *if the universe is to be fit to live in,*" it may be replied that genuine first truths, such as that the universe is rational through and through, need no demonstration. The relational character of experience is just as ultimate a datum as sense-impressions. Thinking is relating, and relating is synonymous with the establishment of causal connections. It is foolish to ask how thought can justify its causal law; this would be to ask that thought justify itself. Furthermore, pragmatists are not the first to do "justice to the significance of the feelings and the will for the solution of the world problems." The "demands and cravings" of human nature have long stood theology in good stead. By way of conciliation Mr. Stewart urges that the universe might well be rational through and through without reason's being the sole or even the most direct avenue into the ultimate heart of things. "No doubt when viewed from the standpoint of omniscience the whole scheme of things is so fitly joined together that every part is seen to involve every other part after the fashion on which the Hegelians love to dwell." But "mental operation does not cease to be intellectual because it can not be embodied in a syllogism." There may well be other ways to the center of things. And to the author's mind "the non-rationative, but still intellectual, faculty of intuition is . . . one of the most fertile suggestions of the greatest of living thinkers, M. Henri Bergson." The writer's position may be summed up in his own words. "Its [pragmatism's] importance lies in the shock it has given to so many slothful dogmatisms and in the determined effort it has made to bring philosophy face to face with the concrete things of life."

This is cold comfort from a conciliator. Add to this the marked disposition of Mr. Stewart to cling tenaciously to the Hegelian universe, and one can well believe that the author will make little headway in his conciliatory labors. Pragmatism presupposes an evolving universe and

evolving minds,—an evolution that is a unique modern conception. Between the evolving universe and the evolving minds there exists an interaction involving a mutual plasticity between the knower and the thing known, a doctrine that is likewise unique. In previous doctrines the mind has been represented as plastic before nature's activity, or nature has been thought to be the creation of an active mind. There have been various efforts to establish an agreement between nature and mind, or to explain a postulated resemblance between things as they exist and as they are thought. At least, pragmatism introduces some novelty. But while pragmatism presupposes a universe so constituted—which of course is quite enough to let out all Hegelians—it does not stress the universe as an object of knowledge and is perplexed when one speaks of the universe as viewed from the standpoint of omniscience. It does regard the question of human knowledge as germane. Truth is a quality of human, not divine, ideas, judgments, etc. Knowing grows out of the very instability of things. If there had been no instability, there would have been no doubt, no uncertainty; and if there had been no doubt and uncertainty, there would have been no thinking. There would have been only things acting upon one another. But Mr. Stewart is still faced the other way.

The case made out for pessimism in the seventh essay takes on the aspect of a forced march that is not satisfactorily explained until one comes to read the following essay. The establishment of pessimism is one way of urging the acceptance of theism. "If our argument so far has been sound we have shown that, on purely naturalistic hypothesis, if a man is temperamentally disposed to the condemnation of life there is no logic that can refute him." Ah, but let us see what can be done on some other assumption! The argument in one form or another is not new. St. Thomas even found in evil a proof of God's existence. But it is not an argument that has appealed to the human understanding, speaking generally. One may not object to, one may accept, the tenets of theism, but no one cares to be "backed into" the house of his father from the rear.

In the eighth essay Mr. Stewart argues against the independence of ethics and maintains, after Kant, that theism and immortality are fundamental postulates regarding the cosmic order that are to be presupposed in ethical theory. Recourse must be had to beliefs "which carry us beyond the facts of the natural order of the world." Undoubtedly much can be said in favor of immortality, theism granted; we should be allowed to complete the task assigned. But the argument that ethics should be based upon either theism or immortality does not seem to be so cogent. In many places the author seems to overstep the bounds of good argument. He writes: "Those, and they are not few, who find no point in such questions are, I believe, as a rule, persons whose career has not been of the strenuous type, whose lot has been cast in conventional comfort and whose imagination is not sufficiently active to bring before them any sort of experience which is in sharp contrast with their own." And again: "When Kant spoke of immortality he meant what he said, therein differing notably from some writers who are confusing us by employing the same word to-day." And here he introduces some unpleasant animadversions

upon other folks's conceptions of immortality that differ from the view that he happens to entertain. It is, however, hard to see just why the use of this term is to be prohibited. Much, at least, might be said for the antiquity of some of these doctrines.

The essay upon the growth of public opinion is well worth reading, showing a keen insight into social psychology. The author's conclusions, however, do not seem to me justified. I am not sure that they do not involve a very simple logical fallacy. It is true that men in the *mass* are not moved by reason so much as by feeling, sympathy, suggestion, etc. But do we have to appeal to the mass? A comprehensive educational programme may reach far enough to render each member of a democracy *as an individual* open to reason, while the proper social mechanisms, the press, etc., may render the individual available. Indeed, some Americans are hopeful that this transformation is now going on. If this be so, it does not follow that there must be a leisure class whose duty it is to do the thinking, while "the majority must always be led." One is prone to wonder whether Mr. Stewart is entirely free from the bias of being a contented Britisher.

Mr. Stewart makes a pitiful slaughter of poor Nietzsche. As he himself suggests, he probably takes him too seriously. From the standpoint of philosophy, pity and sympathy seem to me to be more apt in his case than the criticism here offered. In the field of literature, the case is different; Nietzsche may be looked upon as the last word of romanticism. For these reasons it seems that Mr. Stewart is guilty of carrying coals to Newcastle.

JOHN PICKETT TURNER.

COLLEGE OF THE CITY OF NEW YORK.

Humanism: Philosophical Essays. F. C. S. SCHILLER. Second Edition Enlarged. London: The Macmillan Company. 1912. Pp. xxxii + 382.

"Humanism; Philosophical Essays," is enlarged in its second edition by four essays, constituting about one fourth of the volume: "Humism and Humanism," "Solipsism," "Infallibility and Toleration," and "Freedom and Responsibility." These comparatively recent deliverances of the humanistic message attest its courage and catholicity, not to say audacity. A neglected but bodeful aspect of Hume; a new variety of solipsism, crypto-solipsism, whose fungoid growth may infect alike the absolute idealist and the neo-realist, but finds the humanist immune; the infallibility of the Pope at Rome and the infallibility of the "man in the street"; a call to surrender the idea of absolute truth; a reconsideration of the free-will controversy: these are some of the topics to which the humanistic criticism and interpretation are applied with something of the fervor and conviction of a new gospel. It becomes evident that a relatively large amount of energy is still being consumed in freeing humanistic modes of thought from the trammels of a highly institutionalized intellectualistic tradition; if more positive constructive results are demanded, the humanist can point apparently only to the fruitful sciences whose working theories form "a policy and not a creed."

The first of these essays is a protest against the attempt to relegate humanism to the category of humism. The resemblance is superficial. Humanism is like humism in being an anti-apriorist, pragmatistic, empiricism; but it differs in being neither scepticism nor intellectualism; nor does it surrender to Hume's criticism of causation and activity. Moreover, Hume's criticism of the conception of power, or activity, which has been ignored or "silently and tamely acquiesced in" by the intellectualists, is quite as paradoxical as his criticism of the conception of cause, and is even more radically destructive in its philosophic effects. Humanism by the simple expedient of starting with our immediate experience "as is," not with some sensationalistic or idealistic abstraction from experience, "dissolves the whole mirage of Humanian magic."

A humanist could be a solipsist if he wanted to be one; but he doesn't logically have to be one. If his behavior indicates that he recognizes the independent existence of others, with thoughts, wills, personalities, for which he is not altogether responsible, the proof of his asolipsism is complete. Other philosophies, realistic as well as idealistic, are haunted by the logical possibility of solipsism. This is more apparent in the case of the monistic idealist. In the case of the neo-realist, his apsychologism leaves the solipsistic door open. Failing to take into account the various and sometimes conflicting reactions of different individuals to the world of objects, the neo-realist may yield to the temptation to regard himself as the sole knower of the world. Thus the humanist would be avenged upon the realist, particularly, it would seem, upon the realist who has held up to scorn subjectivism of the Berkeleyian type.

The doctrine of papal infallibility is reasonable and moderate, so Schiller contends, compared with the crass infallibility claimed by the "common-sense" individualist for each thought as it comes into his head, and compared with the infallibility implicit in all rationalistic philosophy. The remedy urged is to give up the idea of absolute truth. Let truth be humanized. Let it be defined no longer as that which is "cogent and compulsory and irresistible, but as what is attractive and valuable and satisfying. Let truth mean whatever can satisfy our cognitive cravings, whatever can answer a logical problem. And let it mean our *best* answer for the time being. Let it be conceived, that is, as essentially progressive and *improvable.*"

The essay on "Freedom and Responsibility" was published originally one year prior to the essay on "Infallibility and Toleration," although it follows the latter in the book. Possibly this accounts for the apparent lack of a humanistic concept of freedom answering fully to the humanistic concept of truth. The essay on "Freedom and Responsibility" is a many-sided discussion of the old controversy, proceeding from a vigorous *reductio ad absurdum* of the attempt of a socialistic writer to absolve criminals from responsibility for their crimes; going on to develop in one of the most illuminating passages of the book the truth that resides in the deterministic hypothesis when considered in its scientific bearings; and concluding with a rehabilitation of the concept of freedom as a rational concomitant of mental and moral growth, even determinism resting finally

on a free choice; but the emphasis, nevertheless, seems to be laid on the freedom that is the freedom of choice—choice, to be sure, that determines, that is a genuine contribution to the course of events—rather than on that more concrete freedom of thought and action, that freedom to express and to improve some concrete function or capacity, habit or method, which humanized truth, truth that starts with and is realized in immediate experience, truth that is "essentially progressive and *improvable*," would seem bound to demand as its province and responsibility, and which is perhaps all the freedom that the "plain man" at least really cares about.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. September, 1913. *Idealism as Tautology or Paradox* (pp. 467–483): J. W. SCOTT. – The realistic criticisms of idealism, in both England and America, are directed against abandoned conceptions of idealism and mistake its central interest. They attack Berkeley, not current idealism. *German Philosophy in 1912* (pp. 484–501): OSCAR EWALD. – Current German philosophy represents the growing conflict between metaphysics and theories of knowledge, as in open conflict. The chief representations of *logism* are Cohen, Natorp, Kinkel, and Cassirer. Especially noteworthy is Natorp's "Kant und die Marburger Schule" in the *Kantstudien*. The prominent metaphysicians are Keyserling, Driesch, and Simmel. *The Nature of Primary Qualities* (pp. 502–511): THEODORE DE LAGUNA. – The finding of a standard for "real size" is a "case of incomplete induction; yet all natural science is based on it." The same is true for duration, mass, force, and work. *Bergson's Intellect and Matter* (pp. 512–519): CHAS. E. CORY. – Bergson often begins with certain contrasts and distinctions, submits them to analysis, finally resolving them into a synthesis. But the arguments for the synthesis have value only in terms of the original contrasts. This thesis is applied to the treatment of intellect and matter. *"Values" and the Nature of Science* (pp. 520–538): JOHN FREDERICK DASHIELL. – The world we live in is such that values form a fundamental category. "Scientific thinking arises in the natural human enterprise of discovering, defining, and analyzing these dynamic values in the interest of living; the category of the subjective finds its place here in the functional classification of worths." *Reviews of Books:* John Watson, *The Interpretation of Religious Experience:* G. T. LADD. William Ernest Hocking, *The Meaning of God in Human Experience:* JAY WILLIAM HUDSON. Oswald Külpe, *Die Realisierung:* RALPH BARTON PERRY. *Notices of New Books. Summaries of Articles. Notes.*

Gemelli, Agostino. Il Metodo degli Equivalenti. Firenze: Libreria Editrice Fiorentina. 1914. Pp. 344.

NOTES AND NEWS

PRESIDENT POULTON'S presidential address to the Linnean Society of London deals with a work by G. W. Sleeper, of Boston, printed, apparently, in 1849, and containing an anticipation of modern views on evolution and the causes and transmission of disease. It goes far beyond most, if not all, previous attempts at solving the problem of evolution. The clear grasp, shown by the author, of the Darwinian principles of the struggle for life and origin of fresh species by the preservation of those forms best adapted for their environment, his advocacy of the persistence of germinal characters, the terminology he uses, as well as his suggestion of the theories afterward developed by Arrhenius, Galton, and Weismann, engender a doubt as to whether his work is not a cleverly devised fabrication with a falsified date. Not less surprising are his enunciation of the germ-theory of disease, his experiments on the cultivation of streptococci from a sore throat, with the use as a germ-filter of cotton wool sterilized by heat, his suggestion of the action of phagocytes, and his recommendation of metal gauze protective frames for doors and windows in order to ward off infection carried by insects. After weighing the interesting information brought together by Professor Poulton respecting the book and its author, few will doubt that Mr. Sleeper's work was really printed and published at the time stated.

THE Southern Society for Philosophy and Psychology has elected the following officers for the year 1914: President, Professor J. B. Watson, of Johns Hopkins University; vice-president, Dr. Josiah Morse, of the University of South Carolina; secretary and treasurer, Professor W. C. Ruediger, of George Washington University.

DR. ROBERT H. GAULT, of Northwestern University, has been promoted from assistant professor to associate professor of psychology. Dr. Gault continues as editor in chief of the Journal of Criminal Law and Criminology.

AT the British Association a separate subsection of psychology was formed this year for the first time. The contributions received were so numerous that four meetings were held during afternoons.

ON January 16, Dr. C. E. Ferree read a paper before the Philadelphia section of the Illuminating Engineering Society entitled "Deficiencies of the Method of Flicker for the Photometry of Lights of Different Colors."

THE annual meeting of the American Anthropological Association was held in the American Museum of Natural History, New York City, December 29–31, in affiliation with the American Folk-Lore Society.

DR. JOSEPH JASTROW, professor of psychology in the University of Wisconsin, gave the opening convocation address at the University of Missouri on February 4, on "Theory and Practise."

PROFESSOR EDWARD KASNER, of Columbia University, recently gave a lecture at Princeton University on "Elements of Infinite Order and the Geometry of Divergent Power Series."

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PSYCHOLOGY AND SCIENTIFIC METHODS

THE DEFINITION OF VALUE[1]

I BELIEVE that I am in accord with the view of Professors Urban and Sheldon[2] as to the general spirit in which the discussion of this problem should be conducted. At any rate, I agree that we should not ride hobbies or prolong factional differences that have arisen in the past. We should treat our problem as a new problem, and approach it, so far as possible, with innocent minds. We should not regard it merely as a special case of an old problem; and we should not feel obliged to be consistent with our past selves, or loyal to our several parties. Beyond this, I can not follow the Urban-Sheldon duumvirate, not for lack of good will, but for lack of understanding. I can not promise, with them both, to eschew epistemology and address myself to "the structure of reality," because I find that when one examines values one not only finds them in the context of subjectivity and judgment, but is from the first puzzled to know how much of that context belongs to their structure. I agree that we should be inductive and seek to arrive at a definition of values by a study of instances, but at the outset an instance can in this case be no more than an approximation, a vaguely bounded region in or near which is that entity which we may agree subsequently to call value. One can not collect values as one can collect butterflies, and go off into one's laboratory with the assurance that one holds in one's net the whole and no more than the whole of that which one seeks. There is no perforation about the edges of values to mark the line at which they may be detached. The great task is to trace the boundaries and detach the entity by an act of discrimination. The Mona Lisa is good and its theft was evil. But in order to add these to my collection of values, what must I include? Is all that makes the Mona Lisa good included within its frame? There is at least some ground for asserting that the Mona Lisa is a good only in so far as you include its enjoyment, or its popularity, or its history. Similarly there are those who say that its theft as evil must be taken to include the

[1] Read before the American Philosophical Association, December 29, 1914, in opening the discussion of "Value."

[2] *Cf.* letters contributed to this JOURNAL, Vol. X., pages 587 and 643.

conscience of the thief, or the collective judgment of the times, or the unhappiness of France. If, assuming that the Mona Lisa I had under my arm was a good, I should forthwith compare it with the money in my pocket with a view to discovering their common structure, I should too hastily have committed myself to a limited set of structural possibilities. On the other hand, if I were to inquire more carefully into the relation of the physical Mona Lisa with attitudes and judgments of sentient beings, or with the demands and opinions of communities, I should walk on the epistemological grass where Messrs. Urban and Sheldon have enjoined us not to trespass. Of these two evils, I shall choose the latter. I shall trespass because I am curious to see what is there, and suspect that Messrs. Urban and Sheldon will follow me if only to put me off. (I seem to see Professor Urban's footprints there already)!

In any case I am in agreement with Professor Sheldon as to the manner in which he and I can best do our parts as leaders in this discussion. We must seek to avoid a Babel of opinions by discovering, if possible, a common language. There are classicists who speak the purest Plato; others who belong linguistically to the great family of Kant and learned at their mother's knees to lisp the flowing syllables of Windelband or Green; and others who talk among themselves exclusively in the strange new dialects known as Deweyan and Meinongese. There is as yet no cosmopolitan party that can speak all these languages and think consecutively and commutably in terms of τὸ ἀγαθόν, εὐδαιμονία, *Beurtheilung, Normen, unmittelbare Gefühl des Sollens,* valuation-process, recognition coefficient, redisposition, marginal utility, axiology, over-individual will for identities, *Wert, Werten, Bewerten, Wertung, Werthalten, Wertschätzen, Werturteil, Wertgeben, Werterlebniss, Wertbegriff, Werthaltung,* and *Nichtgegebenheitswerte.* It is scarcely to be expected that we should all engage profitably in a dispute between Rickert and Münsterberg, or Meinong and Ehrenfels, or Dewey and Stuart. But there is an undertaking for which one of us is as well qualified as another, and that is a review of the present state of the question—a classification of views from the standpoint of the outsider. A united attempt at such an *Auseinandersetzung* would, at any rate, tend in the direction of a universal language, or in the direction of an appeal from private or party symbols to common objects. To promote this end, I shall attempt a critical classification of definitions of value.[3] Of course I shall betray myself in many a provincialism and prejudice, but you will give me credit for my effort and I hope surpass me in attainment.

[3] I recognize the existence of important problems that I do not here even touch upon, such as the measurement of value, the distinguishing features of species of value, such as moral value, beauty, truth, etc., the genesis, development, and transposition of values, teleology, value and existence, etc.

I

The fundamental problem in theory of value, in so far as this is philosophical, is the problem of definition. If Socrates were here, he might say: "Now I want you to tell me whether value is one whole, of which virtue and beauty and wealth are parts; or whether all these are only the names of one and the same thing. Are they parts in the same sense in which mouth, nose, and eyes, and ears, are parts of a face; or are they like the parts of gold, which differ from the whole and from one another only in being larger or smaller?" And we should thus be drawn into a consideration not of the several features of value, but of the physiognomy of value. What is it in principle to be a value? What is value generically?

1. In undertaking to answer this question, we are challenged at the outset by those who maintain the indefinability of value. This view, advocated by Sidgwick a generation ago, and recently restated and reargued by Bertrand Russell, G. E. Moore,[4] Brentano, and Santayana, would seem to rest upon two independent grounds.

(1) In the first place, value is adjectival rather than substantive. It can not be identified with any of the things of which it is predicated. There is no thing such as pleasure of which one can say that it alone has value, for it is always possible that the addition of something else such as knowledge may result in more value or in less value. We can define the valuable thing only as that which *has* value, in other words, we can not define it at all. But this argument rests upon a misconception. It is, of course, impossible to define a predicate in terms of that of which it is predicated, otherwise there would be no difference between subject and predicate. But it does not follow that the predicate is indefinable. The beach is level, and I can not define level in terms of beach. If I add more beach it may cease to be level. But it does not follow that "level" is indefinable. It would be indefinable were it unanalyzable, but that is evidently not the case. There is certainly nothing in the nature of a predicate as such that requires it to be simple. In the case of value, it becomes a question of fact.

Nor is there any logical connection between the simplicity of a quality and its restricted or unrestricted appearance in the rôle of predicate. Were Moore able to prove universally, as he certainly has not done, that any kind of thing whatsoever may be good, nothing would follow as respects the simplicity or complexity of goodness. Nor if it were proved that goodness was simple would anything follow concerning the number of things that could be good. It is quite possible to argue, as does Santayana in his criticism of Russell,[5] that

[4] *Cf.* his "Principia Ethica," §§ 5–14.

[5] "Winds of Doctrine," pages 138 ff.

goodness is simple, but that a thing's *being* good means that goodness is emotionally attributed to it, so that a thing can not be good except in relation to desire. It becomes a question, in short, as to the precise nature and conditions of the copula in propositions concerning goodness. The question of the simplicity and indefinability of the predicate value is an independent question.

(2) Not only Moore and Russell, but Santayana, Brentano, and others as well, assert that the value character, whether it be termed rightness, goodness, or oughtness, is unanalyzable.

But in order to find that a character is indefinable one must at least have found it. In other words, it will not do to pronounce value an indefinable because one has not been able to define it. One must be prepared to point to a distinct *quale* which appears in that region which our value terms roughly indicate, and which is different from the object's shape and size, from the interrelation of its parts, from its relation to other objects, or to a subject, and from all the other factors belonging to the same context, but designated by words other than good, right, value, etc. I find no such residuum. Moore's comparison of good with the quality "yellow"[6] seems to me to be purely hypothetical. Good would be like yellow *if it were* a simple quality. But then the empirical fact that it is not like yellow argues that it is not a simple quality. There is no difficulty over the meaning of terms connoting simple qualities, nor is there serious difference of opinion likely as to their distribution. Things wear them in public and any passer by may note them. But no one who has read either Sidgwick's or Moore's solemn observations concerning what things are or are not good[7] can for an instant be deceived into supposing that their moral perception has lit upon a quality whose presence they report for our benefit. They impute goodness in a miscellaneous way to things that are generally regarded as good, until in a fit of inspiration they are moved to say that it is "Desirable Consciousness which we must regard as ultimate Good,"[8] or that "all great goods and great evils involve both a cognition and an emotion directed towards its object";[9] which assertions are plausible because they sound so much like the view that goodness itself *consists in* desirable consciousness or in a cognitive-emotional attitude to an object. For our authors these purport to be inductions reached after prolonged observation of the resting-place of the simple indefinable quality good. That it should have settled permanently upon desirable consciousness

[6] "Principia Ethica," page 10.

[7] *Cf.* Sidgwick, "Methods of Ethics," Bk. I., Ch. IX.; Bk. III., Ch. XIV. Moore, "Principia Ethica," Ch. VI.; "Ethics," Ch. VII.

[8] Sidgwick, *op. cit.*, page 397.

[9] With the possible exception of "the consciousness of pain." Moore, "Principia Ethica," page 225.

or the cognitive-emotional attitude as its habitat must possess for our authors the novelty and wonder of sheer fact. For some of their readers, like myself, those conclusions will appear to be a laborious rediscovery of assumptions, or the splitting of an identity into a synthetic judgment through the hypostasization of a word.

There are other sound reasons for rejecting this doctrine of indefinability, but I can here do no more than barely mention them. In the first place, this doctrine is compelled to supplement an indefinable good with an indefinable evil; and in that case I suspect that the very peculiar and significant relation of polarity which exists between good and evil becomes not only indefinable, but unintelligible as well. At the same time the matter of degrees or comparative magnitudes of value is left in even greater darkness than before. In the second place, these indefinables give so little account of themselves that the phenomenon of the appearance and disappearance, the waxing and waning of values, is left totally unexplained. Finally, the doctrine of indefinability is objectionable on purely methodological grounds. It is so easy and comfortable to mistake the simplicity of our own knowledge for a simplicity in the object, that I believe the hypothesis of simplicity should be a last resort with the presumption against it until every alternative has been tried and found wanting.

II

The definability of value has usually been assumed. There has doubtless been much confusion, as Moore has pointed out, between the notion of the thing having value, or *a* good, and the value itself, or good*ness*. But most, if not all, of the classic views can nevertheless be stated as definitions of the value predicate. The views to which I wish to call attention have rarely, if ever, been held in entire purity. But theoretically, at any rate, they are independent, and have figured prominently in both ancient and modern theories of value.

The first of these is the view that value consists in the relation of harmony or fitness.[10] It finds its point of contact with common sense in the popular expression "good for." To possess value means to be *condition of*. But this relation is too universal to distinguish those phenomena with which the value sciences have to do. And it is to be observed that the expression "good for" is almost invariably applied to cases of fitness for good, the value of the consequence being anticipated in the thought of the cause. That which is "good for nothing" is fit for no good; it does not lack fitness, but is fit only for the waste-basket or the rubbish heap. The same view in

[10] The best exposition of this view of which I know is to be found in Professor Palmer's "Nature of Goodness."

an amended and more defensible form asserts that the nature of value lies in reciprocal fitness or in the "organic" relation of interdependence. But this view is usually supported by the aid of examples in which the interdependence is conducive to the existence of a *whole* which is good in some other sense, as in the case of the physical organism; or in which the interdependence is conducive to the existence of *members* which are good in some other senses, as in the case of the social community. The clearest instances of interdependence pure and simple are to be found among mechanisms, such, for example, as the gravitational system with its reciprocal masses, velocities, and paths of motion. But such examples are not ordinarily cited, or if cited, are really used to illustrate not interdependence, but unity. As such, they satisfy esthetic and intellectual demands and would not, I think, be regarded as examples of value were they rigorously conceived as existing without relation to any contemplating or aspiring mind.

III

There is a second view which, like the harmony or fitness view, appeals to a familiar phrase and identifies goodness with a formal relationship. The phrase in this case is "good of its kind," and the relationship is that of the particular to its universal. The ordinary name for this view is the self-realization view. But this phrase is clearly ambiguous. It may mean the realization of a self; or it may mean the auto-realization of anything, *i. e.,* its representativeness, or complete exemplification of those attributes or capacities that are peculiar to the kind of which it is a case. Self-realization in the first sense belongs to another type of theory, to be examined below, in which goodness is defined as relative to interest. It is self-realization in the second sense with which we have to do here. But when the distinction is made, doubt at once arises whether it would ever have been held were it not for confusion with the first. The relation of a case to its kind is too abstract and universal to serve the peculiar purposes of the sciences of value. Goodness in this sense can not be denied of anything. If A is a better m than B, it follows that B is a better n than A. Everything is the most shining example of something. The worst specimen of a man may be the most perfect specimen of inebriety or simple-mindedness. This example is suggestive of the confusions which give plausibility to the view. Whatever adequately exemplifies a type already conceived as good reflects that goodness. Man being good, the more manlike the better. Here the goodness lies not in the bare relation of particular to universal, but is borrowed from the nature of the universal itself. The typical

inebriate has no value in this sense. But whatever satisfies the cognitive or esthetic interest is good, and the representation of a universal in a particular does provide such satisfaction in proportion to the adequacy or lucidity of the representation. A good case of inebriety facilitates the understanding or demonstration of the generic defect. An adequate representation of man is interesting and agreeable to contemplate. Thus the goodness does not lie in the bare relation, but in the fact that the relation has a use or affords enjoyment. In short, the typical is good when what is typified is good in some other sense; or when some demand exists for the typical as such. Omit these qualifications, and typicality takes us too far afield, is too pervasive a feature of our world, to be identified with value.

But the above example contains another suggestion. It may be asserted that value is in proportion to the degree of universality realized; and that this accounts for the difference between the good man and the good inebriate. As manhood takes precedence of inebriety so the absolute universal must take precedence of manhood; and value would lie in the degree in which the particular reflected the totality of being. But here again I feel sure that it can not be the bare universality itself which constitutes the goodness. Were this the case, it would be proper to regard the mechanical aspect of human nature as better than its teleological aspect on the assumption of a materialistic metaphysics; or crime and unmerited suffering as better than justice and happiness on the assumption that they are more characteristic of the waywardness and caprice of a world of chance; or the abstract factor of being as the best feature of life on the pluralistic ground that there is no other universal feature. To avoid such paradoxes one must introduce some material assumption. One may assume that the universe is the fulfilment of a purpose in which all particular interests come to fruition. Or one may assume that the universe, as a whole, is good, so that in so far as the particular reflects the universal it reflects that goodness. Or one may assume an interest *in* the universal, the philosophical interest, and judge levels of intellectual attainment by that, adding perhaps the further claim that only by identifying himself with this interest can a man be assured of happiness. But in all such cases the definition of value is altered, and the bare relation of particular to universal becomes merely accidental or instrumental.

IV

All of the views thus far discussed, value as *indefinable*, as *fitness* or *harmony*, and as the *typical* or *universal*, may be said to agree in

characterizing value or goodness without reference to the fact of bias or interest. The belief that this fact, or its characteristic relation, *is* value has most commonly found expression in the pleasure theory or hedonism. This doctrine is perhaps too ancient and too popular to be exact. Broadly and historically it expresses a number of different, more or less independent, and even conflicting motives, such, for example, as scepticism, egoism, prudentialism, psychologism, materialism, humanism, and humanitarianism. I shall interpret this doctrine strictly as that which identifies good and evil with the *states* of pleasure and pain respectively. A thing is good intrinsically in so far as it is the pleasure-state, or extrinsically in so far as it causes the pleasure-state. And yet, curiously enough, it is doubtful if the view has ever been held in this strict form. In disputes over hedonism it has commonly been assumed that value consists ultimately in being liked,—hedonists asserting that only pleasure is liked for itself, and their critics insisting that a man likes other things as well and can not possibly be satisfied with mere pleasure. In this dispute the hedonist has not only been worsted; but as party to the dispute, he has virtually abandoned his view. One may say that the controversy over hedonism has had mainly to do not with the question "what is goodness?" but with the question "what is good?"; both parties agreeing that goodness consists in being liked, and the hedonist asserting that the state of pleasure is the only case of a thing liked.

If it were not characteristic of the state of pleasure that the agent tries to keep it when present or get it when absent, and of the state of pain that the agent tends to get rid of it when present and avoid it when absent, these states would probably never have recommended themselves to any one's judgment as definitions of good and evil. Now that it is clearly understood that one tries to keep and get other things than pleasure, sometimes even pain itself, and that one tries to stop and avoid other things than pain, even pleasure itself, the hedonist accepts this later view rather as a clarification and correction of his former view than as a disproof of it. The crux of the matter lies in the distinction between the motor-affective attitude or impulse, and pleasure and pain as specific qualitative contents of consciousness. The question lies in that portion of the field of psychology that is, unfortunately for the theory of value and for all the social sciences, least thoroughly explored. But it seems to be established that it is possible to like pain, or to "dislike a foul smell more strongly than a slight pain."[11] Of course it is possible for hedonism to gain a nominal victory by identifying liking with "taking pleasure in," and disliking with "finding painful." But such terminology seems only to blur an empirical and important distinction. Lik-

[11] Münsterberg, "Eternal Values," page 66.

ing can certainly not be fully identified with a state or content of the type illustrated by the scratching of itching skin, or the quenching of thirst. It is characteristic of liking that it is directed towards an object, and that it is motor or impulsive; and the pleasure *quale,* even if it be invariably present, is certainly not proportional to what may be called the degree of the liking. Hedonism, then, is too narrow an interpretation of a view that fundamentally is not hedonism at all. To that view I shall now turn.

V

It is held at the present day with something approaching unanimity that value in the generic sense has to do with a certain constant that we may call *bias* or *interest.* We have found that efforts to define value in other terms, and even the argument for its indefinability, point unmistakably to this constant. The justification of this view lies in the fact that bias or interest, with its manifold varieties, conditions, and relations affords the best means of systematically describing that region of our world which the value sciences and the value vocabulary roughly denote. In any case it will doubtless appear that most of our differences of opinion will lie within this view. It is broad and elastic enough to contain views so different as the "self-realization" view of Green, Bradley, and their followers, Windelband's *"Beurtheilung,"* Rickert's *"unmittelbare Gefühl des Sollens,"* Westermark's "retributive emotions," Santayana's "objectified pleasure," Stuart's "valuation process," Meinong's *"Urtheilsgefühl,"* Royce's "loyalty" and countless other conceptions which instruct, edify, and divide us.

It is one thing to assert that the fulfilment of interest is essential to value and another thing to say that it constitutes a sufficient definition. In other words it is possible to maintain that satisfaction of interest as such is value, or to maintain that value is a qualified satisfaction of interest. I shall state the former view first, then the view which would deny it utterly, and finally the view or views which would propose to qualify it.

1. First, then, the view that value consists in the fulfilment of interest as such. I have selected the phraseology that I have thought to be least misleading; but it requires explanation. The central fact for this view is the polarity of affective-motor attitudes. Organisms and conscious beings behave towards certain objects or "objectives" in the manner common to love, hope, aspiration, desire, enjoyment, effort to keep or get; and towards other objects or objectives in the manner common to hate, fear, repugnance, aversion, effort to get rid of or avoid. I propose to generalize the terms liking and disliking, and use them to stand for these two modes of mind.

Liking and disliking are so related as to inhibit one another, and can not both be directed to the same object at the same time and in the same respect. They are often, but not always, directed to objects having opposite or contradictory predicates (as when one likes feminine women and dislikes masculine women). Furthermore, whatever appears to promote the object of one of these modes becomes the object of the same mode; but whatever appears to destroy the object of one of these modes becomes the object of the opposite mode. In other words a thing is liked for promoting an object of liking or injuring an object of dislike, and a thing is disliked for promoting an object of dislike or injuring an object of liking. It is evident, furthermore, that either liking or disliking may be dispositional and yet be effective in inhibiting its opposite or in determining these derivitive modes. Since it is desirable to have terms which signify this general type of reaction I shall use the term *interest* to mean a subject's liking or disliking, including also their derived or their dispositional forms.[12]

According to our present view, then, value would consist in the fulfilment of bias or interest. An object would be said to possess value in so far as it fulfilled interest, or assumed the relation of fulfilment to the term interest; where fulfilment is used in a generalized sense for the consummation of either liking or disliking. At this point numerous questions press upon us. They are perhaps the most significant and vexatious questions of the hour in this field of inquiry, and I could not pretend to answer them in this paper even if the answers were standing ready in my mind. But I must at least state three of these questions, and I can perhaps best stimulate discussion of them by dogmatizing a little on my own account.

(1) First there is the question of the relative priority of feeling and desire. In other words, does value consist at bottom in *having* what you like or dislike, or in *getting* what you like or dislike? It does not seem reasonable to associate values exclusively either with quiescent enjoyment or with progressive effort. On the other hand, one can not but seek to unify them. This appears to be possible if we recognize the motor factor in feeling, and the factor of prospective possession in desire.[13] To like a present object is to seek to prolong it; and is thus not a merely static phenomenon after all. To consummate desire is to achieve the object by the expenditure of effort, and is thus not merely a matter of non-possession. Thus the difference is softened, though it remains as one of the fundamental principles

[12] Meinong uses the term in a similar sense. *Cf.* his "Für die Psychologie und gegen den Psychologismus in der allgemeinen Werttheorie," *Logos*, Vol. III. (1912), page 7.

[13] This is perhaps the same as Dr. Anderson's view that "the test of a value is its influence upon activity." *Cf.* his "Social Value," page 104.

of classification. There are present values and prospective values, according as action is directed to the prolongation or to the achievement of the object. What is enjoyed in the having may not be missed and sought in its absence; and what is sought and achieved may have no value after possession. It is even possible that what is dreaded should be clung to and enjoyed when possessed, and that what is desired should be disrelished and rejected.

(2) A second question is already raised. Must a thing be in order to possess value? One thing seems clear: there must be a term towards which the interest or bias is directed. There can be no liking or disliking unless there be something liked or disliked. But this statement must be guarded and qualified. What is liked must be able to serve as a motive; one likes *to* own or spend money, or one likes one's friend *to* live or flourish, where the verbal form signifies potential action or a state contingent upon will. And only when this state is, can the value be said to be. But the state may be and usually is presented or represented. And it is important to observe that it may be sufficient that the presentation or representation should exist.[14] I may like to see my friend looking well, or think that my possessions are safe. Then my liking would not be affected by the actual illness of my friend or the destruction of my property, were my impressions and convictions to remain unaltered. Or the state liked may be one of supposal or imagination merely. I may like to suppose that God loves me or to imagine that I am rich. And in those cases it is not necessary that things should be as I suppose or imagine them. Desire furnishes an interesting example. If I seek wealth, then in that relation, only my actual attainment of it is good. But I may be actually poor and yet be satisfied in that I am convinced that I am to become wealthy or in that I enjoy the imagined prospect. So the course of achievement prior to its culmination is attended with the compensating values of faith and fancy.[15]

Since Meinong has contributed so largely to the exploitation of this question and since what I have said is so largely in agreement with what I take to be his meaning, it may be well to point out that he has overemphasized a specific rôle which the category of existence plays in value. That which is stipulated in desire, the contingent state expressed in the verbal form, is only sometimes existence. It is not existence or non-existence only which I like or dislike, or which is the object of the belief or the objective of the supposal or imagination which I like or dislike. I may like two and two to equal four, or to suppose that identity is a relation, or to know that my

[14] Unless one abandons the present view and confines value to interest-fulfilment founded on truth. *Cf.* below.

[15] There is also, of course, the value of *partial* achievement.

friend has married, where what I like must be consummated, but where the consummation itself is not a mere possession of the character of existence.

(3) My third question runs as follows: Are liking and disliking themselves cognitions of value, or are they the immediacies to which judgments of value must ultimately be referred? We seem already to be committed to a certain answer. If value consists in an object's consummating interest, then to know that an object has value is to know that in it an interest is consummated. And it seems clear that to take or have an interest in an object is not the same as to know that one does. It does not follow that the two things are in the least incompatible; and it may well be that in the last analysis interest can be found or immediately observed only by the interested subject himself. We seem to meet here with a special case of the general question of introspection. But conceding everything to the advocates of introspection there remains the difference between the attitude of interest and the awareness of it. To say that "values are felt"[16] seems to be equivalent to saying that visual sensations are seen, or auditory sensations heard, the fact being as Aristotle long ago pointed out, that all sensations are objects of a common sense. Certainly it is not the liking itself which is liked; or the dislike which is disliked; nor can it be value which is liked or disliked since liking and disliking are its essential components. In other words, that value which a liking or disliking constitutes can not be the object of that same liking or disliking.

Here is indeed a fundamental issue, and I hope that their aversion to epistemology will not deter Professors Sheldon and Urban from lending us their aid. It appears to me to be clear that interest can not be at the same time constitutive and cognitive of value. And a failure to observe this fact is, I believe, the principal defect in the existing literature on the subject. It even largely vitiates the work of the Meinong school, which is otherwise sound and fruitful. Such current conceptions as "appreciation," "valuation," "moral sentiment," and "funded meaning" perpetuate and compound an ambiguity. We face, I believe, a genuine dilemma. The attitude of interest either constitutes values or it cognizes them. If it constitutes them, then the cognition of value lies in the observation, comparison, recording, and systematic description of interests in their relations to their objects and to one another. The judgment of value is the judgment about interests, and is otherwise like any other judgment. If, on the other hand, the interest cognizes values, then values themselves are not matters of interest at all, but qualities of objects for which interest furnishes simply the requisite sensibility. If we

[16] *Cf.* Urban, "Valuation," page 22.

accept this alternative we are thrown back upon Moore's contention that value is indefinable.

The question is, as Dewey and others have suggested,[17] similar to that concerning the status of the secondary qualities. But the same method will, I believe, lead to opposite conclusions in the two cases. We may attribute to objects qualities which upon reflection we discover to be qualifications of ourselves. A "coveted book" is evidently qualified by a relation to subjects. A "dull day," a "boresome meeting," a "tiresome place," a "hopeful situation" are less evidently so, but the clarification of the experience brings us in each case to the identification of the quality with a specific relation to the subject. When, on the other hand, we endeavor to localize the blue of blue sky in the subject we fail. To call blue a mode of the activity or process of seeing or of the sentient organism is meaningless unless, as in the case of Professor Holt's theory,[18] blue is reduced to quantitative modes that are localizable both in the object and in the sentient. How is it with the alleged "tertiary qualities" of value? So far as I ascertain such qualities at all they appear to me to be either modes of attitude or impulse, and thus motor, or sensory *qualia* which are localizable in the body. In so far as I find traces of what some regard as irreducible feeling-qualities, they localize themselves either in my body or not at all; in proportion as I distinguish and examine them they lose all semblance of that presence to the object which becomes increasingly clear and unmistakable in the case of color and sound. In short, the attentive effort at localization, whereas it unites the secondary qualities with the object, dissociates the alleged "tertiary qualities," and tends to unite them with the sentient. It becomes less and less tolerable to speak of a yellow or melodious organism, as it becomes more and more plausible to speak of one that is covetous, bored, tired, or hopeful. Similarly I conclude that interest is not an immediate cognition of value qualities in its object, but is a mode of the organism, enacted, sensed, or possibly felt, and qualifying the object through being a response to it. To like or dislike an object is to create that object's value. To be aware that one likes or dislikes an object is to cognize that object's value. But this awareness is no more (or no less) an interest than any other awareness whatsoever; and even if it be an interest it is not that interest which is its value-object.[19]

If interests be constitutive of values then the further analysis and classification of values will be based upon a study of varieties of interest. Interests may be dispositional or actual, momentary or

[17] *Cf.* Dewey, "The Problem of Values," this JOURNAL, Vol. X., page 269; Meinong, *op. cit.*, page 12; Urban, *op. cit.*, page 21.

[18] *Cf.* "The New Realism," pages 308–355.

[19] *Cf.* also below, pages 161, 162.

permanent, personal, sub-personal, or super-personal, individual or collective, mutually consistent or inconsistent, original or acquired. The words good and evil now become blanket names for a thousand different attitudes of liking and disliking. The importance of the school of Meinong lies in exploitation of this rich empirical field, in its substitution of this systematic, but elastic polytheism for the conventional trinitarianism of the worshipers of the true, the beautiful, and the good. Perhaps the most fruitful conception of the new school is that of the presuppositional or "founded" interest, or what might be called the "constructive" interest. By this is meant the liking or dislike that rests upon an implied judgment, either concerning the object or concerning the interest itself. Thus I may like a man on the ground that he has assisted my friend, or is of my own party, or on the ground that others like him; so that were the ground removed my liking would cease. Whether in such a case the value itself may be said to depend on the truth of the implied judgment is a question for further consideration. It would evidently involve an abandonment of the present view that any interest whatsoever in an object is constitutive of value, and the acceptance of one of those limited or qualified views that I propose to examine only after having met the arguments that may be raised against this whole type of theory.

2. I have spoken of the very general agreement that value is a function of interest. The notable exception is Mr. G. E. Moore, with Mr. Russell, whom in this particular he has, I suppose, inspired. Indeed it is almost a case of Mr. Moore against the field. His arguments therefore assume a special importance.[20]

(1) He argues, and it seems to me quite soundly, that the term "good" can not signify simply a *judgment* that something is good. This is to the same effect as the argument which I have employed above against the supposition that one and the same mode of mind can be both cognitive of value and constitutive of the very value which it cognizes. As Mr. Moore puts it, we should in that case have no object for our cognition. The judgment can not be its own object. If there is really to be a judgment that *A* is good, then "good" must signify something other than the judgment itself.

(2) Second, he argues that the term "good" can not signify merely the interest of the subject who uses the term. Here again his argument seems unanswerable, unless we are prepared to abandon discussion of the question altogether. For, as Moore points out, if each party to the discussion is referring to his own interest, no two can ever be referring to the same thing. This is the genuinely vicious sort of relativism which puts an end to discourse, and is contradicted in the very act of generalizing it. To the force of this

[20] *Cf.* his "Ethics," Chs. III., IV.

argument Santayana has not, I think, done justice. The objectivity or commutability of judgments of value in some sense must be saved, not for the benefit of those "debating societies" for which he has so poor an opinion, but in order that we may read and enjoy essays like his own, and understand him even when he says "that good is not an intrinsic or primary quality, but relative and adventitious."[21] There is an evident solution of the difficulty. Let good be defined as relative to interest, where it is understood that interest signifies *any* interest, and not exclusively that of the judge who defines. Interests and their relations then become common objects. Against this modified and innocuous relativism Moore urges two objections.

(3) He appeals to the fact that we may use the word "good" without consciously meaning object of interest. Judging by what the speaker has in mind, to say that the object is good is not the same as to say that some one is interested in it.[22] This type of argument would prove altogether too much if it proved anything. No definition has ever been given of anything that is perfectly in keeping either with verbal usage or conscious meanings. For words may be mere echoes, and conscious meanings careless and obscure. The absurdity of the argument is especially evident in the case of complex entities, such as the exponents of the interest-view hold value to be. A complex entity is only roughly or superficially denoted in common discourse, and definitive analysis will invariably reveal a structure which is not present to a mind which reflects the stereotyped familiarity.

(4) A much more interesting argument is based upon the notion of intrinsic goodness.[23] If a thing derives value from its relation to an interest taken in it, it would seem impossible that anything whatsoever should possess value within itself. It is natural to reply that value is possessed intrinsically by the total complex object-in-relation-to-interest. But the question has brought to light a fact that might otherwise have escaped notice, the fact, namely, that value, like other relational attributes, may be predicated in two ways. The subject of the judgment may *stand in* the relation, or *contain* the relation. Thus the predicate parallel may be predicated of one line in the sense of being parallel *to* another, or of both lines in the sense of possessing parallelism. When this peculiarity of relational predicates is observed the difficulty concerning intrinsic values is, I think, removed. Intrinsic value is possessed by the object-interest complex; extrinsic value is possessed by the object itself or by any other factor or con-

[21] "Winds of Doctrine," page 147.

[22] The argument is elaborated against a definition of "right," but is applied also to "good." *Cf.* "Ethics," pages 111 ff., 164 ff.

[23] Moore, *ibid.*, pages 167 ff.

dition of the complex. Value may be predicated in either sense, as possessed internally by the complex or relationship, and externally by the object-term of the relationship.

Such are the arguments which Mr. Moore has urged against the whole type of theory which I am now defending. A more numerous army of critics would propose not to reject it, but to amend it. These critics would propose in divers ways to define value as a limited class of interest-fulfilments.

3. The type of theory to which we now turn asserts that what is liked has value only in certain cases; so that the bare psychological fact of a particular liking is not in itself a guarantee of value. There are several motives which lead to such a view. It is felt that the view which I have been defending degrades value, or renders it too promiscuous. Or the motive may be the demand for some standard by which particular likings and dislikes may themselves be judged, by which a good will may be distinguished from a bad, or a higher interest from a lower. Or one may be moved by the fact that in certain notable cases, such as the moral consciousness, one's liking is attended by a sense of some ulterior ground or sanction, by a recognition that one's liking requires some support beyond itself in order to give its object value. Or the view may result simply from a transference to the realm of values of a general distinction between appearance and reality. But there is perhaps one fundamental motive after all: the desire, namely, to discover a criterion by which superiority or inferiority shall be assigned to values themselves—the desire to justify a criticism of the natural or empirical values. It seems to be necessary to provide for a scale or hierarchy in which inclination shall be subordinated to duty, impulse to a "norm," or enjoyment to an ideal. There is but one way in which this can be accomplished without abandoning our present definition of value, and that is by employing a quantitative scale. In such procedure no new conception of value is introduced; interest-fulfilments are merely compounded and measured. If, on the other hand, interest-fulfilments are judged *higher* or *lower* by some other standard, then that ulterior standard is really definitive of value. Fulfilment of interest becomes a general, but not sufficient characterization of interest. Goodness will be that fulfilment of interest which conforms also to the principle which defines the scale. In what follows I shall contend that the superior interest fulfilments to which many writers would confine value, are superior only in so far as *greater,* so that there is in fact no resort to another principle.

We can not roll away this stone without uncovering a nest of wriggling perplexities and ambiguities that may well terrify us. But I shall hope to introduce a few clarifying distinctions. The most

fundamental distinction is between those views which would propose to define some *specific complex type* of interest as alone capable of endowing its objects with value, and those views which would look to the *presupposition* of interest and confine value to the cases in which these presuppositions are true. The first class of views might be termed ontological, the second epistemological or "axiological" in method.

(1) To the first class would belong, for example, the view that value is confined to objects of self-conscious desire or will, in which the agent desires the object as an extension or expression of himself. Desire of this sort does exist. It is possible for me to try on the various alternatives of choice before the mirror of my imagination, and to select that in which I like myself best. But Green and others have, I believe, attached too much importance to self-conscious desire.[24] They seem to me to be seriously mistaken in thinking that this is the distinguishing feature of volition. Choice is not, it is true, a mere survival from a scramble of impulses; the dominant factor in choice is undoubtedly something which may properly be called the self. The system of the individual's interests comes forward in the interval of deliberative suspense and assumes command. But the extent to which the factor of self-objectification is present is accidental and idiosyncratic. It may signify a habit of self-examination, a peculiarly developed visual or social imagination, or even a mere awkwardness and vanity.

It is certainly more plausible to argue that value is restricted to the satisfaction of one's whole self, whether objectified or not, but in any case distinguished from the momentary impulse. Good would then be that which satisfies a person *thoroughly* or *fundamentally* or *permanently,* after every interest has had an opportunity through reflection of making its claims count. But if one asks why this sort of interest-fulfilment deserves precedence of the fulfilment of isolated or momentary impulses, for my part I can find only one answer. It is because it is a more conserving and fruitful fulfilment of an aggregate of interests than is possible when these interests are unorganized. The organized fulfilment of a self is better than the disorderly indulgence of its several impulses, on the ground that the fulfilment of interest as such is good, and therefore *the more the better.* In other words this view virtually assumes and applies the view which we have been defending, and extends it quantitatively.

This assumption is even clearer when it is proposed to limit the good to that which satisfies the *peculiar* human interest or preroga-

[24] *Cf.* Green, "Prolegomena," pages 118, 154, 171; Mackenzie, "Notes on the Theory of Value," *Mind,* N. S., Vol. IV., and "Introduction to Social Philosophy," second edition, pages 266 ff.

tive. This may mean that since good is interest-fulfilment it is possible to name kinds of good after the interest affected. There is the animal good and the human good, the male and the female, the intellectual and the esthetic, yours and mine, and as many others as there are types or groups of interests that anyone has occasion to enumerate. Surely it would be arbitrary to select any one of these and name it *the* good to the exclusion of the rest. But one may have in mind as the peculiar interest of man the endeavor to systematize and maximize all interests. Man's end is the good because man conceives and aspires to the total or superlative good. In this case it is not man's interest as such that is the determinant of the good, but man's interest as the vehicle or representation of all interests. Here again, however, the good is interest-fulfilment as such, and goods are accredited or disparaged in respect of the degree or measure of such fulfilment, rather than by appeal to an independent principle.

Similarly the good may be defined in terms of *collective* interest, as the fulfilment of the demand of a community rather than of an individual. Here again I see no ground on which such a "higher" interest can be regarded as more legitimate, more properly significant of value, save that it signifies a greater measure of fulfilment than does a private interest. Similarly an interest may be cooperative with collateral and ulterior interests, either within the personal life or within society. On the assumption that interest-fulfilment as such is good, the value of *consistent* or harmonious fulfilment is enhanced by its indirect fruitfulness or innocence. Otherwise I see no reason why it should be selected as peculiarly significant of value.

And finally a universal will or absolute will, or will of God, would possess no peculiar claims were it not either a collective will or a cooperative will. The universal will may be taken to mean the *formal identity* of all wills—the will-character as such. But one must be careful not to speak of this as though it were itself a special case of will. It can not itself define a type of will-fulfilment, for there is, strictly speaking, no such will. There is a will for this and a will for that, but no will in general save as the abstraction common to the two. To define value in terms of the fulfilment of this would be equivalent to attributing value to the fulfilment of any will. In other words, all wills equally exemplify the general nature will, and all fulfilments equally exemplify the generic fulfilment. On the other hand, if the universal will were taken to mean a *common* will, then, even were there such a thing, it could have no claim to precedence except on quantitative grounds. Indeed it is quite conceivable that a common will, such as the will for property, might prove inconsistent with the most harmonious and beneficent system of life. There is certainly a sense in which progress tends away from sameness of interests in

the direction of differentiation and adjustment. Nor again is there any peculiar magic in the will *that there shall be a universe.*[25] It has been thought that such a will must underlie every will, and its fulfilment be the primitive value from which all others are derived. But to any unsophisticated mind it must appear that such a will is peculiarly rare and exotic. The will *to know* is a more important and substantial interest. But neither of these interests, assuming both to exist, is in any sense original or prior to all other interests. It is incorrect to argue that he who wills that there be a universe, or who wills to know, wills all that is implied in the concepts "universe" or "knowledge." So that even if it were possible to deduce all values from these concepts they would not have been deduced from the interest itself. But so far as I know, no such deduction has been successfully completed.

A universal will that would be entitled to preeminence in determining values would be a will that took up into itself or facilitated all interests. But then its preeminence would be based on the assumption of the value of all interest-fulfilment, and would signify simply the comparative value of more and the superlative value of most. In short, there is no specific kind of interest—personal, social, or metaphysical—that can be said to determine value exclusively; or even preeminently, save in so far as it sums or enhances the fulfilment of more limited interests.

I have reserved for the last a type of interest that will serve us as a means of transition to our second class of views. It may be said that only those interests determine values which contain expressly or implicitly a reference to some ground beyond themselves. The real significance of interests of this class lies in the fact that they may be in some sense tested by an appeal to their grounds, and I shall therefore discuss them in that connection.

(2) To my mind the most important discoveries of such writers as Meinong, Ehrenfels, Urban, and others have to do with the so-called "presuppositions" underlying interests of a certain type. These presuppositions or constructions fall into two classes. First, there are certain presuppositions concerning the state of the object or its relation to other objects. Thus I may be happy in the thought of my friend, on the presupposition that he exists. I may admire the painting on the supposition that Titian painted it, the statue on the ground that it is made of marble, or the lace on the ground that it was made by hand. Or I may desire the medicine on the supposition that it will cure my cold. In all of these cases I *construe* my object, and my liking or dislike of it is contingent on this construction. Second, there are certain presuppositions concerning the relation of

[25] Münsterberg, "Philosophie der Werte," page 74.

the object, or the interest itself, to other interests. Thus I may desire an education on the supposition that it is consistent with my general purpose of efficiency, or condemn the act of theft on the assumption that God condemns it, or admire the poem on the supposition that it must rejoice all persons of taste, or approve my act with the conviction that any judge must confirm my judgment. Assumption or "postulates" of this second class afford the best definition of that troublesome word "norm."[26] My interest is normative in so far as it is determined or controlled by the acknowledgment of a confirming interest in some sense superior to my own.

Now it is evident that a value may be tested by determining the truth or falsity of the assumptions which mediate it. If I call a mediated or constructive liking or disliking a valuation, I may validate or invalidate a valuation according as I find it to be well-grounded or based upon a misconception of the situation. If it turns out that the statue was of plaster and the lace machine made, I shall cease to like them. And, similarly, if I am convinced that God wills otherwise, I shall cease to condemn the theft; or if I discover that education is inconsistent with efficiency I shall cease to value it. On the other hand, when the grounds of any valuation are translated into conscious judgments and proved true, the valuation is verified and confirmed. A valuation that is undisturbed and fortified by increased light is in a special sense a true valuation or a genuine value. We must be on our guard against a natural confusion. There are two entirely distinct senses in which a liking may be true, or a value genuine. On the one hand, it may be true that I like the Mona Lisa; and in this case, on the hypothesis that a thing liked has value, the Mona Lisa is a genuine value. On the other hand, I may like it because it was painted by Leonardo, and since it is true that it was painted by Leonardo the value is founded on a correct belief. In other words, a value may be the *object* of a true judgment or *founded* on a true judgment.

I recognize the importance of distinguishing as a class of values those which are well grounded. And it is even evident that they are superior. But this superiority turns out to mean, I think, that they are *greater*. For example, they are more durable. It is evident also that in many cases they are multiple. If I desire the medicine on the ground that it will cure my cold, in getting it I get two things that I want, the medicine and the cure. A value founded on truth is both hardier and more prolific. And there is the truth value itself to be added besides. Or the presupposition may assert a fact or relation that is itself constitutive of value, so that if the presupposition is true, that value is added. But these merits can not be defined with-

[26] *Cf.* Urban, "Valuation," page 18.

out assuming that the value founded on ignorance or error possesses the same in smaller measure. And the same holds of the so-called normative attitudes. If I approve of honesty with a sense of the backing of the community, or the confirming opinion of the disinterested spectator, I may be well- or ill-advised. If I be ill-advised, then honesty has value in my eyes only; if I be well-advised it has a greater value for fulfiling more than my individual interest. But if it be good that an act should be generally approved, it is only less good that it should be privately approved. Furthermore, in so far as my liking is conditioned by the coincidence of social opinion or a Divine Will, then if these truly agree my liking is more durable, is guaranteed against the menace of disillusionment. In either case the superiority of a value founded on true presuppositions is quantitative; it signifies more of interest fulfilment and not value of a different and more fundamental order.

Now that I have penetrated so far into this forbidden land of epistemology, let me add one further point. I find this whole aspect of values confused through a careless use of the term "judgment." An act of liking, especially when it is reflective and mediated, when, in other words, it is conscious of itself and of its grounds, is often spoken of as the "judgment of value." And it is commonly believed that we have to do here with a unique sort of judgment. But this belief is due to a lack of analysis. It is unique only in that it is complex. If I consciously like the Mona Lisa on the conscious supposition that it is the work of Leonardo I may be said to judge twice. First, I judge that I like the picture. There is nothing peculiar about this judgment. It is like the judgment that I see stars. And it differs from *your* judgment that I like the picture, only in that it may be said to reflect a more immediate or certain experience of the fact. I can see good reasons for regarding this as a judgment of value, but none for regarding it as unique. Second, I judge that Leonardo painted the picture. There is nothing peculiar about this judgment. You might have made it; and it is in all formal respects like my judgment that heat causes water to boil. I see no reasons for regarding this as in any sense a judgment of value. It simply happens to condition the existence of a value. In addition to these two judgments my complex state of mind contains my liking of the picture. This is the central fact, but it is no more a judgment than my entering the Louvre to see the picture. It constitutes the value, but does not judge it, and determines the truth or falsity of a judgment that I like it, but is not itself true or false. Mix these three things thoroughly and you have your normative or appreciative consciousness, possessing at once the infallibility of fact, the truth-

claim of a judgment, and the virtuality and vague ulterior reference of a presupposition!

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RECENT STUDIES OF BODILY EFFECTS OF FEAR, RAGE, AND PAIN[1]

DURING the past three years a series of investigations has been carried on in the Harvard Physiological Laboratory with the object of securing further insight into bodily changes accompanying pain and the major emotions. This work was the outgrowth of an interest in the inhibitory effect of pain and emotional excitement on digestive processes. The disturbances of digestion attending these affective states may considerably outlast the period of obvious excitement.[2] What might be the occasion for the continuance of emotional disturbance in the body so long after the emotion-producing object has disappeared?

A suggestion that seemed reasonable was that the state of excitation was continued by secretion of the adrenal glands. These small bodies pour into the blood-stream a substance (adrenin, adrenalin, epinephrin) which exerts on structures innervated by the sympathetic nerves the same effects as are produced by impulses passing along those nerves. Thus the injection of adrenin will cause dilatation of the pupil, erection of hairs, inhibition of the movements of the alimentary canal, and other well-known consequences of sympathetic stimulation. But these glands are themselves stimulated by nerve impulses passing out by sympathetic pathways. It might be, therefore, that the bodily changes accompanying emotional excitement are produced initially by nerve impulses, that these impulses also rouse secretion of the adrenal glands, and that this secretion circulating in the blood continues by chemical influence changes nervously initiated.

By using as an indicator a strip of intestinal muscle, sensitive to adrenin in dilutions 1:20,000,000 parts, we were able to show that when a dog barks at a cat, and the cat reacts by signs of terror or by a raging counter attack, the cat's blood, taken near the opening of the adrenal veins, contains an increased adrenal secretion.[3] Further-

[1] A summary of remarks made at the meeting of the American Psychological Association, New Haven, December 31, 1913.

[2] See Cannon, "The Mechanical Factors of Digestion," London and New York, 1911, page 217; also *American Journal of the Medical Sciences*, 1909, CXXXVII., page 480.

[3] See Cannon and de la Paz, *American Journal of Physiology*, 1911, XXVIII., page 64.

more, stimulation in an anesthetized animal of afferent nerves which, if stimulated in the conscious animal would cause pain, likewise evoked an increased secretion from the adrenal glands.[4] Pain, therefore, and such major emotions as fear and rage are accompanied by the discharge of a substance which can cause further excitation of organs innervated by the sympathetic system.

Certain remarkable effects of injecting adrenin have for many years been known. For example, it will cause liberation of sugar from the liver into the blood to such an extent that the sugar may appear in the urine (glycosuria). It will drive the blood from the abdominal viscera into the heart, lungs, central nervous system, and the limbs. It seems to act as an antidote to muscular fatigue. And it renders more rapid the coagulation of blood. The question at once arose after our first observations, does the adrenal secretion poured out in pain and emotional excitement likewise produce these effects? Our later researches have been concerned with answers to this question.

Emotional excitement and "painful" stimulation were proved to be accompanied by glycosuria. If a caged cat is frightened or made angry by a barking dog it is likely to be glycosuric. Students after a hard examination, and football players after a thrilling contest, also have, in many instances, glycosuria.[5] The mere handling of a rabbit preparatory to an operation may nearly triple the sugar content of its blood.

If a muscle is fatigued, the threshold of irritability rises. It may rise as much as 600 per cent., but the average increase is approximately 200 per cent. If the fatigued muscle is allowed to rest, the former irritability is gradually regained, though two hours may pass before the recovery is complete. If a small dose of adrenalin is injected intravenously, or the adrenal glands are stimulated to secrete, we have found that the former irritability of the fatigued muscle may be recovered within three minutes. In this way adrenal secretion may largely restore efficiency after fatigue.[6]

Fear and anger—as well as worry and distress—are attended, as already stated, by cessation of the contractions of the stomach and intestines. These mental states also reduce or temporarily abolish the secretion of gastric juice. Adrenin injected into the body has the same effect. Besides checking the functions of the alimentary canal, adrenin drives out the blood which, during digestive activity,

[4] See Cannon and Hoskins, *American Journal of Physiology*, 1911, XXIX, page 274.

[5] See Cannon, Shohl, and Wright, *American Journal of Physiology*, 1911, XXIX., page 280; Cannon, *ibid.*, 1914, XXXIII., page 359.

[6] See Cannon and Nice, *American Journal of Physiology*, 1913, XXXII., page 44; Gruber, *ibid.*, 1914, XXXIII., page 354.

floods the abdominal viscera. This blood flows all the more rapidly and abundantly through the heart, the lungs, the central nervous system, and the limbs.[7]

If adrenin is injected in very minute amounts into the blood, the time which intervenes between removal of blood from the vessels and its clotting is greatly reduced. The same hastening of coagulation is observed if splanchnic impulses are excited, or an afferent nerve (*e. g.*, the sciatic) is stimulated in a decerebrate animal, or if the animal is roused to fear or anger. The clotting time which, by the method used, was usually four or five minutes, was in some instances reduced to half a minute.[8]

These profound effects of pain and fear and rage are not in the slightest degree directly subject to voluntary action. They are rather of the nature of reflexes, for they appear promptly, and result from impulses which traverse pathways already prepared in the nervous organization of the individual. Since the effects are reflex in character, and since reflexes are responses commonly useful to the body, it is pertinent to enquire regarding the utility of the changes above described.

The clue which gives these responses significance is found in considering the conditions which would accompany fear or great anger or pain. McDougall has pointed out the relation between these effective states and certain instincts. Thus fear is associated with the instinct to run, anger with the instinct to fight.[9] The emotions in wild life would be roused in the presence of prey or the enemy—a situation that would not unnaturally involve both the pursuer and the pursued in a desperate run or a fight. In case of combat pain would add to the stimulus of the emotion, and thus there might ensue a supreme and prolonged struggle.

Under such circumstances the liberated sugar would be serviceable for the laboring muscles, for it is known to be the elective source of muscular energy. The adrenal secretion, by abolishing the effects of fatigue, would place the muscles unqualifiedly at the disposal of the nervous system. The shifting of the blood from the less insistent viscera of the abdomen to the organs of utmost value in critical physical struggle—the heart, lungs, limbs, and nervous system—would be of the greatest service in assuring efficient action of these organs. And if in the combat the vessels are injured, prompt clotting of the blood might help to prevent dangerous bleeding.

[7] See Biedl, "Innere Sekretion," Second edition, Leipzig, 1913. Pages 434, 435.

[8] See Cannon and Mendenhall, *American Journal of Physiology*, 1914, XXXIII. *Proceedings of the American Physiological Society*, Dec. 29, 1913.

[9] McDougall, "Introduction to Social Psychology," London, 1908. Pages 49, 59.

The emotional reactions above described may each be interpreted, therefore, as making the organism more efficient in the struggle which fear or rage or pain may involve. And that organism which, with the aid of adrenal secretion, best mobilizes its sugar, lessens its muscular fatigue, sends its blood to the vitally important organs, and provides against serious hemorrhage will stand the best chance of surviving in the struggle for existence.[10]

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REVIEWS AND ABSTRACTS OF LITERATURE

The Scope of Formal Logic. A. T. SHEARMAN. London: University of London Press. 1911. Pp. xiv + 162.

In a previous work, "The Development of Symbolic Logic," Mr. Shearman gave an account of the "older" work of Boole, Venn, Schröder, etc., *i. e.*, of the "pre-Peanesque logicians," as he is pleased to call them. The present volume is, in a way, a continuation of the earlier one. It gives a brief exposition of the logical work of Frege, Peano, and Bertrand Russell. For by "Formal Logic" Mr. Shearman means here what has been variously designated by the names "symbolic logic," "mathematical logic," "algebra of logic," "symbol logic" (Mrs. Ladd-Franklin), "logistic" (Couturat). This kind of logic has not yet found its fitting name; but it is "making history." The purpose of "The Scope of Formal Logic" is to convince the reader of the importance of the work in this field, and, without presupposing any familiarity with the writings of Frege, Peano, Russell, to lead the uninitiated to these fountain-heads of modern logical thought. In the first chapter a number of important terms, such as "propositional function," "variable," etc., are elucidated. In the second chapter Frege's, Peano's, and Russell's symbols, or at least some of the more frequent among them, are explained by translating several propositions, some simple, some more complex, from their symbolic statements into English. This is continued in the third chapter which exhibits the methods of proof in "Formal Logic." Chapter IV. is devoted to a treatment, by means of these symbolic methods, of opposition, conversion, syllogism, etc., *i. e.*, the usual subject-matter of ordinary logic. Chapter V. shows "(1) that arithmetical notions and processes may be replaced by logical notions and processes, (2) that geometrical notions and processes may be similarly replaced, and (3) that general logic *ought*, for scientific purposes, or to enable us to reach conclusions that have always been supported by common sense, to be regarded as lying at the basis of pure mathematics" (p. 130). The remaining two chapters are given over to a "philosophical treatment of number" and of "space." The author has given here more of his own thoughts, though he makes acknowledg-

[10] For a detailed discussion of the interpretation here outlined see Cannon, *American Journal of Physiology*, 1914, XXXIII., page 356.

ment to Frege in the discussion of number, to Russell in that of space; he tries "to indicate in a concrete manner the fact that the treatment of number in the preceding chapters implicitly rests upon that conception of number which is here set forth" (p. 131) [and similarly in the next chapter with reference to the nature of space]. But the account is vague, and, as it stands, has little direct connection with "Formal Logic." It is a presentation of "views concerning number that are *unfolded by philosophy*"[1] (p. 143) rather than a development of the subject by the methods expounded in the previous chapters. The "modern logician" will, no doubt, be greatly relieved to learn that his procedure is "in accordance with the *dictates of philosophy,*"[2] that his propositions "imply nothing at variance with the teaching that is unfolded by philosophy" (p. 150), that "the modern treatment of spatial problems . . . proceeds along the lines *which philosophy sets forth as those which should be followed.*"[3] But one would like to know what this mysterious and imperious "philosophy" is, and whence it gets an authority over the results of "logic." The reviewer misses in these chapters a clean separation of logical from psychological problems. Take, for example, such statements as the following: "Number is conceptual" because, amongst other reasons, "we are able to deal with numbers in propositions without being able either to perceive or to have a mental picture of any corresponding entities" (p. 132). "If a concept possesses these three attributes I shall, since no other species of mental entities or act of attention possesses them, take the three to constitute the *definition* of a concept. A concept, that is to say, is a mental entity or act of attention which (1) is such that we can ask concerning it if there exist corresponding objects, (2) is not necessarily accompanied by corresponding perceptual objects, and (3) may exist without the possibility of there being corresponding percepts or images" (p. 133, note). The writer is evidently a champion of "imageless thought"; psychologists will be eager to have him present his experimental evidence; but "logicians," I mean "modern logicians," have no concern with it; having enough problems of their own, they are, or should be, no longer willing to spoil a good psychological problem by hasty and dogmatic solutions on so-called "logical" grounds. "Psychological" solutions of logical problems are beginning to be recognized as misleading; "logical" solutions of psychological problems are, at the present stage of experimental psychology, pathetic.

Regarding "definitions," the author has not "fallen into line with the new exponents of logic" (p. xi). "Mr. Russell . . . does not explain how it is that definitions are used in the same way as assertions" (p. 27). This point is well taken. But I do not see that Mr. Shearman has removed the difficulty. His distinction between definitions in symbolic logic and in philosophy in that the latter are "naturally selected," the former "artificially selected" (pp. 28, 29) does not go to the root of the matter. The current theories regarding the nature and function of definitions in

[1] Italics are mine.

[2] Page 145; *cf.* page 158. Italics mine.

[3] Page 159; *cf.* pages 161, 162. Italics mine.

logic, or any other deductive system, are at fault, and need reexamination, if we are to get rid of troubles of which the one pointed out by Mr. Shearman is an example, and only an example.[4]

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JOURNALS AND NEW BOOKS

MIND. October, 1913. *Some Antecedents of the Philosophy of Bergson. The Conception of "Real Duration"* (pp. 465–483): ARTHUR O. LOVEJOY. – The account of the nature of time as developed by Bergson was not an innovation, but it had been earlier developed, and developed as deductions from Kant, by Ravaisson, Dauriac, and Pillon. *Life and Logic* (pp. 484–492): H. WILDON CARR. – Mr. Bosanquet, in his recent Gifford lectures, misinterprets M. Bergson's theory of the indeterminism of life, fails to see that there is no opposition between his and Bergson's account of the logical process, and furthermore fails to prove that logic is creative. *Idealism and the Reality of Time* (pp. 493–508): HUGH A. REYBURN. – Against the current criticisms of idealism and absolutism it is maintained that "not less but more system is required." Absolutists must recognize that time is real, external, and has a place in the absolute. Criticizes in detail Bosanquet, who fails to give due recognition to the externality and reality of time. *Pragmatic Realism—The Five Attributes* (pp. 509–525): JOHN E. BOODIN. – There are five "ultimate types of differences which reality makes to our reflective conduct." These "*summa genera* in the reflective evaluation of the character of our world" are stuff, time, space, consciousness, and form. They are irreducible to terms of each other, yet they all make a difference to our creative purposes. *Discussions: Analysis of Categorical Propositions* (pp. 526–531): E. E. C. JONES. *The "Working" of Truths and Their "Criterion"* (pp. 532–538): F. C. S. SCHILLER. *On Metageometry and the Sense of Direction* (pp. 539–543): H. S. SHELTON. *Realism and Pragmatism* (pp. 544–548): RALPH BARTON PERRY. *The Meaning of Kant's Copernican Analogy* (pp. 549–551): NORMAN KEMP SMITH. *Critical Notes:* G. E. Moore, *Ethics:* H. P. COOKE. O. Külpe, *Die Realisierung: Ein Beitrag zur Grundlegung der Realwissenschaften:* A. WOLF. D. L. Murray, *Pragmatism:* H. V. KNOX. J. Royce, *William James and Other Essays:* R. F. A. HOERNLÉ. E. Boutroux, *William James:* R. F. A. HOERNLÉ. L. Brunschvicg, *Les Étapes de la Philosophie Mathematique:* P. E. B. JOURDAIN. Baron F. von Hügel, *Eternal Life: A Study of Its Implications and Applications:* A. F. TAYLOR. *New Books. Philosophical Periodicals. Notes and Correspondence.*

[4] I have briefly stated my views on this point in a series of propositions which were read at the Cambridge meeting of the American Philosophical Association in 1911 and published in the proceedings of that meeting. *Philosophical Review*, Vol. XXI., pages 210 ff. I hope to publish a more detailed statement in this JOURNAL at an early date.

Giese, Fritz. Das Freie Literarische Schaffen bei Kindern und Jugendlichen. Leipzig: Verlag von J. A. Barth. 1914. Pp. xiv + 242. 14 M.

Papini, Giovanni. Sul Pragmatismo. Milano: Libreria Editrice Milanese. 1913. Pp. xii + 163. 2.50 L.

NOTES AND NEWS

Dr. Arthur H. Pierce, professor of psychology at Smith College, died at Northampton on February 20, at the age of 46. He was born in Westboro, Massachusetts, and was the son of Samuel and Caroline (Tufts) Pierce. One year after his graduation from Amherst College, in the class of 1888, he was appointed Walker Instructor of Mathematics at his Alma Mater. Two years later he went to Harvard to pursue the study of psychology, and received in 1892 the degree of M.A. In 1893 he was appointed the first Rufus B. Kellogg fellow at Amherst College, and pursued his studies abroad for several years, returning to Amherst to lecture in accordance with the terms of the fellowship. The results of his studies have been published in a volume entitled "Studies in Space Perception." In 1899 he received the degree of Ph.D. from Harvard University, and in 1900 was appointed associate professor of psychology at Smith College. He was secretary of the American Psychological Association for several years, and was, at the time of his death, chief editor of the *Psychological Bulletin*. He was Fellow of the American Association for the Advancement of Science.

The New York Branch of the American Psychological Association met in conjunction with the Section of Anthropology and Psychology of the New York Academy of Sciences on Monday, February 23, at Princeton University. The following papers were read: "Some Tests of Efficiency in Telephone Operators," Dr. H. C. McComas; "Transfer and Interference in the Substitution Test," Professor H. A. Ruger; "A Comparison of the Effects of Strychnine and Caffeine on Mental and Motor Efficiency," Dr. A. T. Poffenberger; "A Comparison of Stylus and Key in the Tapping Test," Dr. H. L. Hollingworth; "An Experimental Critique of the Binet-Simon Scale," Mr. Carl C. Brigham; "The Work Curve for Short Periods of Intense Application," Professor R. S. Woodworth; "Recall in Relation to Retention," Dr. Garry C. Meyers.

Professor Henri Bergson, of the University of Paris, was recently elected a member of the Academie française.

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SOME CRITICAL REMARKS ON ANALYTICAL REALISM

I

IN 1903 appeared Mr. Bertrand Russell's "Principles of Mathematics," a book which has attracted widespread interest. It had the merit of discussing in a fairly accurate and sometimes witty manner the fundamental mathematical disciplines, such as geometry, mechanics, arithmetic, and transfinite assemblages, and of attempting to relate these subjects to a system of philosophy, namely, the "pluralism" of Mr. G. E. Moore, "which regards the world, both that of existents and that of entities, as composed of an infinite number of mutually independent entities, with relations which are ultimate and not reducible to adjectives of their terms or of the whole which these compose."[1] Russell's treatment has been called *neo-realism*.[2] The mathematical advantage of this philosophical position, Russel maintains, is that, unlike most current philosophies, it allows mathematics to be true[3] in a sense which he has frequently sought to explain in various articles and which need not be dwelt upon further here.[4]

As to his method Russell says: "Our method will be one of analysis, and our problem may be called philosophical in the sense that we seek to pass from the complex to the simple, from the demonstrable to its indemonstrable premisses." Also Russell does not distinguish[5] between inference and deduction; induction appears[6] to him as "either disguised deduction or a mere method of making plausible guesses." It is natural enough that he should find the relation of

[1] "Principles of Mathematics," page viii.

[2] H. Dufumier, *Revue de Metaphysique et de Morale*, Vol. 17 (1909), page 620.

[3] *Loc. cit.*, page viii.

[4] *Cf.*, for instance, "The Problems of Philosophy," London; also Russell's "Philosophical Essays," New York, 1910.

[5] "The Principles of Mathematics," § 1.

[6] *Cf.* also *Monist*, Vol. 23 (1913), pages 489–490.

whole and part (which had been previously discussed by De Morgan) fundamental for his position; indeed, he says that for the comprehension of analysis it is necessary to investigate this notion.[7]

As might be expected from Russell's realism, his relational position is the so-called external one, which is opposed to the internal theories favored by idealists. An external relation is described as one implying no complexity in either of the related terms.[8] According to him[9] there exist external relations because asymmetrical relations are involved in Number, Quantity, Order, Space, Time and Motion, and it is impossible for him to explain asymmetrical relations on either of the usual theories of relation, *i. e.*, the monistic and the monadistic.[10] Concerning the external treatment of relations, it is important to recognize a contention made by Russell which, I think, has been supported[11] by Couturat: Russell implies that his discussion may serve as an engine of discovery in actual mathematics.[12]

Russell was able to carry out his discussion, as a whole, largely because he could avail himself of Peano's symbolic formulary of mathematics, whose principles he freely incorporated into his book and from whose mathematical content he drew much of his inspiration.[13]

II

In recent years, a group of young philosophers, "six realists" as they called themselves, has been engaged in controversy, notably with Dewey.[14] Presumably as an outcome of their activities they published a book last year, "The New Realism," consisting of six essays. One of these, "A Defense of Analysis," by Professor E. G. Spaulding, of Princeton, deals to a considerable extent with mathematics and will receive critical consideration in the present paper. Spaulding's purpose is to defend the general realistic interpretation of whole and part, to classify wholes into certain types, and to show that the analysis of each kind of whole does not lead to falsification.[15] The kinds of wholes Spaulding discusses are four:

I. Collections in numerical conjunction.

II. Classes formed or composed of parts which are not classes, but

[7] *Loc. cit.*, page 11, note; *cf.* A. T. Shearman, "The Development of Symbolic Logic," pages 203–205.

[8] *Loc. cit.*, chapter XVI.

[9] *Loc. cit.*, page 224, paragraph 1.

[10] *Loc. cit.*, § 216.

[11] *Cf. Monist*, Vol. 22 (1912), page 524.

[12] *Loc. cit.*, page 24, § 27.

[13] See Russell's own statements, *loc. cit.*, page 26, § 31, and elsewhere.

[14] This JOURNAL, Vol. VIII. (1911).

[15] "The New Realism," pages 155, 157, 168.

which may be either organic wholes or individuals or simples or collections.

III. Classes formed or composed of subordinate classes.

IV. Unities or organic wholes.

Each of these "wholes" or rather specific instances of the latter, Spaulding examines in turn, in order to establish the thesis that analysis is the discovery of the parts of a whole and the organizing relations which these parts sustain to each other.[16]

III

1. It is not my intention to consider Spaulding's essay point by point in detail and in the order of his article. I shall relate myself to crucial philosophic statements and then consider such mathematical errors as are typical.

A comparison of Spaulding's article with Russell's "Principles of Mathematics" shows at once that he has tried to carry out the Russell programme. Indeed, he has almost literally followed Russell in many instances, especially as to mathematics, and, when he deviates from Russell, frequently falls into errors of a very obvious nature.

One of the first points that Spaulding[17] makes is that "all the attacks on analysis are made by methods which themselves involve analysis or are analytical." In testing the effectiveness of any philosophical system, we have the right to investigate its utility (1) with reference to known contents, (2) with reference to unsolved problems. As to the second consideration, we are asked to take the word of the realists that their analysis is a means of discovery, but for tangible evidence they, in effect, refer us to analyses of known contents. Not being creative mathematicians themselves, it would be well for the realists to note what means of discovery eminent mathematicians employ to solve problems in research; but then they would find that the logical position of these investigators is very different from their analytical realism.[18] When in the presence of an unsolved problem even Russell abandons his method of analysis and becomes—as an examination will show—typically inductive; thus illustrating Dewey's remark[19] that a universal seems necessarily as-

[16] *Loc. cit.*, pages 158, 161, 168. It is hardly necessary to recall Aristotle's well-known comparison of a "whole" with an "organism."

[17] *Loc. cit.*, page 160.

[18] *Cf.* H. Poincaré *L'Enseignement Mathématique*, Vol. 10 (1908), pages 357–371. This position of Poincaré has been criticized by E. Borel, *Revue du Mois*, Vol. 7 (1909), page 98. Further, G. Cantor has stated his own general position to be Aristotelian realism. See *Zeitschrift für Philosophie*, Vol. 91 (1887), page 86.

[19] *Decennial Pub. of U. of C.*, Ser. 1, Vol. 3, page 122.

sociated with the existence of a problem. But even in the analysis of known contents the realists are unable to free themselves from inductive methods. Peirce has said that the syllogism involves an element of observation,[20] and a similar remark may be made of all deduction and of all analysis. It is also easy to recognize observational elements of Spaulding's discussion.[21] Spaulding compares the points on a line, the instants of time, and the series of real numbers and finds common properties. Similarly, the so-called "platform" which the six realists have printed as an appendix to their book aims to be a doctrine underlying the six essays which, as they frankly admit, are not in complete agreement. This must be the reply, then, to Spaulding's general criticism of the attacks on analysis.

2. Spaulding's attempted general refutation of the attacks on analysis is incidental to his consideration of specific arguments that analysis is identical with falsification. The instances of attacks upon analysis which Spaulding controverts, hardly do justice to the possibilities. One of these so-called model attacks[22] on analysis runs as follows: "The analysis of space leads to terms which are not spatial; it leads from the extended, the dimensional, to the unextended, the undimensional." Another attack[23] is stated thus: "Space . . . is given empirically by intuition (or some such mode of direct approach) as a unitary continuous whole. But analysis leads to terms or to parts of space which are discrete from one another." Spaulding does not seem to realize[24] that to regard mathematical space as the result of an analysis of a "whole" is itself a false attitude; such a position refers to a preliminary, perceptual space rather than a complete space as a concept. My contention is that the analysis of a "whole" could never induce the mathematical space Spaulding implies in his essay, but only a limited portion of this space. The problem of the genesis of one of those mathematical contents to which the generic name *geometry* is applied is, of course, classic.[25] In the heuristic development of space, as I conceive it, we have first presented to us a perceptual spatial content; in this perceptual "whole," "points" are perhaps spatial magnitudes, "lines" or "rods" are of limited length and have thickness, "planes" or "plates" are of limited area and have thickness, etc.[26] Comparison of such perceptual

[20] *American Journal of Mathematics*, Vol. 7 (1884–1885), page 182; *cf.* G. H. Mead, *Phil. Rev.*, Vol. 9, pages 5–9.

[21] For instance, on page 184 of his essay.

[22] Spaulding, *loc. cit.*, page 186.

[23] Spaulding, *loc. cit.*, page 186.

[24] *Loc. cit.*, pages 169, 187.

[25] *Cf.* Hölder, "Auschauung und Denken in der Geometrie," page 2.

[26] *Cf.* Veronese, "Grundlagen der Geometrie," pages 52–56, 225, 226, etc.

spaces leads to the organization of what may be called a fragmentary conceptual space. By a generalizing, constructive process in which the principle of complete induction plays an important part, this fragmentary space is completed. The completion may be effected in a variety of ways and, indeed, we have at least three geometries, *viz.*, the Euclidean, the Lobatcheffskian, and the Riemannian. Between such completed spaces and the naïve, perceptual contents which approximate the former, Spaulding has not properly discriminated; nor does he seem to understand that the term "space" in mathematics is rather superficial. In fact, "space" is a name applied to many collections of mathematical elements, but its use is a mere matter of convenience, not essential to mathematics.[27] As in the case of space, so in regard to continuity, time, and motion; Spaulding has not properly recognized the conceptual constructive systems as distinguished[28] from the crude percepts which led to them (in part), and these misunderstandings are quite sufficient to throw out any argument based on them. The thesis that Spaulding and the other realists should refute to show that analysis does not lead to falsification may briefly be stated thus:

Let it be granted that there exist infinite[29] *wholes; then it is not possible to analyze such wholes without leading to contradictions.*

Here is an opportunity for the realists to display their analytical skill. It seems that Russell's analysis resulted in an antinomy,[30] which is strangely at variance with his statement[31] that analysis gives us the truth and nothing but the truth.

3. In a future article I hope to discuss the nature of the whole-part relation, its hypothetical and intuitive significances, etc. I wish here merely to refer to that intuitive aspect of a whole which refers to the parts into which the whole has been analyzed. Granted that a whole has been successfully analyzed into parts, these parts represent a specific choice and this choice is intuitive. There must, then, have been a guiding principle associated with the analysis. Let me give an example. In the case of a descriptive three-space there are at least three analyses possible, each leading to an asymmetrical relation, namely, one-dimensional, two-dimensional, and three-dimensional. For each analysis there exists a specific definition of be-

[27] *Cf.* E. J. Wilczynski, *Bull. Am. Math. Soc.*, Vol. 19 (1913), pages 333–334.

[28] *Cf.* J. Royce, "The World and the Individual," Vol. I., pages 526–588.

[29] *Cf.* Spaulding, *loc. cit.*, pages 157, 201; Russell, *loc. cit.*, Chap. XVII.

[30] *Loc. cit.*, §§ 70, 78, 100, 344. This antinomy, by the way, like many others, seems to have as underlying problem the interdependence of object and act, clearly recognized by Plato, "Parmenides," 135, etc.; "Phædo," 73.

[31] *Loc. cit.*, page 141.

tweenness.[32] Russell and Spaulding have taken account of only one analysis and only one definition of betweenness. Now what is to guide us in adopting one analysis rather than another? Russell has touched[33] upon this question:

"It is important to observe that the definition of a space, as of most other entities of a certain complexity, is arbitrary within certain limits. . . . For example, in place of defining the line by a relation between points, it is possible to define the line as a class having a certain relation to a couple of points. In such cases we can only be guided by motives of simplicity."

It would be interesting to know what Russell[34] means by "motives of simplicity," and it is hard to see what test of simplicity of parts there can be other than "satisfactory functioning." This practical test, indeed, enables us to make a choice of the three analyses mentioned above. A three-dimensional analysis of three-space finds its justification in its relevance to the foundations of vector analysis and the application of the latter to mechanics and physics.[35] The geometric example just cited shows that analysis requires intuitive control, and this control must prevent irrelevant analyses or consideration of irrelevant contents. This deficiency suggests that Russell tends towards *scholasticism.* What Green[36] says of the Aristotelian logic is not without application to Russell and Spaulding:

"Thus the Aristotelian or syllogistic logic earns the reproach of consisting in a series of verbal propositions. It represents neither a method of arriving at knowledge nor the system of ideas which constitute the known world . . . but is merely of use in analyzing what is involved in conceded general propositions. . . . Hence its use by the Schoolmen. They did not want a method of arriving at truth nor a theory of what knowledge consists in. . . . As a rule for securing consistency in the interpretation and application of general terms, syllogistic logic has its value."

While, of course, Russell's position, like that of Boole and De Morgan,[37] occupies broader ground than the syllogistic logic, yet I think that the criticism just quoted suggests a fundamental defect of Russell and Spaulding. This view (as to Russell) finds support in

[32] *Amer. Jour. of Math.,* 1909, page 365.

[33] *Loc. cit.,* page 432.

[34] *Cf.* "Principles of Mathematics," page 251, last lines; page 379, paragraph 4.

[35] *Cf. Amer. Jour. Math.,* 1913, pages 37–56.

[36] "Philosophical Essays," Vol. II., page 160.

[37] Both Boole and De Morgan recognized the inadequacy of the syllogistic logic. *Cf.* "Laws of Thought," page 10, and *Camb. Phil. Trans.,* 1864, page 335.

an able survey[38] of Russell's "Principles of Mathematics" by Hausdorff. The latter says:

"A scholastic acuteness which perceives imaginary problems and neglects real difficulties, celebrates in Russell's book orgies of subtlety." Again, he says:

"In Russell's book are two conflicting tendencies, *viz.*, the formalistic, nominalistic, and one opposite to this for which it is difficult to find a name; an *a priori* tendency, realistic in the medieval sense, which would force us to discriminate, in a definite manner, between what is fundamental and what is derived and leads us to hair-splitting decisions in matters which are purely definitional."

To review briefly; the realistic position of Spaulding and Russell is insufficient to account for "wholes," in particular, those of a mathematical nature; it is inadequate, too, in the control of content if we admit that a whole has been successfully analyzed. The test of ultimacy of an analysis into parts must be found in the satisfactory functioning of these parts. For evidence of irrelevant analyses we have only to turn to Russell's book which seems to indicate ignorance on the part of the author of the practical needs of mathematics and logic.

4. The ultimacy of analysis which formed the subject of the preceding section suggests examination of the Russell-Spaulding treatment of asymmetrical relations and their general theory of relation. Spaulding,[39] citing Russell,[40] says that asymmetrical relations are unintelligible on any other theory than that of external relations; and to justify this statement Russell examines[41] the monistic and monadistic theories of relation and concludes, at least to his own satisfaction, that they are inadequate. Russell has given asymmetrical relations great prominence in his book. In every argument, if he has an opportunity, he leads his readers to an asymmetrical relation. The theory of magnitude, when based on transitive, symmetrical relations seems to Russell paradoxical and complicated; asymmetrical relations provide a simple and consistent theory; geometric order is generated by an asymmetrical relation and similarly in regard to time and motion.[42] Now the question may fairly be asked: Are asymmetrical relations indispensable from a practical standpoint? Of asymmetrical relations in general Royce[43] says:

"The contrast between symmetrical and unsymmetrical relations

[38] *Vierteljahrschrift für wiss. Phil. u. Soz.*, Vol. 29 (1905), pages 119–124.

[39] *Cf.* Spaulding, *loc. cit.*, page 176, note.

[40] Russell, *loc. cit.*, § 216.

[41] Russell, *loc. cit.*, §§ 212–215.

[42] *Cf.* Russell, *loc. cit.*, §§ 154–157; 206–207; 441, 446.

[43] *Transactions of the American Mathematical Society*, Vol. 6 (1905), pages 358–359.

seems, to the ordinary view, absolute. Mr. Russell, in his late volume, so treats it. . . . In symbolic logic, however, a symmetrical copula, namely, that of 'inconsistency' or of 'opposition' can be made to accomplish all the work of the ordinary unsymmetrical copula $-<$. In other words, if I have otherwise defined the meaning of 'not,' the statement 'x is inconsistent with not-y' means the same as 'x implies y.' The copula in the former case is symmetrical, in the latter unsymmetrical.''

But also mathematically there is no valid reason why we should regard an asymmetrical relation more ultimate than a symmetrical one. A line may be generated by a transitive asymmetrical relation[44] between points, *i. e.*, a relation of the type

$$aRb \text{ implies not } bRa,$$
$$aRb \text{ and } bRc \text{ imply } aRc,$$

or a transitive symmetrical relation[45] between dyads, *i. e.*, a relation of the type

$$abKcd \text{ implies } cdKab,$$
$$abKcd \text{ and } cdKef \text{ imply } abKef.$$

Russell curiously infers from the definition of asymmetrical relations on the basis of the symmetrical that the latter are not essential.[46] Why? By applying an analogous argument to asymmetrical relations we might easily prove that these are non-essential. For example we can define[47]

$$abKcd \text{ means } (aRb \text{ and } cRd) \text{ or } (bRa \text{ and } dRc).$$

In the second case we have transitiveness and symmetry on the basis of asymmetrical relations. In geometry we should say that the two methods of generating space are equivalent. If we consider n-dimensional space generated linearly ($n > 1$) an infinite class of transitive asymmetrical relations is required,[48] while a single transitive symmetrical relation suffices. Thus there exists in this case a practical reason for preferring transitive symmetrical relations. Russell's reduction of the latter to asymmetrical relations, by the way, is effected through a ''principle of abstraction,'' closely allied to Peano's ''definition by abstraction'' which Vailati has characterized as *pragmatic.*[49] From a practical mathematical standpoint I am unable,

[44] *Cf. American Journal of Mathematics,* Vol. 31, page 378.

[45] *Cf. Amer. Jour. of Math., loc. cit.,* page 394.

[46] *Cf.* Russell, *loc. cit.,* page 235.

[47] *Cf.* Russell's view of ''and'' as a relation, *loc. cit.,* page 71.

[48] *Cf.* Russell, *loc. cit.,* page 395.

[49] *Cf.* G. Vailati, ''Pragmatism and Mathematical Logic,'' *Monist,* Vol. 16, page 487. Russell uses the principle of abstraction throughout his book; see espe-

then, to verify that absolute position asymmetrical relations enjoy in Russell's book.

5. Before considering the possibility of constructing an internal theory of relations, including the asymmetrical, it will be useful to exhibit some of the inconsistencies and vagaries in the Russell-Spaulding external theory. We notice, for example, an arbitrariness and uncertainty on the part of Russell and Spaulding concerning particular relations. Russell says: "It seems best to regard *and*[50] as expressing a definite unique kind of combination, not a relation." Spaulding,[51] on the other hand, assumes that *and* does express a relation. Again Russell explicitly assumes[52] that membership of a term in a class is a relation, and this assumption leads[53] him to affirm that some relations which hold between a term and itself are not necessarily symmetrical, a statement which seems formally undesirable. Concerning identity Russell[54] says frankly:

"The question whether identity is or is not a relation and even whether there is such a concept at all[55] is not easy to answer. For it may be said identity can not be a relation since where it is truly asserted we have only one term, whereas two terms are required for a relation. . . . Identity must be admitted and the difficulty as to the two terms of a relation must be met by a sheer denial that two different terms are necessary." The conclusion that must here be drawn is that identity, as a relation, has a very dubious existence. And if identity, as a relation, is in question, the same must be said of difference, because the interdependence of identity and difference is, I think, fairly well recognized.[56] Lastly, I observe that Russell has arbitrarily assumed[57] that a sensed couple involves a relation:

"It may be doubted whether there is any such entity as the sensed couple, and yet such phrases as 'R is a relation holding from a to b' seem to show that its rejection would lead to paradoxes."

"It would seem, viewing the matter philosophically, that sense

cially *loc. cit.*, page 519; compare also page 51. See also G. Vailati, *Revue du Mois*, Vol. 3, 1907, pages 162–185.

[50] The term "and" has a far more pregnant meaning in symbolic logic than Russell recognizes (*loc. cit.*, §§ 71, 98). Consider, for instance, the definition, given above, of the relation of $abKcd$ in terms of the relation aRb.

[51] *Loc. cit.*, page 162.

[52] *Cf.* Russell, *loc. cit.*, §§ 21, 26, 30, 53, 68, 69, 76–78, 125, (*cf.* 491); see also pages 25, 167.

[53] *Cf.* Russell, *loc. cit.*, §§ 30, 57, 76, 79, 94, 95.

[54] *Loc. cit.*, pages 63–64.

[55] On page 96, *loc. cit.*, Russell says: "Self-identity is plainly a relation," but on page 163 expresses doubt about identity being a relation.

[56] *Cf.* for instance, Bradley, "Appearance and Reality," 2d edition, pages 585, 617, etc.

[57] *Loc. cit.*, pages 87–88; 99 (*cf.* page 25); 512, note; 107, note.

can only be derived from some relational proposition.'' Russell thus seems by no means certain that the sensed couple involves a relation.

If one assumes that identity and diversity are not relations,[58] that possession of a trait does not express relation,[59] that reference[60] to a term is non-relational, and that no relation is involved in a sensed couple or rather *functional ordered*[61] *dyad* $(x\ y)$, then it seems possible to explain asymmetrical relations on an internal basis. I will mention briefly how this might be done. As a standard form of a binary functional relation, I assume xRy, that is, ''x possesses R with reference to y;'' a relation between x and y arises, then, if the term x possesses a *mark* or *trait* with reference to the term y. Now I assume that xRy is always equivalent[62] to $(xy)R_1(xy)$ where (xy) is a functional ordered dyad, and that R_1 is symmetrical, *i. e.*, (xy) and its repetition may be interchanged. Therefore the preceding interpretation suggests that a binary relation may be generated by comparing an ordered dyad (xy) with its repetition; one has xRy if, and only if, (xy) possesses R_1 with reference to itself, or (xy) and its repetition possess a common mark or[63] the dyad (xy) and its repetition are ''relatively equal'' with reference to a mark. It should be observed that the equivalence of xRy and $(xy)R_1(xy)$ involves subtle distinctions in Russell's external theory of relation; it has as underlying problems the analysis of a reflexive relation[64] and the relation of the class of all propositions of the form xRy to the associated propositional function of two variables, $\phi(x, y)$.[65] This preceding internal theory seems consistent, but contradicts[66] several

[58] *Cf.* Bradley, *loc. cit.*, page 582.

[59] Russell, *loc. cit.*, §§ 53, 79, also §§ 425, 426.

[60] Russell, *loc. cit.*, § 214. In the above I conceive of ''trait'' not merely as something that may be possessed by a term, but also as something that is *relevant* to some term (*cf.* Russell, *loc. cit.*, §§ 81, 82). Reference, or rather relevance, is a preliminary that may lead to relation. On ''relevance'' see Schiller, *Mind*, 1912.

[61] See *Amer. Jour. of Math.*, Vol. 31, pages 370, 375.

[62] As tending to illustrate this equivalence consider ''$x = y$'' and ''$x - y = x - y,\ x - y = 0$.''

[63] *Cf.* Veronese, ''Grundzüge der Geometrie,'' pages 2–5.

[64] *Cf.* Russell, *loc. cit.*, page 86, paragraph 2.

[65] It seems possible to approach the above equivalence on the Russell basis by saying (*cf.* Russell, *loc. cit.*, page 85, paragraph 2 and § 74) $(xRy)\epsilon\phi(x, y)$, or if one is thinking of a functional ordered dyad underlying xRy one has $(x, y)\epsilon\phi(x, y)$, as equivalent to the former symbolic statement. Now $(x, y)\epsilon\phi(x, y)$ expresses a relation of a class to a class of which it is the only member, *viz.*, a class of couples (x, y) to the associated propositional function $\phi(x, y)$. One might, therefore, conveniently express $(xy)\epsilon\phi(x, y)$ in terms of a single (relational) symbol and get $(xy)R_1(xy)$. Compare also A. T. Shearman, *Mind*, 1907, page 260.

[66] I assume that subject-predicate propositions are reducible to the standard,

of Russell's controversial assumptions concerning relation and class.[67]

It seems plausible, therefore, to modify the monistic and monadistic theories of relation so as to yield, formally at least, an unobjectionable internal[68] theory. Against Russell's external theory, it might be urged that the external theory assumes[69] the definition of the general effectiveness of a relation:

"The relation affirmed between A and B in the proposition 'A differs from B' is the general relation of difference and is precisely and numerically the same as the relation affirmed between C and D in 'C differs from D.' And this doctrine must be held to be true of all other relations; relations do not have instances, but are strictly the same in all propositions in which they occur."

In my opinion a more correct statement would be that general concepts of relation are limit concepts to which classes of specific instances of relation sometimes tend. Aside from this, however, it may be questioned whether Russell has succeeded in entirely avoiding relations as specific instances. What I suspect to be a disguised internal relation is Russell's "measurable relation between two vectors" which he describes[70] as follows: "To say that the relation is measurable in terms of real numbers means . . . that all such relations have a (1, 1) relation to some or all real numbers." From the standpoint of the correspondence with real numbers it seems altogether likely that we are concerned here with specific relational instances in which the terms related are peculiarly involved. A precisely analogous relational problem occurs elsewhere in the abstract mathematical science of Grassmann, the *Ausdehnungslehre* which has geometry and mechanics for particular applications. On the introduction of the number system into his discipline Grassmann states[71] explicitly: "The numerical magnitude as developed in our science does not appear as discrete number, *i. e.*, not as a set of units, but . . . as a quotient of continuous magnitudes and therefore does not at all presuppose the discrete conception." This conception of number, regarded in a certain way as a foundation for a general theory, may have its limitations; nevertheless, its use is, I think,

equivalent forms, "a possesses M," "a belongs to C," "O affects a," where M, C, O may lead to a relation, class, operation, respectively. See Russell, *loc. cit.*, §§ 57, 79.

[67] See, for instance, "Principles of Mathematics," page 167, paragraph 1.

[68] I do not wish to imply here that I uphold a purely internal theory of relation. On the contrary neither an internal theory nor an external theory, in itself, appears to me adequate.

[69] Russell, *loc. cit.*, § 55, page 51.

[70] *Loc. cit.*, page 433.

[71] *Cf. Gesammelte Werke*, Vol. I., page 138.

amply justified in Grassmann's Extensive Algebra and constitutes a serious difficulty in the purely external theory of relation.

6. Reverting for a moment to the falsification of analysis, I may be permitted to indicate how conflict, which is the source of embarrassment to analytical realists, is employed to advantage in the pragmatic position. To have recognized the fundamental part of conflict in the process of knowledge is, I believe, one of the great merits of pragmatism.[72] This philosophy, at least in regard to conflict, seems more nearly in accord with the facts of mathematics as an incomplete science than analytical realism. Let me review briefly a few important instances of conflict in the history of mathematics and the developments to which they have given rise. It is proper here to quote Hilbert:[73]

"In modern mathematics the question of the impossibility of solution of certain problems plays an important rôle and the attempts made to answer such questions have often been the occasion of discovering new and fruitful fields for research. We recall . . . the demonstration by Abel of the impossibility of solving an equation of the fifth degree by means of radicals, as also the discovery of the impossibility of demonstrating the axiom of parallels, and finally the theorems of Hermite and Lindemann concerning the impossibility of constructing by algebraic means the numbers e and π."

Again, Hamilton endeavored to construct an algebra of three units, $a + ib + jc$, which should obey the same laws of operations as the ordinary complex number, $a + ib$; and out of the conflicts that arose between these algebras, as he describes in detail in the preface to his "Lectures on Quaternions," he was led to construct a new complex number of four units, the quaternion. If I may give another example, the problem of the continuity of the straight line is that presented by the conflict of an intuitive straight line, say L, with the class R of rational numbers; namely, on the straight line L there is an arbitrary number of points which corresponds to no rational number, while to every rational number there corresponds a point. Thus as Dedekind says in his celebrated memoir,[74] a comparison of the intuitive straight line L with the rational numbers R shows that the

[72] *Cf.* G. H. Mead, *Philosophical Review*, Vol. 9; A. W. Moore, "Pragmatism and its Critics," page 125. See also Stosch, *Vierteljahrschrift für wiss. Phil.*, Vol. 29, page 97, note 3.

[73] "Foundations of Geometry," page 131. Compare O. Perron, "Ueber Wahrheit und Irrthum in der Mathematik," *Jahresber. d. Deutsch. Math. Ver.*, Vol. 20 (1911), page 196; H. Liebmann, "Nothwendigkeit und Freiheit in der Mathematik," same journal, Vol. 14 (1905), page 230.

[74] "Stetigkeit und irrationale Zahlen," pages 7–11.

latter presents gaps, but the former does not. Dedekind's solution of the conflict was his formulation[75] of the principle:

"If all the points of a line are separated into two classes such that every point of the first class lies to the left of every point of the second class, then there exists one and only one point which produces this separation." More generally, I might refer to the conflict between analysis and geometry in the development of mathematics and that great movement initiated by Lagrange known as the arithmetization[76] of mathematics in which rival theories due to Cauchy and Weierstrass and Méray are prominent. But the examples given will, I think, sufficiently indicate an important aspect of mathematics as heuristic.[77]

IV

I come now to criticisms of a more properly mathematical nature. One of Professor Spaulding's colleagues, Professor W. B. Pitkin, in the "New Realism" (p. 378), speaks of the objections which mathematics has brought against realism in the past, and implies that these have been cleared away in previous essays in the volume, presumably Spaulding's essay. This statement, alas! can not be verified. Spaulding has committed many mathematical errors and it is proper to state that these seem due to an unfamiliarity with mathematical conceptions, rather than to the peculiar philosophic position he upholds; his mathematical remarks obscure rather than elucidate his fundamental theses. On this account I enter upon a mathematical criticism of Spaulding's essay rather unwillingly, and a few indications of the most noticeable mistakes must suffice.

Readers of Spaulding's essay will quite agree with the author when he says,[78] "It is important . . . to present clearly and with precision that which analysis shows the continuum to be." But this is what Spaulding does not do. (1) Consider his statement (p. 178), "That there are irrationals is discovered in the realization that there

[75] Obviously, Dedekind's statement lacks rigor; *cf.* Russell, *loc. cit.*, § 266.

[76] *Cf.* G. Bohlmann, *Jahresbericht der Deutschen Mathematiker Vereinigung*, 1901, page 95.

[77] In the preceding section it might have been desirable to dwell on the nature of conflict in general. Research mathematicians will probably have no difficulty in recognizing in their own experiences what is meant by the *conflict* of mathematical terms. The subtle character which such conflict often possesses may be illustrated by an example. The statements, "$1 + 2 = 3$" and "$9 + 16 = 25$" are not in conflict in reference to addition of integers, but they are in conflict in that $9 + 16 = 25$ may be expressed $3^2 + 4^2 = 5^2$, while $1 + 2 = 3$ does not admit an analogous expression in terms of squares. More broadly, there is a conflict between "intuitive" and "formal" mathematics.

[78] *Loc. cit.*, page 78.

is some value for x whereby, for example $x^2=2$. The position[79] that underlies this statement is incorrect. What probably suggested this remark to Spaulding is the possibility of making the (intuitive) construction which he has described (p. 184, paragraph 3).[80] (2) The definition of limit of a sequence Spaulding misquotes[81] from Pierpont's book.[82] I remark that Pierpont's theory of real numbers has been discussed in a review by G. A. Bliss.[83] (3) The error is committed by Spaulding (p. 179) of juxtaposing the *derivative of an assemblage* and the *derivative of a function;* further comment on this seems unnecessary.

Spaulding's analysis of space is not more satisfactory than his arithmetical analysis. (1) Spaulding seems to have been misled (p. 184, paragraph 1,) by Hilbert's use of the word "continuity" in connection with the Archimedean property of a line.[84] (2) The author's inability to comprehend mathematical continuity is clearly shown, as is evident elsewhere, by his remark (p. 185) that a "series" is continuous if it is perfect. The latter remark is contradicted by *nowhere dense perfect assemblages.*[85] (3) Spaulding makes a very feeble attempt (p. 188) to explain the relation of the extension of a line to its continuity. What we are concerned with here is the dependence of the Archimedean axiom on the axiom of Dedekind continuity in the foundations of geometry; this has been recently discussed by O. Hölder.[86] In view of such instances as the preceding, Spaulding is not justified in saying[87] that his analysis of space "states with clearness and precision what space is, what its continuity is, what terms and relations are involved."

I shall not consider further Spaulding's errors. Enough has been

[79] Russell has a remark quite as misleading as the one quoted above from Spaulding; see Jourdain, *Math. Gazette,* Vol. IV. (1908), page 204, note.

[80] Compare also Dedekind, *loc. cit.*

[81] *Loc. cit.,* page 178.

[82] "The Theory of Functions of Real Variables," Vol. I., page 25, § 42; page 61, § 97.

[83] *The Bulletin of the American Mathematical Society,* Vol. 13 (1906–1907), pages 121–122. See especially Bliss, *loc. cit.,* page 121, note; compare H. Weber, *Jahresber. d. Deutsch. Math. Ver.,* Vol. 15 (1906), page 173. Instructive references to the theory of real numbers are, A. Pringsheim, preceding journal, Vol. 6, page 73; O. Perron, same journal, Vol. 16 (1907), page 142, and Jourdain, *Math. Gazette,* Vol. IV. (1908), page 201.

[84] "Foundations of Geometry," page 24.

[85] See Schoenflies, *Jahresbericht der Deutschen Mathematiker-Vereinigung,* Vol. 8 (1900), pages 101–102; *cf.* Russell, *loc. cit.,* page 440, § 417; page 288, § 272.

[86] *Leipziger Berichte,* Vol. 63 (1911), pages 108–109. *Cf.* K. Th. Vahlen, *Jahresber. d. Deutsch. Math. Ver.,* Vol. 16 (1907), page 409.

[87] *Loc. cit.,* page 185.

said to establish that he not only is unable to analyze successfully those mathematical contents with which he has dealt, but he does not even possess familiarity with the mathematical conceptions he mentions. In this respect Spaulding differs from Russell, who, I think, has been reasonably accurate in dealing with mathematical conceptions, and who has been aptly characterized by James[88] as an "athletic ratiocinator." But so far as I have been able to ascertain, neither Spaulding nor Russell has had experience in mathematical research, and discovery, as Peirce[89] has pointed out, is a part of mathematics.

V

In conclusion, I should like to lay stress on the desirability of a more intimate relation between philosophers and mathematicians. "The mathematician's interests," says Royce,[90] "are not the philosopher's. But neither of the two has a monopoly of the abstractions and in the end each of them—and certainly the philosopher—can learn from the other. The metaphysic of the future will take fresh account of mathematical research." The numerous misinterpretations of mathematics occurring constantly in philosophical literature, probably not excepting the work of Bergson,[91] show that philosophers can not pronounce judgment on mathematical contents without acquainting themselves with mathematics in a way that probably requires actual mathematical experience. Conversely, mathematicians should endeavor to enter into the spirit of philosophical disciplines and recognize that the study of philosophy can be made indirectly the means of further mathematical development.[92] Mathematical masters have sometimes acknowledged explicitly this advantage of philosophic study. It is said of Kronecker,[93] for instance, that he thought more philosophically than mathematically and considered it profitable to go beyond his special mathematical field, to aim at general ideas, and then to return to his more restricted activity.

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[88] "The Meaning of Truth," page 276.

[89] *Cf.* J. B. Shaw, *Bull. Am. Math. Soc.*, Vol. 18, page 381.

[90] "The World and the Individual," Vol. I., page 527; compare Vol. II., page x.

[91] *Cf.* E. Borel, *Rev. de Met. et de Morale*, Vol. 16, 1908, pages 244–245.

[92] *Cf.* M. Winter, *Rev. de Met. et de Morale*, Vol. 16, 1908, page 920.

[93] *Cf.* Netto, Mathematical Congress Papers, Chicago, 1893, page 243; see also page 246.

VALUE IN ITS RELATION TO MEANING AND PURPOSE

IN philosophical discussions it is common to find the terms meaning, purpose, and value bracketed together, or used interchangeably. Thus, in introductory text-books of philosophy such statements may be found as that science has for its problem the description and explanation of facts, philosophy the interpretation of facts in terms of meaning, of purpose, or of value; or that the scientist is interested in facts as such, whereas the philosopher inquires further into what these facts mean, what they are for, and what function they fulfil in the universe. But though considerable thought has been and is being given to the definition of each of these concepts, the investigation of their mutual relations has been neglected, and it is to this phase of the matter that I wish here to call attention.

In the first place, the three concepts have in common the factor of external reference. However much independent reality we may attribute to any object, to assert that such an object has a meaning, purpose, or value is to acknowledge its lack of complete independence. All three concepts, then, are determined by some relation, the subsistence of which is essential to the adequate definition of the object concerned; and if this is so, we must look to the other term of the relation for the principle of differentiation between them.

Now the meaning of an object is always determined by its relation to some other object. When any object A has a relation to another object B, such that the subsistence of that relation is essential to the adequate definition of A, B is determined as the meaning of A, A as the "sign" of B. Thus, a frown is not merely a contortion of the face, but a sign of anger, of deeply concentrated attention, of anxiety or uncertainty, etc.: that is to say, the presence of the frown is an indication of the existence of some definite state of mind in the individual which "expresses itself" through the frown, and without which the latter would be meaningless. So, the sound of the dinner-bell ordinarily means that dinner is ready, and without a dinner ready for consumption the ringing of the bell is meaningless. So, again, the motif of Beethoven's Fifth Symphony is said by some to mean "Fate knocking at the door," by others to represent (*i. e.*, to mean) the crying of a baby, and by others still is regarded as no more than a theme to be developed, *i. e.*, as having its meaning only in relation to that which follows in the composition.

Meaning has reference to an accomplished fact, purpose to the accomplishment of some fact: the meaning of an object is determined by its relation to some other object as existent, purpose by its relation to some change in or modification of some object. Thus the purpose of the nomination of a fusion ticket in New York City last

summer was to defeat Tammany, the meaning of the election of Mr. Mitchel was the accomplished defeat of Tammany. Hence the definition: when any object A has a relation to a modification of some object B (as B'), such that the subsistence of that relation is essential to the adequate definition of A, then the change from B to B' is determined as the purpose of A. If the meaning of a frown is anger, its purpose is to convey the information that the frowner is angry, and so far to produce a change in the mental state of the observer: the angry man may suppress the frown, but if he frowns his facial expression fails to fulfil its purpose if no modification results therefrom in the mind of the observer. So the purpose of the dinner-bell is to produce, let us say, a movement of the guests from the conservatory to the dining-room; the purpose of the Fifth Symphony motif to arouse the notion of Fate or the image of a crying baby in the minds of the hearers, or at least to prepare them for the musical mood of the composition.

Value, finally, is determined by the relation of the valuable object to a subject, and is defined from the standpoint of the subject rather than, as in the former cases, from that of the object said to "possess" value. When any object A has a relation to a subject S such that the subsistence of that relation is essential to the adequate definition of S, A is said to be valuable, and the relation itself to constitute the value of A. Thus the frown, the dinner-bell, the Beethoven motif, the New York election, have value because they in one way or another fulfil the interests, satisfy the needs, or complete the reality of some subject. The frown is valuable because it enables the angry man to express his anger, for without this or some other outward sign the needs of the subject would fail to find satisfaction: the dinner-bell is valuable because it enables the server to summon the diners with less effort than any other method; the Beethoven motif is valuable because it expresses the composer's and arouses the hearers' esthetic sentiment; the New York election, finally, is valuable because it expresses in the most practical and efficacious manner the dissatisfaction of the people with political conditions.

These definitions, it is hoped, bring out clearly the close interrelations between our three concepts, and justify the use of them as alternative predicates of objects whose reality extends beyond their isolated existence. Purpose is hardly distinguishable from meaning when predicated of an action, and value has been defined by Urban as "affective-volitional meaning." Whether any fact that possesses meaning must also possess purpose and value may be questioned, but whatever has purpose or value has thereby meaning also. Meaning is defined in terms of relation to some object—but if we think of the denotation of "object" as including also changes and conscious

selves, purpose and value become species of meaning. In other words, if we conceive meaning as genus, and regard it as divisible into the two species, logical (or cognitive) and affective-conative meanings, purpose and value become subspecies under the second head—purpose essentially conative meaning, value, primarily, perhaps (but not solely), affective.

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REVIEWS AND ABSTRACTS OF LITERATURE

La Synthèse Mentale. GEORGES DWELSHAUVERS. Bibliothèque de Philosophie Contemporaine. Paris: Librairies Felix Alcan et Guillaumin. 1908. Pp. 276.

The book, as its title indicates, is a study of the mental life. It is an exposition of the nature of consciousness which Dwelshauvers characterizes in terms of a synthetic activity. Its object is to explore the content of this synthetic activity, to define that act which constitutes "the unity of mentality." It is an attack on the materialistic and sensationalistic theories that have reigned in psychology for so many years. Dwelshauvers does not pretend to have originated the problem of the mental synthesis; it is a continuation, but through a different method, of the line of work which in France has preoccupied thinkers like Maine de Biran, Ravaisson, Lachelier, Paulhan, Ribot, Pierre Janet, and many others. The fundamental idea of Höffding's "sketch of a psychology founded on experience" is, as Pierre Janet remarks in his preface to the French edition, that "consciousness is essentially an effort toward unity, a synthetic force," and that even elementary sensations,—and not only the higher types of judgment and general ideas,—are synthetic in their nature. Dwelshauvers's work, though of a different scope, is based on those fundamental assumptions.

Dwelshauvers is brought to the notion of synthesis not by metaphysical reasons, but, as he claims, through the simultaneous use of diverse methods of psychology applied to the mental fact which he attempts to define in its concrete reality, and not in abstraction. What Dwelshauvers calls the unity of the life of the mind has nothing in common with the Cartesian theory of a soul unable to have more than one idea at a time on account of its simplicity, nor with the unity of the soul such as Herbart has admitted. The unity which is presented by the mental synthesis is, according to Dwelshauvers, neither an abstract entity nor the property of a substance, but the realization more or less perfect of a complex equilibrium maintained among diverse tendencies which constitute the conscious individuality. "The synthesis of the life of the mind," to quote our author, "is neither a combination of elements nor simply an expression of logical relations, but it is an act which explains the natural way by which all of us, whether ignorants or subtle analysts, posit our ego

at the same time as we posit as equally real, *i. e.*, as subjects, other egos, or the non ego." "This act is intuitive, it is prelogic, it answers to an interior vision, to a real affirmation of faith, or more simply, of sympathy."

The book is divided into four chapters which deal respectively with (I.) the mental and cerebral activity, (II.) the unconscious, (III.) the mental life and the laws which govern it, (IV.) personality and freedom.

In the first chapter the author examines the nervous system in its relation to thought and shows that the physiology of the brain does not explain the act of thought. The nervous cells do not produce representation; representation is the work of an act of the mind. It is an interior act issued from this pure and non-spatial potentiality which mind is. The act of the mind surpasses in its richness and variety the cerebral activities which accompany it. The brain is to consciousness what the piano is to the musical artist; the instrument has a restricted number of keys, consequently the number of its movements is very limited. However, what the artist will play will vary infinitely. Viewed from its inner side, the life of the mind appears as an élan, an interior movement; studied in its relation with the organism which it animates, the life of the mind manifests itself as anticipation. It anticipates the nervous system, it establishes means of communication and does not make use of the means already in existence. It is essentially effort, *inextensivity,* dynamism. A mind which would be merely a synthetic consciousness of the organism would not create anything new, would not adjust itself to unexpected adaptations, in a word it would not live. Dwelshauvers, like Bergson, rejects the psychophysical parallelism and, like him, criticizes those psychological systems which speak of cerebral images, aggregates of sensation in the brain and of psychophysiological localizations. He sums up the first chapter by emphasizing the fact that we lose sight of the real problem by attributing to the brain a function which it does not possess, namely, "the formation of images, the activity of thought or ideation."

The second chapter deals with the unconscious in the mental life and its relation to conscious thought "whose continuity is assured by the movement and the depth of the unconscious life which never stops and never tires" (p. 115). The author makes an interesting study of the different forms of the unconscious, from the unconscious in the act of thought to the unconscious in the affective life. He groups them into two classes, the ultra-psychic unconsciousness and the psychic unconsciousness. The first comprises the two limits of our mental life, the rational unconsciousness which manifests itself in the act of the mind and the irrational unconsciousness which connects itself to the organism. The psychic unconsciousness manifests itself in memory and in automatism. The conclusion of this study, which is carried over to the third chapter, is that the mental life is not a series of states, "but is formed of an indeterminable number of psychic currents of different force and quality upon which there falls an ever changing illumination with an infinitely varied play of light and shade. These currents sometimes diverge, sometimes go parallel, and sometimes rejoin in order to divide again."

So far the author has endeavored to give us a conception of the mental life. He now tries, in the rest of the third chapter, to consider the laws that govern the mental life. This brings him to a consideration of the categories of quality, quantity, duration, causality, and finality, those objective categories which we are tempted to carry from the objective world into the interpretation of the mental life. He shows what a profound transformation the specificity of the spiritual life imposes on those categories. The spatial categories as well as objective causality can not apply to the mental life. Mental life differs from phenomena in this essential point that all prevision with regard to it is impossible. Causality for the psychologist does not connect phenomena and does not form an indefinite series, but unites concrete facts, ideas, sentiments, volitions to a personality. Nor is it legitimate to reduce the psychic finality to the finality applicable to the external world. They have some common characteristics, but consciousness and the will bestow upon psychic finality an altogether different value. "The life of the mind," says Dwelshauvers, "escapes the logical determination in which our reason groups phenomena. It can not be understood without a theory of freedom." This theory of freedom is the subject of the fourth chapter.

The psychological problem of liberty has no solution, according to our author, as soon as we ask with regard to a given act whether that act is free or not. Freedom has sense in psychology only for a series of acts, for the ensemble of an activity, and not for such and such an act in particular. The more a voluntary act is part of a more unified movement the more free it is. It is the force of cohesion and resistance of the ego which gives the measure of liberty. "One who prefers the unity of his interior development to the solicitations of the environment tends to act freely." Freedom is thus explained by personality and synthesis. It is that unity which is the equilibrium, the harmony, of the different tendencies that make up the conscious individuality which explains freedom. That unity, as we have already seen, is the mind, the spiritual principle par excellence, which reveals itself in the pure act, in intuition, and in reflection.

Here the author gives a historic sketch of the notion of mental synthesis held by those philosophers whose writings help us to understand better the meaning of the spiritual life. He takes up Leibniz, Kant, Wundt, Höffding, Pierre Janet, and Bergson. But it is rather surprising that the author has omitted from this list Fichte, whose doctrines, if translated in contemporary terms, have, it seems to me, something in common with those of Dwelshauvers.

The book contains, in addition to those four chapters, an appendix which gives us a critical review of the various methods used in psychology. The method with which Dwelshauvers identifies himself is the reflective method, so named and defined by Jules Lagneau. This method, as we can see from the plans followed in our present book and as Dwelshauvers describes it himself, has for aim the explanation of the logical unity which consciousness presents, the determination of its essential characteristic and the search for the laws which would enable us to under-

stand them. Dwelshauvers claims that this reflective method is superior to the other ones because it has not the shortcomings of the introspective and the psychophysical methods; that it is at the same time rational and living, rational because it brings all psychological manifestations to a unity, and living because it seeks the condition of the real,—it makes no abstraction. Dwelshauvers's method differs from the Bergsonian intuition. For the Bergsonian intuition aims to reach the bottom of the spiritual life under the stratified layers of the logic and the social, while the reflective analysis applies itself more specially to thought as ideation and reflection. It is by this method that, according to the author, we arrive at a most correct notion of the mutual implications of ideas in the concrete totality which constitutes all act of thought, of cognition, or of reflected volition.

Such is but a brief outline of the fundamental ideas underlying the book, the central thought of which is the revindication of the specific and autonomous character of our mental life. The conclusions which Dwelshauvers reaches in his work do not differ much from those of Bergson. But he comes to them through his own method, through his own original and personal way of thinking, based on deep reflections, on scientific researches, and on accumulation of facts which have been furnished to him by the experimental investigations of leading scientists. Whether or not we admit the author's theory of consciousness, we can not fail to find his book most interesting and suggestive. It is at once a contribution to and excellent representative of contemporary psychology.

NINA HIRSCHENSOHN.

The Philosophical Works of Descartes. Rendered into English by ELIZABETH S. HALDANE and G. R. T. ROSS. Two volumes. Cambridge University Press. 1911. Vol. I. Pp. vi + 452; Vol. II. Pp. viii + 380.

This edition makes accessible to English readers much which has been overlooked in other English renderings of Descartes. Thus far English translations have been limited almost exclusively to the "Discourse," the "Meditations," and selections of the "Principles." These works are, however, not enough to give us a comprehensible view of Descartes. The way in which he expounded his theories makes a more extensive acquaintance with his works necessary for a thorough understanding of his philosophy. Descartes never expressed freely and openly what he believed to be the truth. He gave us his ideas only in disguise; his progressive theories are veiled in conservative covers. The "Discourse," the "Meditations," and the "Principles" only arouse our suspicion of a double policy on the part of Descartes; a systematic study of his scientific treatises and his other works confirms this suspicion, and, what is more important, enables us to free the kernel of his philosophy from the husk. The present translators, E. S. Haldane and G. R. T. Ross, have thus rendered an invaluable service to English readers by including some of the scientific treatises and the polemics in this edition.

Of the scientific treatises, Volume I. contains the "Rules for the Direc-

tion of the Mind," and "The Passions of the Soul." The "Rules" give us the original sketch of Descartes's method and its application to mathematics. In this treatise the explanation of Descartes's view of extension is worthy of notice. He refutes the independent existence of extension and explicitly states that while "body possesses extension," "extension is not body" (pp. 57 sq.).

"The Passions of the Soul" is a mechanistic interpretation of all vital phenomena. This was the first attempt to apply the mechanical principle to both mental and physiological processes. Present-day psychology and physiology testify to the significance of this attempt. English readers have been thus far deprived of this very interesting treatise, as the first translation of 1650 is practically out of print at present.

Of other works that have been given here their first English rendering, Volume I. contains "The Search after Truth" and "Notes directed against a Certain Programme."

"The Search after Truth" is an unfinished dialogue which exemplifies the search for truth according to the Cartesian method by the "natural light" alone.

The "Notes" is a refutation of ideas expressed in a pamphlet on the nature of the mind, edited anonymously in the form of a manifesto or poster by Regius. These ideas conflicted with orthodoxy, and as Regius was generally known as an ardent follower of Descartes, the latter publishes his opposition to a very much feared denunciation. In these "Notes," translated without the preface and the verses that accompanied the original, Descartes's incidental explanation of the innate ideas is very elucidating, and makes all objections against them in the history of philosophy appear to us vain (p. 442).

In addition to the above-mentioned works, Volume I. contains the "Discourse," the "Meditations," and the "Principles."

The "Principles" are here more fully translated than in the previous English editions. The headings of all passages not translated are given, so that the contents can be inferred.

The second volume of this edition comprises the "Objections and Replies," "Arguments Demonstrating the Existence of God," a "Letter from Descartes to Clerselier," and a "Letter to Dinet."

In the Introduction to this volume the translators explain the origin of the "Objections and Replies." Before publishing the "Meditations," Descartes circulated it in manuscript among various theologians and philosophers. Their criticisms and Descartes's replies were later published, together with the "Meditations."

The "Objections and Replies" consists of seven sets of objections and replies; objections by (I.) the theologian Caterus, (II.) a group of theologians and philosophers, (III.) Hobbes, (IV.) Arnauld, (V.) Gassendi, (VI.) another group of theologians and philosophers, and (VII.) Bourdin.

The "Objections" are criticisms, on one hand, from the theological, and, on the other, from the empirical and scientific, points of view of Descartes's following doctrines: The proofs of God's existence; efficient causality and "*causi sui*"; continual creation; liberty of indifference in

man and God; the method of doubt; the principle of definition as criterion; the distinction between soul and body; the nature of the "thinking thing," and the spirituality of the soul, and the identification of substance and accident.

These criticisms contain things of considerable interest. In the "Objection" by Caterus we find a striking parallel drawn between Descartes's ontological argument and that of St. Tomas (pp. 3 sq.). In the "Objection" by Arnauld, we have the identification of Descartes's "*je pense, donc je suis*" with St. Augustine's "*si fallor sum*" (p. 82), and the discussion of Descartes's likeness to St. Augustine in the doctrine that the soul is more clearly perceived than the body. In the objections of Arnauld—"as a theologian," perhaps the most interesting points are his explanations of the danger of Descartes's rule of evidence for the teachings of theology, and of the incompatibility of Descartes's conception of matter with the theory of the Eucharist (pp. 93 sq.).

Gassendi's "Objections" gives us an insight into his materialism and the reaction of an empiricist to Descartes's assertion that the mind is more clearly perceived than the body, and that its essence is mind, and to Descartes's similar speculative doctrines. Hobbes's "Objections" is gratifying as an exposition of the relation of this materialistic thinker to Descartes's spiritualistic philosophy. In these objections (pp. 61 sq.) the interpretation of Descartes's conception of the "thinking thing" as favorable to the soul's materiality attracts our attention as we meet with the same objection in Gassendi's criticism.

In Descartes's "Replies" to the "Objections" we have elaborate discussions of his doctrines criticized by the opponents. In these "Replies" comes up Descartes's attempt to reconcile his theory of matter with the teaching of the Eucharist (pp. 116 sq.), which is later more elaborated in a letter to Mesland.—Descartes's distinction between real and formal existence in the case of everything except God, is brought out here more definitely than in the "Meditations" (especially p. 20).

The "Objections and Replies" are not important as an elucidation of the difficulties with which we meet in Descartes's speculations; for in his replies to the opponents he makes various concessions. This work is interesting rather as an illustration of the attitude of Descartes's theological and philosophical contemporaries towards his philosophy, and of his efforts to justify the difficulties of his speculations leading to the accusation of heterodoxy on one hand, and lack of empiricism on the other.

The "Arguments for God's existence" is an exposition in geometrical form of the same proofs as occur in the "Discourse," the "Meditations," and the "Principles."

In the "Letter to Father Dinet" Descartes complains of accusations that his ideas are opposed to ancient philosophy and clash with theology, and expresses his eagerness for the approval of his ideas by the Jesuit society, of which approval he despairs on account of Bourdin's attack.

The "Letter to Clerselier" consists of Descartes's replies to objections made by Gassendi to previous replies.

The rendering is done very carefully; expressions that can not be

translated precisely are quoted in the footnotes; literal exactness is, however, often sacrificed for the sake of English style. The variations in the text of the different editions of the original works are indicated by means of brackets.

The translators introduce each work by valuable notes as to place, date, and circumstances of publication, character of the work and its history; and indicate each time what edition of the original work they followed in the translation.

In the preface to the first volume the translators promise an English rendering of Descartes's correspondence in the near future. I should say his letters are quite indispensable for an unmistakable conception of Descartes. I should also add that a translation of the treatise "Le Monde" would be very desirable in order to have Descartes in his full greatness.

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Immanuel Kants Werke. Gesamtausgabe in zehn Bänden und zwei Erläuterungs-bänden. In Gemeinschaft mit HERMANN COHEN, ARTHUR BUCHENAU, OTTO BUEK, ALBERT GÖRLAND, B. KELLERMANN, herausgegeben von ERNST CASSIRER. Verlag von Bruno Cassirer, Berlin. Bd. I. Vorkritische Schriften, herausgegeben von ARTHUR BUCHENAU. Pp. 541.

It seems remarkable that an age which, according to his own avowal, was entirely dominated by Kant, should not have given us a satisfactory edition of Kant's works, one which every one could afford to buy. For the editions of Rosenkranz and Hartenstein, apart from the fact that they are inadequate, have long since been out of print; the Kirchmann edition, although recently improved, is very uneven; the new Akademie edition is exorbitant in price, and Reclam offers only a few of Kant's writings. Under these circumstances, we note with pleasure that a number of the most prominent German Kant scholars of to-day have united to compile a new edition of Kant, which has the advantage of being not only complete and good, but also of being sufficiently cheap to be within the reach of every one. The plan calls for ten volumes and two supplementary volumes, of which the first will be a presentation of Kant's life and teachings, by Ernst Cassirer; the second, by Hermann Cohen, will concern itself with Kant's influence upon science and culture. Naturally, the treatment of the text is based upon the original Kant edition, particularly upon the last edition which Kant himself helped to compile. The manuscripts have been compared as far as they were accessible. Corrections have been made only in those cases where the discrepancies and the misprints were too evident—a note always being made to the change, however. The new style of orthography, and alas!, also of punctuation, is employed. The language, however, is altered only when rendered necessary on account of a possible misunderstanding of the sense. The outer equipment of this new edition is, in spite of its moderate cost, so rich as to make it a pleasing piece of artistic workmanship in the library of "booklovers."

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JOURNALS AND NEW BOOKS

THE AMERICAN JOURNAL OF PSYCHOLOGY. October, 1913. *The Measurement of Attention* (pp. 465–507): KARL M. DALLENBACH. – An experiment to measure the attention to auditory stimuli in terms of clearness values. The introspective attention values were closely correlated with objective measurements. Two types of individuals in regard to attention were found, "dual-division" and multi-level. *A Bibliography of Rhythm* (pp. 508–519): CHRISTIAN A. RUCKMICH. *Clinical Notes on the Emotions and Their Relation to the Mind* (pp. 520–524): GEORGE HENRY TAYLOR. – Emotions have their origin in sex, while opposed to emotion is reason. *A Rapid and Accurate Method of Scoring Nonsense Syllables and Words* (pp. 525–531): DARWIN O. LYON. *Characteristic Differences between Recall and Recognition* (pp. 532–544): H. L. HOLLINGWORTH. – An experimental study bringing out the importance of recognition as opposed to recall; data on the effect of the presentation, primary, recency, etc., have been presented. *A Note on the Relation and Esthetic Value of the Perceptive Types in Color Appreciation* (pp. 545–554): E. J. G. BRADFORD. – Four types of apperception were found approaching esthetic value in the following order, (1) sensational-associative, (2) physiological, (3) emotional-associative, (4) character. *The Comparative Value of Various Conceptions of Nervous Functions Based on Mechanical Analogies* (pp. 555–563): MAX MEYER. – The writer presents several simple mechanical analogies that can easily be translated into psycho-physiological terms. *An Introspective Analysis of the Association-Reaction Consciousness* (pp. 564–569): EMILY T. BURR AND L. R. GEISSLER. – There exists a close parallel between the consciousness of concealing complex and association reactions under negative instruction. *"The Feeling of Being Stared At"—Experimental* (pp. 570–575): J. E. COOVER, PH.D. – The groundless "feeling of being stared at" is experienced by one half of the student group of the university, due to a nervousness and anxiety concerning one's looks and the attributing of objective validity to subjective impressions. *Projection of the Negative After Image in the Field of the Closed Lids* (pp. 576–578): FRANK ANGELL. – A discussion of the relation of the results published by the above author to those of Mayerhausen (*Graefe's Archiv,* 1885). *Prof. Martin on the Perky Experiments* (p. 579): E. B. TITCHENER. *Minor Studies from the Psychological Laboratory of Vassar College. The Effect of the Interval Between Repetitions on the Speed of Learning a Series of Movements* (pp. 580–583): MILDRED BROWNING, DOROTHY E. BROWN, AND M. F. WASHBURN. – There are indications that the law of distributed repetitions holds in habit formation especially for complex processes. *A Suggested Coefficient of Affective Sensitiveness* (pp. 583–585): HELEN CLARK, NEIDA QUACKENBUSH, AND M. F. WASHBURN. – There seems to be little correlation between affective sensitiveness and the corresponding kinds of tests in sense impressions. *A Bibliography of the Scientific Writings of Wilhelm Wundt* (p. 586): E. B. TITCHENER AND W. S. FOSTER. *Book Reviews* (pp. 587–595): Alexander Philip, *The Dynamic Foundation of Knowl-*

NOTES AND NEWS

Letter from Dr. Schiller

To the Editors of the Journal of Philosophy, Psychology, and Scientific Methods:

As Professor J. P. Turner has done me the honor to quote, in his review of Mr. D. L. Murray's "Pragmatism,"[1] from my preface to that work a fragment which stops short of the point of my argument, *viz.,* that given a certain sort and degree of intelligence there is nothing like an intellectualistic education to develop "a perception of the *intellectual necessity* of Pragmatism" and to opine that it deserves a wide circulation, may I point out that his quotation is not quite accurate and may possibly mislead? I did not ascribe to the British nation a contempt for "*the* pure intellect", but for "pure intellect", and pointed to the practical success of administrators selected by an examination so gloriously irrelevant to their "*future* duties" as that for the British, and, until recently, that for the Chinese, Civil Service. But though I noted the paradox, I did not dispute the success, and it should, in my opinion, be a serious concern of political philosophers to account for the success of the

[1] This Journal, Vol. XI., page 24.

mandarinate in governing China for three thousand years and in attaining a stability so much in excess of any that usually befalls the institutions of man.

Very truly yours,
F. C. S. SCHILLER.

OXFORD UNIVERSITY,
February 3, 1914.

AT a meeting of the British Academy on January 28, Professor S. Alexander read a paper on "The Basis of Realism." By insisting on the equal claim of objects with the mind to be considered real, realism seems at first sight to depress the mind, and make it less real. But this misapprehension rests upon the mistake of confusing reality with perfection. Mind is not more real than things, but more perfect, *i. e.,* more developed. In view of Mr. Bosanquet's recent criticism of realism (Adamson Lecture, 1913), and to show that by depriving mind of its pretensions realism actually establishes the perfection of mind, it seemed well to restate the position. The starting-point is the analysis of an act of cognition into an act of mind, its independent objects, and their compresence. This is not the mere distinction of act from object, but is only understood as the distinction of an enjoying subject from a contemplated object, separate from it. This latter distinction is thus the more important. This initial proposition of realism is "naive" and incomplete. When further examined, it turns out to be a particular case of the compresence of interrelated reals cohering within a universe. Two consequences of the analysis may be stated. First, mind is a continuum of mental functions which are also brain functions of a certain degree of development, with the mental quality. Being mind or consciousness is a new empirical quality which emerges at a particular stage. The mind is thus located in the brain. Secondly, the alleged distinction of "contents" of sense from the "objects" of thought disappears. The difference is one of part and whole. In each case there is an object, and not a "content." Reasons were assigned to account for the contrary view. But Mr. Bosanquet has urged that the analysis fails, because a mind is a world, while its object is a fragment. If this were so, the analysis from which realism starts would be false from the beginning. But in fact the mind is as much a fragment as the object, and the object is in the same sense a world as the mind (and neither is). His further objection that the analysis fails to account for the riches of mind, its wealth of being, or for tertiary qualities like beauty, was examined, and it was shown (*a*) that the riches of mind are unaffected; they are but a complex of processes and tendencies, always compresent with their objects; and (*b*) that the reality, and the more perfect reality, which is mind, enters as a constituent into beauty. It was then shown that while objects are independent of the mind, the mind is in a certain sense dependent on objects, or rather implies them. But again, to suppose that this minimizes the self-existence of mind is to confuse independence with isolation. The very lateness of mind in the order of development is the condition of its perfection. But the most searching

objection to realism is that its objects are mere abstractions and dead; whereas it is urged they already imply mind, and things are thus continuous in kind with mind. Now, according to realism, objects have all the fundamental characters, of continuity, retention, and the like, which can be seen more easily and flagrantly in minds. Thus the objection confuses the specific characters of minds with the categorical, fundamental characters which are common to minds with things. It may indeed be said, metaphorically, that all finites are minds; but this is inexact; and at any rate it does not mean that things are "mind," but only that they are different ranks of empirical existences, called minds, because in a certain sense they "know," that is, are compresent with, one another. This led to an attempt to define the larger issues between realism and (absolute) idealism. For in the case of the latter, things are transformed in entering into the one, individual whole. But for realism, things in certain respects at least (intrinsic ones) remain in the whole what they are already. The whole is not the only reality, but the most complete, or perfect reality, in a second sense of perfection.—*Athenaeum.*

THE Experimental Psychologists will meet this year at Columbia University on Thursday, Friday, and Saturday, April 9 to 11. The scientific sessions will be preceded by a dinner on Wednesday evening, April 8, in honor of Professor James McKeen Cattell.

PROFESSOR THOMAS H. HAINES, of Ohio State University, who is on leave of absence, is conducting the courses in psychology at Smith College during the present semester.

DR. GEORGE R. M. WELLS, of Oberlin College, has been advanced to an associate professorship of psychology.

THE Western Philosophical Association will hold its annual meeting at the University of Chicago, Thursday and Friday, April 9 and 10, in connection with the Conference on Legal and Social Philosophy, which is to occur at Chicago, April 10 and 11. It is proposed to devote the session of Thursday afternoon to a discussion of the Neo-Realistic Doctrine of Relations. The President's address will be given Thursday evening. At the session Friday morning, Professor Fite will lead a discussion of the subject of Natural Rights. On Friday afternoon the Association will hold a joint session with the Conference on Legal and Social Philosophy. The special topic to be considered is Rule *versus* Discretion.

PROFESSOR GEORGE STUART FULLERTON closed his lectures as the first Columbia exchange professor at the University of Vienna on February 21. After the final lecture, the Dean of the Philosophical Faculty made an address in which he announced that Professor Fullerton had been nominated honorary professor by the faculty, and closed with these words: "I am glad to be able to inform you that yesterday the Emperor confirmed your nomination as honorary professor. You are hereby given the continued right to lecture at our University, and I may express the wish that you will frequently make use of it. In this spirit, let me say *auf Wiedersehen.*"

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THE JOURNAL OF PHILOSOPHY
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A DEFINITION OF CAUSATION. I

THE category of causation was once regarded as rather fundamental in metaphysics; but in western civilization man's interest in man has so taken possession of the field that philosophers now study almost exclusively the problems of subjectivism, human knowledge, or the nature of consciousness. Consequently it is difficult to find a modern discussion of causation which attempts anything like an exhaustive investigation of its meaning. It is treated in passing, with a remnant of respect for an old tradition, and generally from the basis of an already finished system. Some have even gone so far as to say there is no such thing as a cause.[1] This extreme statement—though made, at one time or another, of most of the important categories—hardly merits much attention; for when the scientist or the ordinary man uses the word cause, he is assuredly thinking of something. The only question is what? Indeed the question, whether this or any other concept has objectivity, is subsidiary to the question, what does the concept mean? Only after decision of the latter can the former be answered. Meanwhile, we should not make too much of the fact that current interest is not centered upon defining objective categories. Fashions of thought change; the old discarded view is restored—witness the present revival of Platonic realism—and sooner or later we may expect a renewal of interest in things that are not man's. And of these causation appears to be one of the principal ones. The plain fact that in our transactions with reality—so far as reality is vouchsafed to mortals—the category is inevitable and ubiquitous, at least suggests this. We may reflect, too, that the great bulk of the increase of our knowledge of reality in detail, *i. e.*, the content of the sciences, has come from looking for the causes of things. *Prima facie* it would hardly seem possible to form a philosophical system, either closed or open, without first according this category a serious treatment.

[1] So Mach: "There is no cause and effect in nature; nature has but an individual existence; nature simply *is.*" *Science of Mechanics* (Eng. transl.), page 483. *Cf.* also B. Russell, *Proc. Arist. Soc.*, 1912–13, page 1.

The main reason of its importance lies in the fact that it deals with the connection of events. Philosophers seek to know the universe as a whole—be it of externally joined parts or an articulated system. The thread which connects these parts in time is causation. From one isolated event it leads to another. Can one understand the constitution of the world unless he knows how this is done, of what stuff this glue is made that attaches one event to another? Other modes of connection there may be, too; but any mode that unites, that gives a rational, systematic character to the world, is of fundamental significance for philosophy.

The problem of causation, being so central, is a very large one; the bibliography alone is appalling. This same term has meant many different things in the course of history; it has been believed to represent a substance, a force, an event, a relation, a mere word. Presumably no broad treatment of it to-day could dispense with these labors of the past. They are manifold and full of ingenious speculation, and some of the best work, within the last century, is little known. The standard histories (König's, Lang's, Göring's, etc.) give but small idea of this last. It is, however, manifestly undesirable to bring much of this material into a discussion in a journal. What we shall have to say will be along a line which has not been touched as yet, except in a very fragmentary way. It is not regarded by the writer as final, but simply as a piece of work that needs to be done, and has not been done. It is also regarded by the writer as the natural way, and, philosophically, the indispensable way of attacking this problem—for reasons which shall soon be given. But it will remain subject to certain philosophical criticisms which can not be answered by any result obtained in this investigation, but must be examined on their own account. For that part of the problem the contributions of past thought form a necessary basis. We pass now to the statement of our particular topic and method.

When physics tells us that heat causes a body to expand, that the electric current causes a magnetic needle to be deflected, or that a ray of light is due to the motion of electrons, what is the character of the connection between the members in each pair? Suppose we take the analysis science furnishes of each cause, and of each effect, and of the process by which the one turns into the other; suppose this accomplished for all kinds of cases which are treated in the various sciences; and suppose, finally, that we find, common to all the cases, a certain logical structure. Then that structure will constitute an empirically grounded definition of causation. A definition obtained by this method will presumably be the only one which applies to real events and is valid in the actual world; for the causation men know and profit by is one which reveals itself always in specific cases, and

it is not likely that its character can be understood quite apart from its behavior in those cases. Nevertheless, this method has seldom been pursued, and never, I think, with a sincere attempt at comprehensive treatment. The usual method is rather to treat the category as a member of a hierarchy of concepts, as part of a rational ideal, whose meaning can be deduced by analysis of that ideal and is quite independent of empirical characters. Whether in the expansion of a body by heat, or in the explosion of gunpowder by a spark, the causal connection is assumed to be indifferent to the particular nature of the event; as indifferent as is number to the color of the objects numbered. Such a procedure is to the one first described as abstract to concrete. It is not confined to either idealism or realism; it is used by Russell and G. E. Moore as well as Natorp and Royce. The only difference is that the former pair would consider the concept independent of the mind; the latter, due to the mind's activity. And it may very well be true that there is a certain ideal concept, fitly called causation, which is definable by abstract deductive methods. Yet it remains doubtful, until it is compared with an empirical definition, whether this is the causation the scientist uses and the philosopher evaluates in his criticism of science. And if it is not that kind of causation, it is, though certainly of some value, yet of much less value than the latter. Philosophy is interested primarily in the real, and the world with which the sciences deal is at least fairly high in the scale of realities. So the kind of causation, by virtue of which one body hitting another moves it, is for philosophy considerably more important than any abstractly perfect ideal which does not hold of actual events. Naturally one can not deny beforehand that the definitions given by the abstract method really do apply to the existent world. The method itself, however, does not seem likely to give the kind of result which philosophy desires to get; some "schematism" at least would be necessary, to show that such a concept would be applicable to the concrete. In seeking a definition of causation, accordingly, we must choose the empirical or concrete method.

The position here taken is independent of the general issue about the "externality" or "internality" of relations. Those who hold the former view do indeed tend to believe that, in general, concepts are independent of, and external to, their particular examples in the actual world; while advocates of "internality" do not admit such independence. While we do here claim that the concept causation can not be understood, in so far as *philosophy* desires to understand it, when treated as thus independent, it is not because of a general adoption of the doctrine of internality. It is because the causation which alone is deserving of serious study seems to be the causation

which is "internal" to the actual world, which forms the object-matter of the sciences. Causation is, as Kant showed, a category *prima facie* concerned with actuality; number and quantity are not by definition so directly concerned with it. Its own special nature, then, makes causation internal to the particulars of the actual world.

Our purpose is then to determine the meaning of causation as it is found to hold in the actual course of events; that is, in the details of the sciences. It is not, at present, to decide any question about the metaphysical rank of the category. This inquiry is only a necessary preliminary to such a decision; it would get the concept fairly before us, and ignore philosophical criticism until that is done. It is necessary, however, to forestall one philosophical objection which, if sound, would seem to invalidate beforehand the mode of investigation adopted.

There is a familiar view to the effect that science does not give facts, but artifacts ("fictions" is too strong a word). The rigid bodies, uniform atoms, symmetrical waves, of the text-books, are said not to exist, and accelerations, as well as other functions, to be only numbers. Accordingly, we can not study *actual* causation, for it is not actual but ideal. And being ideal, its nature can be understood only from the abstract, ideal side, as part of a great ideal of rationality, or in Professor Royce's words, as theory of order. Now this objection is really irrelevant. Even if the concepts used by science are not names of existing facts, they are nevertheless, as science studies more deeply, ever closer approximations to existing facts, and their detailed content depends more and more upon the nature of those facts. Indeed, as Professor Royce shows,[2] the very result of the abstractness of the scientific concepts is that many consequences can be deduced from them, and experimental verification, therefore, may become more manifold. As it were, they draw away from fact in order to get closer and closer to it; so that the full nature of the abstract is realized only in its approximate verification in the concrete. Oddly enough, he does not draw what seems the natural conclusion, that the abstract concept has little meaning by itself, but says, rather, "The order-systems . . . are therefore to be studied with a true understanding only when one considers them in abstraction from the 'probable' and 'approximate' exemplifications which they get in the physical world" (pp. 94–95). Now the definition of causation obtained from these approximately realized concepts is, in general, different from that derived from a simple abstract treatment like that of the theory of order, and is surely much nearer to the concrete. We should gain the truest comprehension of causation by learning its meaning in as close juxtaposition to facts as science can afford us.

[2] *Encyclopædia of Philos.*, Vol. I., pages 94–95.

This procedure, if still somewhat ideal, is not unmixedly so, but swayed to a large extent by the nature of facts. We shall in the course of our analysis find some reason for suspecting this whole philosophical objection of unsoundness, but it is not now necessary to raise that question. It is not because the abstract views rest upon a mistaken view of science, but because they are so poor and meager of content, that they are considered unprofitable. They do not study the concept of causation as it has been fully developed in its employment with facts.

This same objection sometimes takes another form. Science has obviously two ideals: that of pure rational system, and that of information about particular facts in time and space. One who values the abstract higher than the concrete will probably tend to identify science with the former ideal rather than with the latter or with both. So, *e. g.,* we find one who approaches philosophic questions from the mathematical field, regarding the most perfect sciences as the most mathematical, and the least concerned with events as causes. "In the motions of mutually gravitating bodies, there is nothing that can be called a cause, and nothing that can be called an effect; there is merely a formula."[3] "This statement holds throughout physics, and not only in the special case of gravitation."[4] " . . . in advanced sciences such as gravitational astronomy, the word 'cause' never occurs" (p. 1). These statements seem very one-sided. They altogether overlook the concreteness of science. If the word "cause" is seldom used in text-books of physics, it is that it is so obviously taken for granted. But it *is sometimes* used. Watson says[5] "an experiment is simply the artificial arrangement of certain causes, so that . . ."; although, having stated this at the outset, he does not find it necessary to repeat the word "cause" very often in describing particular experiments. Nevertheless, more or less equivalent words, such as "produce," "generate," "give rise to," are frequently used. Science doubtless aims at mathematical system, but it never loses touch with experiment, or with the verification of its deductions, approximately, in particular cases.

There is a more practical objection to this undertaking of ours, which consists in the fact that science changes. Light was once described in terms of the emission theory, then of the ether-undulation-theory, now of the electromagnetic theory. Perhaps fifty years hence the present views on the motion of electrons will be antiquated. Better stick to the formal deductive side alone, and run no risk of refutation by future science! That *would* be the safer course, no

[3] B. Russell, *Proc. Arist. Soc.,* 1912–13, page 14.

[4] *Ibid.*

[5] "Text-book of Physics," page 3.

doubt. But it would tell us very little about real causation. Meanwhile, the changes of science are not wholly destructive. Statics has grown, practically by addition alone, and Newton's laws remain empirically valid within the margin of error. But even if so extreme a position as that of H. Poincaré were correct, and causal explanations were matters of choice, it would still be our duty to examine the structure of all those which one might choose. At any rate, there is no higher source of knowledge about the causation of the actual world than the latest results of science. In the attempt to reach results so certain that they can never be refuted, we are likely to commit the fault of which the absolutists are accused—I do not say with justice—of getting something which has no possible bearing upon the particulars of experience. While this might be permitted to an Absolute, it is clearly ruled out for a scientific category; for science directs itself toward the existent.

It has been said above that the empirical method is the only one fitted to define the causation philosophy is interested in. That does not imply that it may not involve, in the working out of its analyses, deductive methods. What is needed to-day is a protest against the exclusive use of the latter; a use which by its abstract and exact mathematical form has apparently attained certainty at the cost of truth. We can not, of course, get universals from *mere* summation of particulars, nor the universality inherent in a causal process merely from a number, however large, of specific instances. But we must know the nature of those instances before we can see how the university of law is able to embody iteself. Our method then is alleged to be the only one which makes it possible to understand how the universal is adapted to the particulars.

Now what within the field of the sciences shall we select as cases of cause and effect, and what reject? For not all scientific reasoning concerns these categories. The equations of dynamics are worked out by means of mathematical properties; *that* part of dynamics is clearly not pertinent. The test must be this: wherever a law is spoken of, or a principle, in accordance with which one actual fact, situation, or event uniquely determines another fact—or its own future state—then we have what science treats as causation. The two categories, causation and law, are one in denotation. We must then—without denying that some causes *might* act individually and not by law—govern our selection for the present investigation by the criterion of law.

Perhaps some apology is needed from the present writer for venturing into the field of science, inasmuch as it is only too obvious that he is far from possessing competence therein. This, however, is one of the risks that can not well be avoided. Philosophers who have

had the advantage of scientific training have not been disposed to connect the categories with their empirical manifestations. The form and the matter of knowledge have remained apart, sundered, neither adapted to the other. Some one must attempt to overcome this estrangement. It is very probable that first endeavors in this direction will at least partially fail, owing to misapprehension in regard to the accepted truths of science. But it seems to the writer better to make a move, however inadequate, in the right direction, than to go on waiting in the vain hope that a well-qualified investigator will do it. Mistakes may be corrected, and it is hoped will be. But until some such inquiry into the structure of the concrete world of experience has been made, philosophers will have little to occupy themselves with but an epistemology which is constituted by mutual refutations.

The sciences which aim to deal with facts comprise physics, chemistry, astronomy, geology, biology, history, linguistics, economics, political and social sciences, and the psychological and anthropological sciences. There does not seem to be any systematic body of knowledge which can not be brought under one or more of these heads. Statistics is here excluded, for two reasons: (1) as set forth in text-books like those of Bowley and Yule it is a method of getting as exact knowledge as possible about facts rather than of *directly* finding causal connections, (2) it is concerned, so far as it gives laws, mainly with the important (and by philosophers hitherto largely neglected) concept of probability rather than that of causality.

How many, then, of these sciences offer distinct types of causation? Some of them certainly do not. Thus, geology and astronomy clearly explain their facts by appealing to the laws and causes set forth in physics and chemistry. Biology, for many biologists, does the same. Other biologists claim a special, unique kind of causation, *viz.,* that of an "entelechy." The point is not yet settled; but until all biologists are agreed that there is a kind of causal explanation not reducible to terms of physics or chemistry, we can hardly take it as a datum for our investigation. Though not denying its existence, we may fairly say that until it is generally accepted in biology as a fact, and shown analogous in structure to cases admittedly causal in other sciences, it does not deserve the name causation. The psychological sciences contain a similar uncertainty. Some psychologists—*e. g.,* Wundt—believe in psychical causality *sui generis;* others do not. Until the matter is decided we can not take the alleged cases of psychical causation as data for analysis. In economics, history, political and social sciences, no one, so far as I know, pretends that there is any kind of process not explainable in psychological, biological, physical, or chemical terms; except in the case of history, where we

have the familiar view of Rickert *et al.* This view is by no means generally accepted by historians. Alleged cases of "*individuelle Kausalität*" or historical, personal causation can not then be taken as data. Linguistics, finally, explains by appeal to biological and psychological processes; these we have already dealt with. The only sciences, then, in which by the general agreement of those pursuing them there seem to be independent types of causation, are physics and chemistry. These sciences have analyzed particular causal processes to an extent unparalleled by the others. By this work they have established a claim to primacy; what we shall find causation to mean in *their* fields is what the term should be taken as meaning. Only if Drieschian "entelechies," psychical causation, and other unknown types, can be reduced to essentially the same logical structure as that of physical or chemical causation, should they be called by the same name. This is, in a sense, only a verbal issue, but it is one of some importance in the interest of an exact philosophical vocabulary.

So far, we have physics and chemistry on our hands; as wide a field as one could wish. It can, however, be narrowed. The causal processes studied in chemistry are, it appears, regarded by that science as further reducible, and statable ultimately in the terms of physics. Hence arose the science of Physical or Theoretical Chemistry. Professor Nernst, writing twenty years ago, when relatively very little of this reduction had been done, said: "The question of the nature of the forces which come into play in the chemical union or decomposition of substances, was agitated long before a scientific chemistry existed. As long ago as the time of the Grecian philosophers, the "love and hate" of the atoms were spoken of as the causes of the changes of matter; and regarding our knowledge of the nature of chemical forces, not much further advance has been made even at the present time."[6] "It can not be emphasized enough that we are as yet very far from reaching the goal: *viz.*, the explanation of chemical decompositions by the play of well-defined and well-investigated physical forces" (p. 354). Since then, however, considerably more has been done toward reaching this goal, by the electrical theory of matter.[7] For the rest, we can hardly take it as containing definite types of causal process, when it is believed to be further reducible. The situation seems to be analogous to that of biology, where types *peculiar to that science* are not generally agreed to exist. In the still somewhat unsettled condition of chemistry on this point, we must leave it and confine ourselves to physics.

In the field of physics there are apparently many kinds of causal connection. Thus: an inelastic body strikes another inelastic body;

[6] W. Nernst, "Theoretical Chemistry," Eng. tr., London, 1895, page 353.

[7] *Cf.* J. J. Thomson, "Electricity and Matter," London, 1904, Ch. 5.

this cause is followed by the effect that both move on in contact. Again, a ray of light enters a glass prism; it is refracted. These are, on the surface, quite different types of causation. An exhaustive enumeration of all such types would carry us through a large text-book of physics. Nevertheless, an account of the cause-effect relation which omitted any of them would be lacking in generality and therefore inadequate. Fortunately, however, the number may be greatly reduced. While the fields of dynamics, heat, light, etc., are at first appearance so disparate, yet physics treats large portions of some fields as cases of some other field. *E.g.*, many types of causal relation in the field of light are reduced to electrical types. In fact, glancing over a standard text-book, we find that there are only a few types that look really distinct. Our task is now to show these forth.

The total field of nature, so far as studied by physics, is comprised under the following divisions: mechanics (including statics and dynamics), "properties of matter" such as elasticity, capillarity, density, etc., heat, sound, light and radiant energy, magnetism, electricity. To causal connections in each of these fields we must add those embodied in transformations of energy from one field to another; *e. g.*, of electricity into light, of motion into heat or light, etc. This classification is not quite a mutually exclusive one, nor has it any obvious *fundamentum divisionis,* but it contains all that is known, with general agreement and certainty, of the actual causal relations in the world. Let us take them in order, beginning with mechanics.

The inclusion of statics, or the study of the causes of equilibrium, encounters a certain objection. Some philosophers would say that here are no *events* and therefore no causal connection. Several answers to this are possible. (1) It rests on a preconceived definition of cause, and can in this inquiry have no weight. Statics *explains why* a body is in equilibrium: it regards the position of the weight-arm as due to that of the power-arm of the lever. In other words, this field is to be included because science treats it as if included. (2) A condition of equilibrium may be regarded as an event, as much as a motion. It occupies time and exists in the world of fact. (3) There is no *a priori* reason why rest can not be a cause of, as well as caused by, either rest or motion. Continuation of the same condition in time is as real, and as dependent on preceding conditions, as change. It may be that things as inert as circles do the causing in some cases. It is a wholly empirical question.

What are the elementary causal situations in statics, out of which *all* the situations studied in that science are composed? These will be the types sought for. They are, I think, just three in number.

They are the two laws which are respectively called (1) the principle of the transmissibility of force, (2) the principle of composition and resolution of forces, and (3) the definition of the moment of a force about an axis, as producing a tendency to rotation. Every statical situation seems to be a case of one or more of these. Thus, the lever is a case of (3), the centre of gravity of a body is determined by (2) and (1), the pulley is a case of (3), the inclined plane of (2). The statics of fluids (liquids and gases) contain no principles beyond those of the statics of solids. Even if it should be the case that these three elementary cases are further reducible, it will do little harm; the danger is that we examine too little rather than too much.

Dynamics is in general parallel to statics, their difference depending upon that between *tendency* to motion and *actual* motion. Indeed, "every dynamical problem can, by the help of D'Alembert's principle, be reduced to one in Statics."[8] We might, then, simply consider the three laws of Newton as the elementary cases for both Dynamics and Statics, and let that suffice. "The principles of Newton suffice by themselves, without the introduction of any new laws, to explore thoroughly every mechanical phenomenon practically occurring, whether it belongs to Statics or to Dynamics."[9] Nevertheless, it is sometimes more conducive to clear insight to show different instances of the same type. We shall therefore consider the composition and resolution of velocities and accelerations, the law of inertia and uniform motion, the case of a body's motion as changed by the external force of gravitation (the second law), and of bodies undergoing impact with other bodies (the third law). In regard to Newton's first law, it is true that it does not hold for very high velocities, because for such velocities the electrical state of the particle changes and increases the mass. This, however, is no denial of the law. It also happens that the bodies which act in accord with the causal laws of dynamics, act at the same time under certain statical conditions; so that the static and dynamic types are at once combined in single events. This combination of many causes or effects into one must also be dealt with.

Further cases under Mechanics are such as show transformation from a static to a dynamic situation or the reverse. For example, a pressure is the cause of a motion; the attraction of the earth causes a body to fall when the support is removed. In general, this type of case may be called the passage from potential to kinetic energy, or the reverse. It forms, I think, a distinct type of causal sequence and as such deserves special examination.

[8] Routh, "Elementary Rigid Dynamics," page 316.

[9] Mach, *Science of Mechanics*, Eng. tr., page 256.

"Properties of matter" include elasticity, friction, resistance of a medium to motion through it, the liquid, viscous, and gaseous states, surface tension, capillarity, diffusion, osmosis, cohesion, density, solution, gravitation, crystallization. The ways in which these properties behave, and determine events, are, of course, types of causal connection. Some, however, have been reduced to mechanical cases: *e. g.*, the liquid and gaseous states are treated under the mechanical sciences of hydrostatics, hydrodynamics, and kinetic theory of gases. Surface tension, capillarity, diffusion, osmosis, and solution are also conceived in mechanical terms, *i. e.*, terms of molecular action. Viscosity is a property of liquids which is due to internal friction. There remain, then, elasticity, friction, resistance, density, cohesion, gravitation, and crystallization. None of these has as yet been wholly reduced to cases of mechanical action, static or dynamic. In this division, also, it will be best to place that very general property of matter which is defined under the law of indestructibility, or, as sometimes named, the conservation of mass.

The field of events classified under Sound contains none but mechanical types, combined with the above "properties." Under Heat are two kinds: (1) those events, such as convection, conduction, expansion, etc., which are either clearly mechanical or are explained by the dynamical molecular theory of heat, and (2) radiant heat. This last has been placed under the head of Radiant Energy, which in turn is reduced to terms of electrical disturbance. All the phenomena of Light are accounted for in terms of electricity. Of the other known kinds of radiant energy, such as X-rays, Becquerel rays, etc., so far as they are explained the same is true. The field of Magnetism contains only such events as are reduced to cases of electrodynamics. Under Electricity the fundamental kind of event seems to be the mutual attraction and repulsion of small charged bodies. This may perhaps be couched in terms of ether-strain, but is in any case at present conceived to be a non-mechanical type. The development of this conception in the electron-theory has in fact explained so many phenomena of chemistry that it is regarded by many as indicating the ultimate constitution of matter. However that may be, we do seem to find in the fields of Heat, Light, Radiant Energy, Magnetism, Electricity, and Chemical Transformation, a great class of events of a unique type. Each such event constitutes a cause-effect sequence as clearly as does mechanical impact or gravitation; but neither seems as yet reduced to the other. According to the present view of science, then, all cause-effect situations in nature are in the last analysis, and so far as there is general agreement, either mechanical cases, or cases determined by "properties

of matter,'' such as elasticity, friction, etc., or cases of electricity, or combinations of some or all of these. And this can now be seen to hold as well for transformations of energy from one kind to another, *viz.*, heat to motion, electricity to heat or motion, heat to light, etc. For the electric ''current'' is conceived, as we shall find, to be motion, and hence may lead to motion in the shape of light, heat, or mechanical energy; and conversely. In general, no new type of causation appears in such processes; so we may omit the study of transformations of energy. Our task is now to ascertain the logical structure of the typical events in each of these three fields: that of Mechanics, of ''Properties of Matter,'' and of Electricity.

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RULE VERSUS DISCRETION

WHEN the conference on Legal and Social Philosophy decided to place as the central problem for the next meeting the question of the Province of Rule and Discretion in the Administration of Justice, one of our honored colleagues, who had followed the first meeting with generous sympathy, expressed grave doubt as to whether the question was of sufficient general or philosophic importance. The prevailing absorption of philosophy in the problems of epistemology makes it probable that this doubt is shared by a great many, and makes it incumbent on us to show cause why philosophers should busy themselves with this question. It will, however, be sufficient for the present purpose if the following considerations succeed in indicating genuine philosophic problems rather than any adequate solution.

I

Amidst the diverse attitudes which people take to our courts of law, nothing is more usual than the remark of educated people: ''If our judges would only occasionally forget their legal technicalities and rely more often on common sense and justice, we would have less reason to be dissatisfied with their work.'' This remark is based on the belief that the end of courts of law is to render justice, and that the technical rules are at best only means towards this end and ought not, therefore, ever to stand in the way of the end itself. To which the lawyer answers, that if the judge is to feel free to disregard a law in the interest of what he thinks justice, then the law becomes a dead letter and we are given over to the arbitrary sway of caprice, which is equivalent to anarchy or tyranny. The classical expression of this point of view occurs in Maine's Ancient Law. Commenting on the

fact that the Greeks "disembarrassed themselves with astonishing facility from cumbrous forms of procedure and needless terms of art, and soon ceased to attach any superstitious value to rigid rules and prescriptions," Maine says that it was not for the ultimate advantage of mankind that they did so, for "no durable system of jurisprudence could be produced in this way. A community which never hesitated to relax rules of written law whenever they stood in the way of an ideally perfect decision on the facts of particular cases, would only, if it bequeathed any body of judicial principles to posterity, bequeath one consisting of the ideas of right and wrong which happened to be prevalent at the time. Such a jurisprudence would contain no framework to which the more advanced conceptions of subsequent ages could be fitted. It would amount at best to a philosophy, marked with the imperfections of the civilization under which it grew up."[1]

The attitude of the legalist to a system of law that merely achieves justice is similar to the attitude of a properly trained physician to an empiric medicine that merely cures people. To be worthy of respect, both justice and medicine must work, not empirically from hand to mouth, but according to a scientific system of rules. The predominant reason for this rationalistic attitude in law is a practical one, the need of certainty in human transactions and security against unforeseen changes. Justice has been, and is still in several fields, administered according to the sense of justice of the judge. But the judge decides a controversy only after it has arisen. In entering, however, on any transaction that involves reliance on future conditions, people must in some measure know beforehand what they may and what they may not do. Hence the need of definite rules to govern human transactions and according to which controversies shall be decided. The other advantages of justice administered according to rules or laws, *viz.*, that it provides a check against partiality, ignorance, etc., are really subordinate to this great desideratum of certainty.

The non-legal philosopher may be inclined to question the assumption at the basis of the above view, to wit, that the popular sense of justice is more variable and less certain than the popular knowledge and understanding of the law. But whatever may be said on the two sides of this question, it is certain that wherever we meet a non-homogeneous population such, *e. g.*, as characterizes our urban life, there we find actual differences of moral standard, and laws like treaties of peace are necessary to establish uniform standards.

Legal philosophers, especially those of the English school, make a great deal of the need of certainty in matters which are morally in-

[1] Maine, "Ancient Law," Ch. 4.

different. The familiar illustration of this is the rule of the road.[2] It makes no difference whether the rule of the road is to turn to the left or to turn to the right. The important thing is that there should be a rule so that people may know how to avoid collision. The legal or conventional part of justice, Aristotle tells us, "is what originally was indifferent, but having been enacted, is no longer so."[3] The assertion is also frequently made that "it is often more important that a rule should be definite, certain, known, and permanent, than that it should be ideally just."[4] Though this may be somewhat questionable from a rigorous ethical point of view, there can be no doubt that most people would rather stand a small loss than remain long in a condition of doubt as to their rights.

For these reasons the legalist regards discretion on the part of the magistrates as anarchy and the appeal from law to justice as shallow and vicious. But now the plot thickens. Having banished the layman or the empiric, the legalist meets his Nemesis in his own household. The requirement of certainty and the effort to eliminate all discretion on the part of the magistrate make legal rules rigid, formal, and inimical to progress. And when the law (in its effort to keep up somewhat with the progress of life) develops, it becomes tremendously complex, so that it becomes in practise unworkable and even uncertain. Hence, legal history shows, if not alternating periods of justice according to law and justice without law, at least periodic waves of reform during which the sense of justice, natural law, or equity introduces life and flexibility into the law and makes it adjustable to its work. In course of time, however, under the social demand for certainty, equity gets hardened and reduced to rigid rules, so that, after a while, a new reform wave is necessary.

It would thus seem that life demands of law two seemingly contradictory qualities, certainty or fixity and flexibility; the former is needed that human enterprise be not paralyzed by doubt and uncertainty, and the latter that it be not strangled by the hand of the dead past.

A detailed analysis of the factors which enter into this problem and make it so significant to-day is not necessary for our present purpose. The problem has been treated in a masterly way by Professor Pound[5] in a series of articles which leave little to be desired by the philosopher who wishes to orient himself in this matter. It may be

[2] Pollock, "Essays in Jurisprudence and Ethics," page 24.

[3] "Ethics," V., 7.

[4] Salmond, "Jurisprudence" (3d. ed.), page 20.

[5] *Columbia Law Review,* December, 1913, and January and February, 1914, and *Harvard Law Review,* January, 1914.

useful, however, to consider here the purely logical aspect of the dialectic immanent in this field of human endeavor.

II

That the dilemma between framing hard and fast rules or else allowing room for discretion is a real one, can be seen in other fields of human endeavor as well as in the law. It is felt by every one who has to give orders to a human subordinate. You attempt to guard yourself against his mistakes or departures from your settled policy by laying down fixed rules. But when your subordinate rigorously follows these rules, you are vexed that he does so mechanically without using common sense or "judgment." In the ancient and honorable art of war the tendency has been to emphasize mechanical obedience. Yet military history abundantly shows how initiative on the part of subordinate officers or even privates carried the day. A distinguished authority in our national game has said that the too-scientific players "follow the rules even when the rules are bad—which is worse than no rules at all," and every one recalls the case of the British pickets at Balaklava who were so highly trained that the camp was surprised before they knew it, when common sense might have saved the day.

The most general form of this difficulty in the field of practise is to be found in the political philosophy of Plato and Aristotle.[6] Shall the law or the just man rule? Plato, as is well known, decides on the latter alternative, using the analogy of the physician who, though he writes out a prescription, ought to be free to change it when he finds that conditions have changed. As a rule, however, he tells us, it is better that the law should be obeyed. Aristotle, influenced, perhaps, by the polemic motive, decides in favor of government by law rather than by men; but when we consider his admission that laws are frequently the result of party bias, and his continued insistence that equity exercised by magistrates is necessary as a corrective to the abstract generality of laws which can not possibly take all circumstances into account, we see that our American publicists are not really genuine disciples of the Stagyrite when they deify the one-sided dogma about "government by law" as the final revelation of political truth for all times to come. In the intellectual realm this difficulty shows itself in the form of the familiar dilemma between rationalism and empiricism. Should we put our faith in rules or in concrete cases? In his address before the International Congress of Physicists, the great Poincaré began, "Experience is the only source of truth: it alone can teach us anything new; it alone can give us certainty. These are two points which no one can contest." But on

[6] Plato, "Statesman," pages 293–300; Aristotle, "Politics," II., 8; III., 11, 15, 16; IV., 4.

the next page he tells us that "there are good experiments and poor ones," and then, again, that "the physicist *can not restrict himself to generalizing his experiments, he must correct them.*"[7] Thus we keep on appealing from principle to fact and then back again from fact to principle. This is especially noticeable in ethics. How are we to settle disagreements as to ethical matters? By appeal to principle! But if the principles are questioned, we appeal to particular instances.

It is the essence of rationalism—the naïve faith in the adequacy of all intellectual distinctions—to declare that certain things can not be or certain tasks can not be performed because they involve contradictions. The history of human thought ought to warn us against this easy assumption. All human difficulties are contradictions before they are solved. For a man to cross a river and not get wet was a patent contradiction before the invention of boats. At any rate, a distrust of the classical forms of rationalism leads to a wise scepticism about sharp antithesis. Certainty and flexibility may be difficult qualities to bring together, but they are really not logical contradictions. In the past we have tried to create certainty exclusively through hard and fast rules, and this has admittedly broken down in practise. The legalist's dilemma, either a rigid rule without discretion on the part of the judge, or else arbitrary caprice, does not, however, exhaust all possibilities. If it were true, there would be no middle course between absolutism and anarchy. (In the American theory of government, "the Law" takes the place of the absolute monarch or sovereign). As a matter of fact, discretion is not lawless. When we praise any one for showing fine discretion on any occasion, we certainly do not mean that he has acted in an anarchic manner. Discretion, in general, represents more or less instinctive evaluation or appreciation of the diverse elements that enter into a complex; and such instinctive evaluation must precede conscious rule-making.[8] Rule thus bears to discretion the relation of *limit* (in the mathematical sense). It is this which enables us to understand the present tendency in American public life to take away administrative duties from courts that exercise them according to fixed rules, and transfer them to commissions clothed with large discretionary power. Doubtless these commissions will, sooner or later, formulate their discretion into rules (as did the courts of chancery), but observe that such commissions have means of studying the effect of their decisions, and of modifying their attitude in accordance with the results of enlarged

[7] "Rapports present au Congrès International de Physique," I., pages 1, 2, 3 (italics mine).

[8] That judges must take part in the process of law-making, I have attempted to show in my article in the *American Law Review,* March, 1914.

experience, while our regular courts can only guess at the social effects of the rules which they work out, and have no guide except reliance on *a priori* maxims. That there is really nothing to prevent our courts from likewise introducing statistical and scientific material to guide them in their work is shown by the organization of the municipal courts of Chicago.

In European countries the emancipation from legalistic rationalism has taken the form of a revolt from the ancient dogma that a judge can decide controversies growing out of modern conditions by finding the will of a legislator who could not possibly have foreseen the complicated changes which time has brought about. This school of *Freie Rechtsfindung* (*libre recherche scientifique*) insists, however, that they are not contending for a lawless jurisprudence. On the contrary, by judges availing themselves of the material offered by the social sciences, the interests of social security will be all the better protected.[9]

In the legalist's references to discretion we always find a sharp antithesis between rules of reason and arbitrary will. It is easy to dismiss all this as based on an antiquated faculty psychology, but such verbal refutations, though popular, are not very illuminating.

What is reason?

When the defenders of the classical theory of law tell us that law is reason, they mean that law is deduced from legal first principles which are as eternal, self-evident, and binding as the axioms of Euclid.[10] Hence the consistent adherents of this view, like Wolfe, do not hesitate to deduce the most detailed regulations of life, table manners, etc., from natural law.

Against this view we have, besides the refutation of the self-evident character of Euclid's axioms and consequent distrust of self-evident propositions generally, a whole mass of evidence that the self-evident principles to which legal philosophers have appealed are vague, frequently in contradiction with other equally self-evident principles, and always really dependent on a fundamental choice or preference. Principles like "equality before the law" are clear only so long as we do not apply them to actual problems where all sorts of distinctions between people have to be made; the "right of each man to what he produces" comes into flat contradiction, in the case of invalids, etc., with the equally self-evident "right to life." Even the supposedly definite principle that "the whole is always greater than the part" becomes somewhat vague when applied to moral issues by

[9] See Gény, "Méthode d'Interprétation"; Ehrlich, "Freie Rechtsfindung und freie Rechtswissenschift," and the various works of Stampe.

[10] This is explicitly stated by the leading Catholic social philosopher of today, Cathrein; see his "Socialism," page 126.

such a clear thinker as St. Thomas, when, *e. g.*, he says, "as the part and the whole are in a certain sense identical, the part may in a certain sense claim what belongs to the whole."[11]

As a matter of fact, when people approve a proposal as reasonable or condemn it as unreasonable, they mean in the first case either (1) that the proposal agrees with their own usual assumptions, (2) that the proposal forms an intellectually coherent or consistent body, and (3) that ulterior as opposed to immediate interests are safeguarded by it. A system of justice according to law (which involves trained jurists) is eminently reasonable in all these three senses; *i. e.*, it is (1) conservative, (2) emphasizes coherency, system, or, if you please, intellectual symmetry, and (3) safeguards fundamental interests.

Those, however, who insist that reason or logic does not determine the ends of the law, that it is merely a tool to bring about ends which we have on other grounds consciously or unconsciously adopted, are misled, by a too simple analysis of the relation of means or instrument to its end, to suppose that the end determines the means and never *vice versa*. Reflection on actual situations shows that this is not true. Give a boy a hatchet and he will want to do things for which he had no desire before; or, if this illustration is not sufficiently dignified, consider how the invention of rapid means of travel and communication has introduced Speed (alias Efficiency) as the supreme deity of our civilization and final arbiter of our personal as well as social ends.

Philosophy has for some time been engaged in deciding the relative claims of rationalism and empiricism, and has tried to do so, in the main, on the basis of an analysis of the procedure of the mathematical or physical sciences. A thorough study of the see-saw between rule and discretion in law suggests the inadequacy of the current antithesis between these two points of view. The rationalistic and empirical motives can not be fully understood unless they are seen in their application to the whole life which we call civilization. Thus the fundamental motive of all radical empiricism comes out most clearly, I venture to think, in James's essay on the "Moral Equivalent of War,"[12] with its expressed preference for all the horrors of war rather than "a world of clerks and teachers, of coeducation and zoophily, of consumers' leagues, and associated charities," etc. Empiricism is the motive which makes us all impatient of restraint and detest the world of rules and regulations with its ceremonies and red tape. It makes us tired of routine and anxious for the thrill of novelty. It glorifies immediacy, and is essentially an

[11] Summa Theol.," 2a, 2ae QLXI., Art. 1 and 2. For a detailed exposé of some juristic "first principles," see Demogue, "Les Notions Fondamentales du Droit Privé." Book I.

[12] "Memories and Addresses."

attitude of trusting "nature."[13] On the other hand, rationalism, the love of order and certainty, sets greatest value on what the temperamentalist calls the artificialities of life; it makes us build houses to protect us against winds, rain, and the variations of temperature, and likewise set up theories to protect us against the flood of new and unexpected experiences. Its essence is thus the setting up of arbitrary bounds or limits to minimize the bewildering variations of nature and to eliminate some of the shock of novelty. Just as it builds dams and dikes to control the great rivers, so it sets up laws and ceremonies to provide channels through which the fitful floods of human passion and impulses may run more or less smoothly.

To the extent to which we recognize the inseparability of these two motives in the life of civilization can we approach, it seems to me, any adequate appreciation of the purely logical problem of rationalism versus empiricism.

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THE MODERN SPIRIT AND DR. SPINGARN

In a recent issue of this Journal[1] Dr. Spingarn says that my volume "The Masters of Modern French Criticism" lacks "unified and consistent thought" and is indeed only an expression of "personal bias." Perhaps if I state briefly the argument I have aimed to put into this book it may have more meaning for some of your readers than it seems to have had for Dr. Spingarn. I remark in my preface that the literary critic is confronted to-day by the same fundamental problem as the philosopher. "For, to inquire whether the critic can judge, and if so by what standards, is only a form of the more general inquiry whether the philosopher can discover any unifying principle to oppose to mere flux and relativity." French criticism has been marked during the past century by a magnificient expansion of comprehension and sympathy, but this expansion has been more or less at the expense of judgment because the critics have lost traditional standards and have failed as yet to find inner standards to take their place; they have, in short, become impressionists. These critical impressionists are, I point out, closely related to philosophers like James and Bergson who revel in the infinite otherwiseness of things, the warm immediacy of individual impulse, and dismiss everything that makes for unity as cold, inert, merely conceptual.

[13] Hence the easy transition from radical empiricism to mysticism.

[1] Vol. X., page 693.

What are we to oppose to this purely unchecked and temperamental view of life, this attempt, as the pragmatist has happily phrased it, to live in a universe with the lid off? Some theory of the absolute? Nothing could be farther from my thought. Because a man does not care to live in a universe with the lid off, it does not follow that he must abide in some shadow world of Kantian concepts. The intellectualist always writes with an eye on the anti-intellectualist, and the anti-intellectualist counters upon the intellectualist, but the true opponent of both intellectualist and anti-intellectualist is the man of intuitive common sense. For common sense may not only rest upon intuition, but on a form of intuition that should be especially cultivated by those who wish to escape from the present naturalistic imbroglio. What I have attempted to do throughout my volume is to apply a sort of Socratic dialectic to the word intuition and to the dangerous sophistries that are being introduced under cover of this word into contemporary thought. It has been assumed that the only type of intuitive person is the person who has the intuition of change, of flux and relativity, and who stands, therefore, for all that is expansive and expressive and individual. In contrast to this type of intuition which makes itself felt practically as vital impulse (*élan vital*) I have distinguished another type of intuition—the perception, namely, on the part of the individual, of a something in himself that he possesses in common with other men. In its higher forms (as possessed, for example, by Joubert) this perception may be defined as inspired and imaginative common sense. In opposition to *élan vital,* it makes itself felt practically as an inner check or power of vital control (*frein vital*). I have, therefore, defined two main directions of the human spirit, corresponding to the two main types of intuition, and have opposed a philosophy of the inner check to the various forms of the philosophy of the flux that are now sweeping the occidental world.

There is, then, something more vital than vital impulse, and that is the power to control this impulse and direct it to some human end. The man of naturalistic temper is prone to look on impulse alone as vital and dynamic, and to conceive of everything that restrains as dead and mechanical. Those who stand for concentration and discipline he regards as reactionary or patronizes pityingly as "academic."

I am flattered that Dr. Spingarn should think me an American Brunetière. I am less flattered by the way he dismisses as a vain flourish of words all the passages in which I am at pains to distinguish between my point of view and that of Brunetière. It is true that, like Brunetière, I would react against naturalism; but,

unlike Brunetière, I would react in the name of the modern spirit. For the modern spirit does not necessarily coincide with the naturalistic spirit; it is simply the positive and critical spirit, the spirit that refuses to submit tamely to authority, but would try out and test everything according to the facts. Now, however tradition may confirm my dualistic conception, I do not rest it, as Brunetière does his conception, immediately on tradition, but on a fact—on the presence, namely, in the breast of the individual man of a something that is anterior to both intellect and emotion, that makes itself felt experimentally as a power of control over intellect and emotion. Kant tends to draw men away from a firm grasp on this primary fact of human nature into mere intellectualism when he denies the superrational intuitions. Bergson significantly takes this denial as the point of departure for his own philosophy.[2] Benedetto Croce, Dr. Spingarn's master, rests his system on a similar denial.[3]

It is true, as Dr. Spingarn says, that I attack scientific positivism, but for a reason one would scarcely gather from his review—namely, because it is not sufficiently positive. The fault I have to find with men like Taine is not that they are hard-headed, but that they are not hard-headed enough. The scientist who tries to stretch his observation of natural law to cover the whole of human nature is really being drawn away from the positive and critical attitude into some phantasmagoria of the intellect. In the name of this phantasmagoria he tries to deny one of the two main directions of the human spirit. What the present situation would seem to require is not the transcendentalist, but the spiritual positivist who will plant himself on the facts of the human law at least as firmly as the true scientist does on the facts of the natural law, and who will look with equal disdain on the apriorist and the metaphysician.

One of the results of the naturalistic denial of dualism in the field of literature and literary criticism has been to obliterate the boundaries between creation and criticism, between genius and taste. "The identity of genius and taste," says Dr. Spingarn, in his "New Criticism," is the final achievement of modern thought on the subject of art, and it means that, fundamentally, the critical and the creative instincts are one and the same." This doctrine at all events is not new. It is in germ in precursors of the naturalistic movement like Rousseau and Diderot and, Croce would add, Vico; it is stated with perfect clearness by A. W. Schlegel[4] and passed on by him to Madame de Staël.[5] Those who for a century or more have been

[2] See his article on "L'Intuition philosophique" in *Revue de Métaphysique et de Morale,* Nov., 1911.

[3] "Estetica," page 68.

[4] "Vorlesungen über Schöne Litteratur und Kunst" (1803) in *Deutsche Litteraturdenkmale,* 18, pages 82–83.

[5] *Cf.* "The Masters of Modern French Criticism," pages 16–17.

putting forth these extreme views are playing into the hands of the reactionaries, who assert that the modern spirit is in its essence only anarchy, the readiness to sacrifice the true form and symmetry of life to mere expression. One should aim, on the contrary, to be a modern of moderns, and at the same time practise the disciplinary virtues and so deprive the reactionaries of their only serious argument.

I understand perfectly that the principles that seem to me to make for this union of the disciplinary virtues with the modern spirit do not seem to Dr. Spingarn principles at all, but merely "personal bias"; they are too different from the point of view he has borrowed from Croce. I do not, however, find it easy to understand why so distinguished an investigator as the author of "Literary Criticism in the Renaissance" should fall into palpable misstatements of fact. For example, he says of my essay on Scherer: "The reader will search in vain *for a single allusion to literature or art,* to the life of the imagination in any of its forms." If the reader turns to the essay on Scherer he will find detailed discussion of Scherer's attitude towards Molière, Sainte-Beuve, Zola, Baudelaire, and Goethe, along with less detailed treatment of his attitude towards Arnold, Amiel, Hugo, Gautier, Lamartine, and others! I admit, however, that my whole volume is meant as a protest against the romantic tendency to withdraw into the tower of ivory—in other words, to treat art and literature as something apart from life.

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REVIEWS AND ABSTRACTS OF LITERATURE

French Prophets of Yesterday. ALBERT L. GUÉRARD. New York: D. Appleton and Company. 1913. Pp. 288.

This is a book of a good kind, the subject is well chosen, and the work is skilfully done. The writer traces the currents of religious thought under the Second Empire as revealed, not merely by theologians and philosophers, but by historians, critics, poets, novelists, and essayists, who often express and develop the ideas of an age far more than the leaders of the schools. In the period under review France had ceased to be the acknowledged leader of the intellectual world; but she remained a great clearing-house of thought. The contending influences which have gone to make up modern life on its intellectual side were embodied there in such great personalities as Scherer, Michelet, Hugo, Sainte-Beuve, Taine, and Renan, whom one can not omit from one's acquaintanceship without serious loss. Professor Guérard analyzes the contributions of all these, and of many smaller men, to the thought of their time, not only with absolute fairness, but with a breadth of sympathy and a fulness of knowledge no less praise-

worthy than rare. The book deserves to be widely read by students of both literature and philosophy; any young man gifted with intellectual curiosity should be grateful for the opportunity to find out what names like Veuillot, Montalembert, Guizot, Quinet, Leconte de Lisle, and Alfred de Vigny really stand for. And Professor Guérard has not achieved impartiality at the price of a colorless moderation; he has his own views, and is not afraid to express them trenchantly enough. His judgment of Taine, for example, will appear to some unduly severe:

"An appearance of unanswerable logic, a display of minute facts, an imperious style, and above all the ardor of evident sincerity, gave outward unity to a complex and contradictory system. His example strengthened that which is more dangerous than ignorance, and even than frivolity —pseudo-science. Clear, honest thinking in the good old French way, modest, cautious, painstaking research of the modern kind, suffered equally from the success of this pessimistic poet, earnestly masquerading as a logician and a scientist. His intellect was a powerful and delicate instrument which, through some original vice, was *untrue:* perhaps the harsh word of a political opponent was none too harsh; 'Taine est un esprit faux.' Always stimulating, always unreliable and dangerous, he has been unduly praised as an intellectual and spiritual leader; whilst his fame as an artist is firmly established, and will probably grow brighter when his scientific claims are dismissed and forgotten."

It will be seen from the above that Professor Guérard writes English uncommonly well; indeed, a careful perusal reveals only one or two slips,[1] easily pardonable in a writer whose mother language is French. His eloquence carries one through occasional eddies and shallows of thought which might perhaps have been better disregarded. Maret's attempt to liberalize the Church, he says, is "deeply forgotten," and it is a question whether it was worth while to recall it, even in a survey so comprehensive as this. Professor Guérard never ceases to be intellectually alert and therefore stimulating, but he is naturally at his best in dealing with people and movements that have really counted. By the side of his judgment of Taine it is perhaps only fair to put his more favorable estimate of Renan:

"They call him frivolous: but for fifty years he devoted his strength to minute and patient research, and died in harness, leaving forty scholarly volumes behind him. They call him elusive and shifty: but he never varied in his main course, and, when he presented alternative hypotheses, he did so out of broad-mindedness and candor. They call him pliant, effeminate, a moral weakling: but he went boldly through a spiritual ordeal from which most men of the rugged and strenuous type would shrink and seek refuge in dogmatism or compromise. They call him selfish and a Hedonist, whilst he preached and practised absolute renunciation to whatever was not the ideal. They rebuke him for his smiling benevolence, as if cheerfulness was not the supreme grace of the strong, and indulgence the privilege of the pure."

Professor Guérard makes a good point in support of this view in a foot-

[1] "Which" for "who," for instance, in the middle of page 49.

note in which he draws attention to the fact that the two most famous disciples of Renan, Jules Lemaître and Anatole France, did not fail to act with decision and energy in the Dreyfus crisis, although they took opposite sides. His personal recollections of that mighty controversy are interesting in themselves, and are used to bring home an important truth:

"Humanitarianism survives to the present day, as a faith, a hope, a discipline. It was an essential part of the religion of the great Romanticists, Hugo, Lamartine, George Sand; it remains the spiritual backbone of France. A dozen years ago, when a great moral issue was placed before the country, when the Catholics seemed to think only of material order, conservation, and safety, it was in the name of Humanitarianism that Zola led his great crusade for truth and justice. It was our privilege to attend many tumultous meetings in those days; with quiet courage the speakers—scholars, scientists, ministers, anarchists, for all were welcome to their share of honor and danger—were facing obloquy, ostracism, and even death; no elaborate High Mass in an ancient cathedral, no revivalist meeting of the most successful evangelist, has ever given us a deeper feeling of what religion should be."

Professor Guérard amply redeems the period he has chosen for study from the reproach of spiritual indifference too lightly urged against it and against nineteenth-century France in general by people who do not know what they are talking about. His remark that "France in the sixties, materialistic as it seemed, discussed religion with an intensity, an earnestness, which contrasts curiously with the good-humored indifference of the British and American public at the present day might be extended with perfect truth to France before and since. Professor Guérard has deserved well of his country in this faithful and loving study; and he would add to the obligations under which he has laid American and English readers if he were to add a companion volume on "French Prophets of To-day," for which the material is no less rich, and for which he is abundantly qualified.

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Heredity and Memory. James Ward. Henry Sedgwick Memorial lecture at Newnham College. Cambridge University Press. 1912. Pp. 56.

Professor Ward finds the starting-point of his discussion in the directed activities of our conscious life. This affords an interpretative principle which, on the ground of continuity, is extended to include all living processes. To the objection of the mechanist that continuity may be read in either direction he replies that an explanatory concept must be derived from cases where it is typically manifested.

The characteristic features which the problem presents are individualization and progress. The latter comprises both inheritance of the achievements of our predecessors and the attainment of expertness through experience. "Just as later generations inherit from earlier generations, so later phases of the individual inherit, as it were, from earlier phases." In

the progressive modifications which thus arise in the plastic individual is given "the possibility of an indefinite advance upwards in the scale of life without the succession of individuals which heredity involves."

In the latter case the individual in a brief period repeats with certain accelerations and foreshortenings the vast evolutionary history of which he is the result. In an immortal and plastic individual all this might be achieved, but every modification would be the result of function. A type which actually connects these two series is presented by the unicellular organisms where an endless series of individuals, each as old as the species, arises through successive divisions by which, without death, the modifications of structure progressively acquired are continuously transmitted.

If now we suppose such an individual gifted with memory to be set back from successively higher stages to the beginning of the whole process again, the stages already traversed would be repeated each time with accelerated rapidity, the latest acquisitions always involving the greatest time and difficulty in their repetition. At any point in his history such an individual would represent the sum of modifications acquired in the course of experience.

This conception, which is fundamental to our notion of individual existence, has met great opposition when applied to the derivation of characteristics in the successive individuals of an hereditary series. "It is unproved, impossible, and needless," say the critics. To this question the writer then turns. In both cases alike a form of immortality is predicated, but in that of the hypothetical individual modifications are due to the teleological influences of experience, while in the case of the immortal germ-plasm the factors, natural selection and amphimixis, are both non-teleological. The attainment of the result is obviously possible under the former conditions; under the latter Ward thinks it to be inconceivable.

In the protozoa it is confessedly the former mode of transmission which is present: if either term is to be denied it is the fact of inheritance, not of acquisition. In the metazoa, according to Weissmannism, on the contrary, there is absolute discontinuity between individual and individual, so far as this system of acquired somatic modifications is concerned. One is thus at a loss to find any resemblance between the processes of evolution in unicellular and multicellular organisms, respectively.

The latest conception of intragerminal selection, formulated to meet the problem of germ and soma, is a "surrender both of the ancestral continuity and of the somatic discontinuity of the germ-plasm." But if the principle breaks down even in the single matter of nutrition it needs supplementation, and the whole question of possible modification must be raised anew.

To this Ward now turns in the development of a psychological or "mnemic" theory of heredity. In its modifiability and retentiveness "every living cell, whether living in isolation or as a member of a complex organism, must be credited with that organic memory which all life implies. In the higher complex organisms the mechanism of this development lies in the nervous system, but in the germ-plasm it is to be found in the nucleus of the cell. The germ-cell thus becomes "a definite unity, the

counterpart of the structural alterations wrought by habit in the parental organisms with which it has been in sympathetic rapport all along." We can neither assume that experience has no place in the building up of an organism nor that this process changes abruptly in passing from unicellular to multicellular forms. Ontology and heredity thus become aspects of a single process: what habit is for individual life heredity is for social life. The writer closes with a protest against the physical interpretation of this point of view. "The mnemic theory, then, if it is to be worth anything, seems to me clearly to require not merely physical records or 'engrams,' but living experience or tradition. The mnemic theory will work for those who can accept a monadistic or panpsychistic interpretation of the beings that make up the world, who believe with Spinoza and Leibnitz that 'all individual things are animated albeit in divers degrees.' But quite apart from difficulties of detail, I do not see how in principle it will work otherwise."

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An Introduction to Psychology. T. LOVEDAY and J. A. GREEN. Oxford: The Clarendon Press. 1912. Pp. 272.

This volume is prepared especially for teachers, assumes little knowledge on their part, and gives relatively little discussion of the technical psychological problems. It is a chatty discussion in essay style of the principal problems of psychology as they present themselves to the teacher who has not thought too deeply before reading the book. Much attention is given to the description of infancy and to the growth of the different capacities during the period covered by school life. Purpose as the controlling factor in attention, action, and thought is treated in two chapters; otherwise the book is for the most part devoted to a discussion of imagery, association, thought, and imagination, treated as different processes. Feeling, including emotion, is discussed in two chapters. On the whole, the book bears about the same relation to psychology that nature study does to the natural sciences. Within these limits it is well done.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. November, 1913. *Degrees of Reality* (pp. 583–605): BERNARD MUSCIO. – The notion of degrees of Reality as employed in idealistic speculation is either based on an unwarranted assumption, and supported by unsound arguments, or else it becomes psychology and ethics. *Practical Success as the Criterion of Truth* (pp. 606–622): HENRY W. WRIGHT. – "The purpose of this paper is to investigate the meaning of practical success as a criterion of truth—when practical success is interpreted in terms of voluntary achievement." *The Problem of the Value-judgment* (pp. 623–638): DONALD W. FISHER. –

Develops the consequences of the view that every value is related to a subject in the sense of being emotionally valid for it. Analyzes the structure of the value-judgment and maintains that there is no distinction between value-judgments and other types of subject-predicate judgments. *The Dualism of Bergson* (pp. 639–652): NANN CLARK BARR. – The method of Bergson, that of making and subsequently resolving distinctions, shows a progressive development. In "Time and Free Will," distinctions are absolute. In "Matter and Memory," the distinctions earlier treated as ultimate are largely transcended. In "Creative Evolution," the final inclusive synthesis is reached. The result is "a genuine, though far from simple or traditional, idealism." *Reviews of Books:* B. Bosanquet, *The Value and Destiny of the Individual:* ERNEST ALBEE. F. Pillon, *L'Année Philosophique:* W. K. WRIGHT. John Theodore Merz, *A History of European Thought in the Nineteenth Century:* J. E. CREIGHTON. *Notices of New Books. Summaries of Articles. Notes.*

REVUE PHILOSOPHIQUE. October, 1913. *Sociologie et Psychologie* (pp. 337–357): J. LEUBA. – A criticism of Durkheim's conception of religion, in which the following differentiation of magic and religion is offered: the idea of an agent which can be acted upon by anthropopathic means is the distinctive trait of religion, while that of magic is the employment of means of influence that act upon the agent mechanically and automatically. The article advocates, against Durkheim, the importance of the psychology of the individual in sociology. *L'Inutilité du Vitalisme* (pp. 358–382): F. BOSC. – Neo-vitalism is rendered useless, without implying the triumph of materialistic monism, by a distinction between the life that characterizes all reality (*la vie cachée*) and the life that appears to the senses (*la vie apparente*). "... the principle of life appears as a general force which, by condensation, gives birth to matter, ... matter possesses in decomposition the property of emitting imponderable forces that approach more and more, in living complex bodies, the universal force." *L'Education et Bonheur* (pp. 383–403): J. FINOT. – A discussion of free-will in connection with education and happiness. *Notes et Documents. Pensée, Image et Conscience chez l'Animal et chez l'Homme:* G. SAINT-PAUL. *Revue Critique. La Lutte Philosophique et la Division des Croyances:* F. PAULHAN. *Analyses et Comptes Rendus.* Buhler, *Die Gestaltwahrnehmungen:* B. BOURDON. Luquet, *Les Dessins d'un Enfant:* E. CRAMAUSSEL. *Notices Bibliographiques. Revue des Périodiques étrangers.*

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NOTES AND NEWS

THE following letter addressed to M. Fernand Vandérem is reprinted from the Paris *Figaro* of February 28:

MONSIEUR:

Je tiens à vous remercier pour l'article, fort joliment tourné, que vous avez bien voulu me consacrer dans le *Figaro*. Je vous suis particulièrement reconnaissant d'avoir rétabli la vérité sur un point essentiel. Quand on compare mes cours à ceux de Caro, on oublie que je n'ai jamais fait l'ombre d'une concession au "grand public", que mon enseignement s'adresse aux spécialistes, que je le rendais même de plus en plus technique à mesure que l'affluence à mes cours augmentait. Cette année, mon cours du vendredi porte sur "la Méthode en philosophie", et celui du samedi sur la deuxième partie de *l'Ethique* de Spinoza, c'est-à-dire sur ce qui a été écrit de plus difficile par le plus difficile des philosophes.

Il y a deux points sur lesquels il me serait impossible de me mettre d'accord avec vous;—ces deux points n'en font d'ailleurs, probablement, qu'un seul. D'une part, vous ne voyez dans la métaphysique qu'un tissu d'hypothèses indémontrables, et d'autre part vous estimez que l'accueil fait à mes doctrines par le public en général est incompréhensible. Permettez-moi de vous dire que la diffusion de ce qu'on est convenu d'appeler le "bergsonisme" tient tout simplement à ce que les initiés voient et à ce que les non-initiés entrevoient qu'ils ont affaire à une métaphysique moulée sur *l'expérience* (soit extérieure, soit intérieure), à une philosophie modeste mais décidée à rester sur un terrain solide, à une doctrine qui n'a rien de systématique, qui n'a pas réponse à tout, qui distingue des problèmes différents et les examine séparément, enfin à une philosophie capable de progresser et de se perfectionner indéfiniment comme la science. Chacun de mes livres m'a coûté plusieurs années de recherches scientifiques; et chacun d'eux aboutit, non pas à de vagues généralités, mais à des conclusions capables d'éclairer par quelque côté des questions très spéciales. Encore une fois c'est là ce qu'on aperçoit, distinctement ou confusément, quand on se rallie à cette philosophie.

Croyez, je vous prie, Monsieur, à mes sentiments distingués et dévoués.

H. BERGSON.

AT the Conference on Legal and Social Philosophy, to be held in Chicago on April 10 and 11, the sessions of the first day will be devoted to a joint meeting with the Western Philosophical Association. On Friday evening an informal dinner will be given by the local members from Northwestern and Chicago Universities, which will be followed by a Round Table Discussion on "The Advancement of Philosophic Jurisprudence." The final meeting of the Conference will occur on Saturday morning, April 11.

DR. OTTO KLEMM, docent at Leipzig, has been appointed professor of psychology in Alberta University, Edmonton, Canada.

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PSYCHOLOGY AND SCIENTIFIC METHODS

THE WORK OF HENRI POINCARÉ

WHEN Henri Poincaré, already a member of thirty-five learned societies, was admitted in 1909 to the Académie Française, to the place left vacant by the death of the poet, Sully Prudhomme, M. Masson recounted in the words of a distinguished scientist the career of this master "whose reputation," he said, "is established as an axiom."

"M. Poincaré has a vast mind. He is remarkable both by the diversity and the depth of his knowledge. He is not only a geometer, but also a physicist and an astronomer, not in the fashion of those scientists who give themselves up to observations and experiments, but by the applications he has made of analytic method to science; in other words, he has advanced mathematical physics and celestial mechanics.

"As a geometer, his writings on the theory of numbers, on integral calculus, and on the general theory of functions are spread through more than one hundred and fifty Notes published in the *Comptes Rendus* of the Académie des Sciences, and at least as many articles and memoirs in French and foreign mathematical journals.

"Professor of mathematics at the University of Paris, he has published fourteen volumes of lessons on light, electricity, thermodynamics, and the propagation of heat, making known in France the theories of Maxwell as substantiated by Herz. He has not even neglected wireless telegraphy—an application of the Herzian waves.

"Also on the astronomical side he has shown much originality; there, his studies on the form that a fluid mass takes in rotation and submitted to universal gravitation have led to interesting theories concerning the breaking apart of the earth and moon, and on the formation of diverse variable stars; his work on the stability of the solar system has led, by a revision of the calculus of Laplace and by an approximation pushed still farther, to the proof that the theory as formulated in 1784 is absolutely justified. The three volumes that he has published on celestial mechanics are authoritative amongst astronomers."

In addition, there had also appeared three remarkable volumes[1] in which the philosophic significance of science is studied with rare depth and from which emerges the most profound analysis of knowledge, perhaps, that it may be the good fortune of our age to possess. Yet, in 1913, when four distinguished French scholars unite[2] to review the achievements of H. Poincaré lamentably brought to a close by death on July 17, 1912, much more is still to be told. Not only have significant scientific publications followed those already enumerated, but also another volume of papers[3] of the highest interest to philosophers is added to the list.

Langevin sets forth the dominant characteristics of Poincaré's mind;[4] "His extraordinary power of abstract construction is equilibrated by a constant care for reality; he is a realist in mathematics as in physics. The tree of his thought, branched to infinity, is solidly attached to the soil by deep roots. . . .[5] Henri Poincaré was never troubled by the difficulties of analysis; he knew them scarcely more than nature herself knows them, and he never lost contact with her." If his work lacked unity on the mathematical side it was because he appreciated the adage of Hermite[6]—" 'We are servants rather than masters in mathematics.' . . . The history of the work of Poincaré is nothing else than the history of mathematical science and the problems that it has placed in our epoch." For him science was so much a living thing that growth of a part was not to be distinguished from growth of the whole. No one understood better than he how the solution of a single problem spreads its influence, like the splash of a stone in a pool, until it permeates the whole.[7] "An experiment of Kaufmann on radium revolutionized at the same time mechanics, optics, and astronomy." A discovery by Poincaré in geometry, that "came" while stepping into a 'bus,'[8] has revolutionized our conception of the earth and of the generation of the heavens themselves.

To follow the technicalities that substantiate such work as Poincaré's is a task too difficult for those not deeply versed in the lore of the mathematical and physical sciences. Indeed, even the able expositors of the *"Revue de Métaphysique et de Morale"* frequently

[1] "Science et Hypothèse," 1902; "La Valeur de la Science," 1905; "Science et Méthode," 1907.

[2] *Rev. de Mét. et de Mor.*, September, 1913. L. Brunschvieg, "Le Philosophe"; J. Hadamard, "Le Mathématician"; A. Lebeuf, "L'Astronome"; P. Langevin, "Le Physicien."

[3] "Dernières Pensées," 1913.

[4] *Rev. de Mét. et de Mor., loc. cit.*, page 687.

[5] *Loc. cit.*, page 696.

[6] Hadamard, *loc. cit.*, page 618.

[7] *Sci. et Mét.*, page 310.

[8] *Sci. et Mét.*, page 51.

impress upon our minds no more than a few baffling phrases—Fuchsian, meromorphic, and thêta functions; curves defined by differential equations, equations with partial derivatives; molecular tensions, capillary attractions, Herzian resonators, convection currents, etc., leaving us scarcely more informed than we were from M. Masson's summary. Yet most of these things have their root in a doctor's thesis of 1879, or the papers that appeared during the next two or three years! And "the accumulation of these memorable works is not their only characteristic. The god who inspired them manifests his impatience in their very style. In a number of them . . . two or three pages, luminous as concise, suffice for the '*veni, vedi, vici*' of a triumph of the human spirit."[9]

Throughout we feel the scientist in love with truth and a man of faith, for all scientists "are in a sense men of faith; every passion supposes a faith; every motive of action is a faith; it is faith alone that gives perseverence, that gives courage. But, nevertheless, one is not a scholar if one is not endowed with a critical spirit which seems to exclude every sort of faith and often causes men of science to be taken for skeptics."[10] His conclusions are models of caution. Now he reviews Arrhénius's hypothesis by which the universe might escape that calorific death predicted by Claudius, and concludes that, at most, we can infer a mere retardation of the process; or again he examines cosmological theories only to end in interrogation, since all, including his own, fail to take account of some known fact.[11] Yet M. Poincaré does not lose faith in speculation. Had man been content to await adequate data of knowledge, he would have lacked that imperious curiosity that raises him through science above the savage. This curiosity is the incentive to work and "however well endowed a man may be, it amounts to nothing without work; those who have received the sacred spark from heaven are no more exempt than the others; their very genius only cuts out their work for them."[12]

It is, however, M. Poincaré's reflections on the nature and significance of science that especially concern the philosopher, for he has rare acumen and an acquaintance with the subject-matter with which he deals such as is almost unique in our literature. There have been as keen philosophers and as learned scientists, but, with the exceptions of Aristotle, and possibly Leibnitz, such intensity of philosophic interest and scientific creativeness have never before been united in one man. The unwary reader, however, should be warned that from the appearance of "Science et l'Hypothèse" in 1902 to

[9] *Rev. de Mét.*, pages 634–35.

[10] "Savants et Ecrivains," page v.

[11] Leçons sur les Hypothéses Cosmogoniques," 1911–13.

[12] "Savants et Ecrivains," page iv.

that of the "Dernières Pensées" in 1913 there is manifest an unfolding of the results of analysis that often betrays the unprepared, for it is easy to pigeon-hole his earlier works as an expression of a phenomenalistic relativism that is far from their real import.

"For the superficial observer," "Science and Hypothesis" begins, "scientific truth is beyond the possibility of doubt; the logic of science is infallible, and if the scientists are sometimes mistaken, this is only from their mistaking its rules." When we look a little more closely this confidence vanishes. We find the scientist everywhere depending upon assumptions and these assumptions are by no means as stable as one might think. It is not a question of such simple outlived ideas as defined for antiquity the shape of the earth or the movement of the heavenly bodies, but of Carnot's principle, of the principle of the relativity of space, or Newton's principle of the equality of action and reaction, of Lavoisier's principle of the conservation of mass, and even of Mayer's principle of the conservation of energy. We can not as yet predict the outcome in particular instances, but such present doubts illustrate the instability of the most fundamental certainties that science can contribute to our knowledge.

What shall we do? Deny everything? "To be skeptical in this fashion is still to be superficial. To doubt everything and to believe everything are two equally convenient solutions; each saves us from thinking."[13] But a superficial acquaintance with the results of science convinces us that even our discarded hypotheses have been useful. New science, then, if it is to transcend our present science, must keep alive something of it or our old science will persist by the side of it. Our formulæ are like the victims of Kipling's vampire, for some of them live, though most of them die, and it is experiment alone through which these things are found out. But M. Poincaré is fond of pointing out that experiment is not everything unless it be understood to be something more than a mere quest of observations. The observations must be used, and to be used they must be generalized. Carlyle's love of mere fact was unworthy of a countryman of the man who invented the phrase *experimentum crucis*. No heap of facts constitutes science, but rather an organization of facts. It is science that enables us to predict, and a single observation by a wise scientist like Pasteur can tumble into oblivion all the crowd of facts a lesser mind might amass in a lifetime. Bacon would have understood this, but not Carlyle. At best experiment gives us only a number of isolated points. To reduce these to law we must join them by a continuous line, but "the curve we trace will pass between the observed points and near these points; it will not pass through the

[13] "Science et l'Hypothèse," page 2.

points themselves. Thus we do not restrict ourselves to generalizing the experiments, but we correct them; and the physicist who should try to abstain from these corrections and really be content with the bare experiments would be forced to enunciate some very strange laws.''[14]

Even mathematics is not exempt from this dependence upon fact. M. Poincaré seems never to weary of returning to attack the logicians, of whom B. Russell and Hilbert are leading representatives, when they would found mathematics on arbitrary definitions and postulates. The first chapter of ''Science and Hypothesis'' demonstrates the factual foundation of arithmetic, the second of geometry; the ''Value of Science'' begins with a discussion of the respective rôles of intuition and logic in mathematics; the second part of ''Science and Method'' recurs to the same problem and ends with the words, ''the old logistic is dead, so much so that already the zigzag theory and the no-classes theory (Russell) are disputing over the succession''; and chapters three, four, and five of the ''Dernières Pensées'' are at the problem again, emphasizing especially the conclusion that ''there is no logic or epistemology independent of psychology.''[15]

Mathematical propositions are, then, transcriptions of experience. It may be of psychological experience, such as our right to repeat a certain process indefinitely—the principle of complete induction—or of the conditions of movement which affect our geometrical interpretations of space; or again, they may express complex relations among physical objects, and often both psychological and physical experiences are invoked.[16] Incidentally he has contributed to the solution of the problem of the non-Euclidean geometries for the philosopher by showing that every one of their theorems is useful to solve problems of Euclidean geometry, thus extending the significance of Reimann's and Beltrami's proof that any fact expressed in Euclidean terminology could be expressed by any non-Euclidean system, and *vice versa;* and also the problem of hyperdimensional geometries similarly by showing that any equations expressing facts of space in terms of three dimensions can be translated into equations expressing those same facts in terms of N-dimensions, although, of course, the dimensions would not remain the same entities (lines). The consequence is that geometries are only languages and our choice of geometries is based merely on convenience.

But this does not mean that the choice is arbitrary. ''It is true that it is convenient, it is true also that it is convenient

[14] ''Science et l'Hypothèse,'' Ch. IX.

[15] ''Dernières Pensées,'' page 139.

[16] *Cf.* ''Why Space has Three Dimensions,'' ''Dernières Pensées,'' Ch. III.

not only for me, but for all men; it is true that it will remain convenient for our descendants; it is true finally that this can not be by chance." The reason is that "all that the scientist creates in a fact is the language in which he enunciates it" and "scientific fact is only brute fact translated into a more convenient language."[17] Consider the four following statements of fact. They are M. Poincaré's freely transcribed. It is getting dark, says the man on the street; an eclipse is taking place, says the astronomer; the eclipse is a phenomenon that could have been deduced from tables derived from Newton's laws, says a mathematician; and the cause of it is that the earth revolves around the sun, says Galileo. All of these statements transcribe the same fact of experience. The first denotes a present experience in relation to what has just been experienced; the second relates a present experience to the great mass of past and future experiences; the third appeals to our powers of predicting and concatenating events; and the last is so stated that one who is sufficiently informed can see that Newton's tables are possible to construct and of guaranteed applicability to this present experience.

The purpose of our theories, accordingly, is not to describe things as they really are. They are not based on experience alone, but spring from a collaboration of intellectual activity and facts whose status is imposed by practical life. Their durability lies in their power to simplify and unify the relations between things, and their ephemeral aspect in their descriptive implications. When astronomers said that the earth was the central body about which the sun and stars revolved, they were saying nothing false except in so far as they might be taken as speaking descriptively. That is, if we look upon their theory merely as a formulation of certain relations that express themselves among visible objects in the open heavens and the visible earth, we find that it is a simple and unifying formula by which to record them. To the casual observer, the sun, moon, and stars *do* pass as they might if they revolved about the earth. The motion is a fact. The trouble comes when we look more closely and observe regressions and variations from the motion that is at first the only one apparent to the eye. We must then reconstruct our theory, and only then do we find that the helio-centric hypothesis has much more power to unify and simplify than the other, and we say it is true in a deeper sense. Naïvely we chose the most conspicuous objects and scientifically those simplifying the most expressions. The naïve statement is not false, but an awkward conveyance of truth.

This is the essence of Poincaré's identification of the truth with the convenient. In his last volume[18] he explicitly identifies the con-

[17] "La Valeur de la Science," Ch. X.

[18] "Dernières Pensées," pages 136 seq.–146 seq.

ception with pragmatism and elaborates the conception as implying that every statement that has a meaning must lead to some consequences verifiable in fact, and that in this consists its truth. Abstractions can be nothing but short cuts to getting into working relations with the concrete. Unfortunately, the issue is confused for the philosopher by an identification of pragmatism with idealism, and the opposed school, characterized as Cantorians, with the realists. These realists are more of the scholastic than of the modern type. Their realism is based on essences and universals, and on things outside of relations to human beings, but of which the true and the false may be uttered, although it is inconceivable that such utterances meet with verification or rejection. They live by definition through *genus proximum et differientiam specificam* and discover the geometrical entities they define, instead of defining those that they discover.

M. Poincaré's idealism accords verbally with traditional statements, "an object exists only when it is thought" and "an object can not be conceived independently of a thinking subject," as opposed to the realistic, "the world existed before the creation of man, even before living beings; it would exist even if there were no God or thinking subject." But the general character of his epistemology and ontology puts us in a curious dilemma in interpreting these statements. Either this scientist, whose thinking is most exact in the field of science, experiences an astounding lapse of logical intuition when he enters the realm of philosophy, or else his idealism must be read without those Berkeleian connotations the above quoted idealistic phrases usually carry with them. In favor of the first conclusion is the curious Pythagoreanism by which he defines the objective as that which is common to many minds, and concludes that consequently it can be nothing but mathematical relations, on the ground that while the identity of sense qualities in two observers can not be established, the scientific equivalents of them, the mathematical relations involved in their experience, can be.

On the other hand, in an essay contributed to a volume entitled "La Matérialisme Actuelle"[19] and in the sixth chapter of the "Dernières Pensées" he favors an atomistic and discontinuous account of a deterministic universe that seems quite independent of human consciousness. A definite solution of this problem of interpretation can not be given without knowledge of the theory of consciousness which must underlie these statements, and this M. Poincaré has nowhere given us. If, for example, such a theory had been developed along the lines of the new behaviorism, the statement that the world can only exist in the mind of a thinking being would mean

[19] Paris, 1913; contains also essays by Bergson and others.

that the world, as man knows it, is merely an organization of objects thrown into a practical perspective by their relations to the possible modes of activity latent in the human or animal organism and, in connection with epistemology, that objects are only aspects of an ultimate, isolated (made objects) by these demands for action. On the other hand, a representative theory of consciousness would lead to an orthodox Berkeleianism difficult to harmonize with the ontology and epistemology. The evidence left us is so slight that it would be illegitimate to conclude in favor of either interpretation.

When we examine the character of the formulæ by which we express our knowledge, we find three distinct types. First, there is a class of verifiable propositions of the sort that lead experimentally either to verification or to refutation. In either case they are useful, for, if immediately rejected, the false ones at least narrow the field of investigation and the very experiment which rejects them may suggest a new hypothesis to replace the old, and thus be a great aid to discovery, because when an hypothesis that pretends to take into consideration all the factors in a given situation fails, it can only mean that some unknown factor is present, something unexpected and extraordinary which, without the false hypothesis, might have been a long time overlooked.

The second class of hypotheses consists of general statements that are useful to us in fixing our ideas, but which can not be submitted to experimental tests and so can not be affirmed or denied. The principle of the conservation of energy is such an hypothesis. The only condition that makes it true is that we enunciate it for a strictly isolated system, but this condition can never be realized in a system upon which experimental observation is possible. Yet it is of the highest value, for it expresses something that a large number of scientific laws have in common. Its very generality guarantees its unverifiability. But if the principle has a meaning, may it not be false? It may well be that we have not the right to apply it indefinitely even though it is certain to be verified in the strict sense of the term. We shall know when we have reached the limits of its applicability by the fact that it ceases to be useful in the prediction of new phenomena and it will stand condemned without being contradicted.

The third class of hypotheses are such only in appearance. They are really what M. Poincaré calls disguised definitions or conventions. "These conventions are the work of the free activity of our mind, which, in this domain, recognizes no obstacle. Here our mind can affirm since it decrees, but let us understand that while these decrees are imposed upon our science, which without them would be impossible, they are not imposed upon nature. Are they arbitrary?

No, else they were sterile. Experiment leaves us our freedom of choice, but it guides us by aiding us to discern the easiest way. Our decrees are, therefore, like those of a prince, absolute but wise, who consults his counsel of state."

The discovery of an hypothesis is an interesting case of creative imagination and M. Poincaré has contributed an important chapter to the psychology of this problem. Certain of the dominant factors of discovery are possessed by every one. In the first place the creator must be able to reason; in the second, he must be able to remember, and in the third, he must possess a certain sensibility less easy to define. All men should be able to understand mathematics, for all men go through the same thought processes as the mathematician, but some men can not remember mathematical facts surely enough to retain long series of mathematical reasonings, just as some men can not retain the dominant facts in a game of chess well enough to be good players. But the last factor of creation is by no means common to all. In discovery, there is presented to thought countless combinations from which those most likely to fit the situation in question are selected, but the creative act is not merely one of selection, for to the real creator many combinations are not even presented. Only the useful ones present themselves, or at least those that have a fragmentary utility that may be rejected later as inadequate. A long period of fruitless work often precedes, rejected combination after rejected combination, then suddenly, at a quite irrelevant moment, such as in the midst of a conversation, or a walk, the proper idea appears with a strong feeling of illumination and certainty that can only be justified or refuted by later work. Unconscious work has evidently been taking place. But M. Poincaré is loath to accept this as evidence of a subliminal self as a causal factor while any other plausible hypothesis remains. What may happen is that an automatic combining and recombining takes place until certain combinations having a peculiar affinity for our emotional consciousness occur and bring themselves to our attention. The most original part of his discussion is the interpretation of this feeling as esthetic, a feeling of "the harmony of numbers and forms, of geometric elegance," and there have never been finer pages written than those following on the relation of the beautiful and the useful; for not only is the sense of harmony the determining cause in the selection of facts and scientific creation, but it is also the instigator of the endeavor from which results that flash of intellectual light which is the essence of man's brief terrestrial career.

"The scientist does not study nature because it is useful; he studies it because he delights in it, and he delights in it because it is beautiful. . . . Of course I do not here speak of that beauty which

strikes the senses, the beauty of qualities and appearances; . . . I mean that profounder beauty which comes from the harmonious order of the parts and which a pure intelligence can grasp. This it is which gives a body, a structure, so to speak, to the iridescent appearances which flatter our senses, and without this support the beauty of these fugitive dreams would be only imperfect, because it would be vague and always fleeting. . . . And we need not fear that this instinctive and unavowed prepossession will turn the scientist aside from the search for the true. One may dream a harmonious world, but how far the real world will leave it behind! The greatest artists that ever lived, the Greeks, made their heavens; how shabby they were beside the true heavens, ours!

"And it is because simplicity, because grandeur, is beautiful, that we preferably seek simple facts, sublime facts, that we delight now in following the majestic course of the stars, now in examining with the microscope that prodigious littleness which is also a grandeur, now in seeking in geological time the traces of a past which attracts because it is far away.

"We see, too, that the longing for the beautiful leads us to the same choices as the longing for the useful. . . .

"Whence comes this concordance? Is it simply that the things which seem to us beautiful are those which best adapt themselves to our intelligence, and that consequently they are at the same time the implement this intelligence knows best how to use? Or is there here a play of evolution and natural selection? Have the peoples whose ideal most conformed to their highest interests exterminated the others and taken their place? All pursued their ideals without reference to consequences, but while this quest led some to destruction, to others it gave empire. One is tempted to believe it. If the Greeks have triumphed over the barbarian, and if Europe, heir of Greek thought, dominates the world, it is because savages loved loud colors and the clamorous tones of the drum which alone occupied their senses, while the Greeks loved the intellectual beauty which hides beneath sensuous beauty, and it is this intellectual beauty that makes intelligence sure and strong."[20]

The "Dernières Pensées" gives us our only glimpse of Poincaré's moral philosophy,[21] and much of the discussion here is limited to the relations between science and morals. Morality for Poincaré is ultimately based on feelings, hence there can be neither a scientific morality nor an immoral science. Science can help us to foresee what consequences follow if we act in a certain fashion. It can also cultivate

[20] "Science et Méthode," Ch. I.

[21] *Loc cit.*, Ch. VIII., "La Morale et la Science"; Ch. IX., "L'Union Morale."

our sense of harmony and our love of truth. It can develop habits of generalization so that we can see the furthering of our personal interests as subordinate to wider interests, but it can not prove a moral law and must contradict our idea of liberty, except in the sense in which Fouillée construes this idea itself as a moving force. Half science only is dangerous, for facts remain what they were before they were articulated in scientific language. The power of morality can not be weakened by an understanding of its secret force: "Is gravitation less irresistible since Newton?" Life presents itself as a strife in which now this and now that triumphs, and moral education consists in organizing this strife to make as efficient as possible our energies which are, in this relation, our feelings.

And the popular attitude toward science, as expressed by the appropriations of governments, recognizes its ideal value. Astronomy is one of the most expensive of the sciences, from the point of view of research, yet governments never hesitate. And how is astronomy useful?[22] It raises us above ourselves and makes us conscious of our power through its eternal presentation of harmony and law. It is a prototype for our analysis of matter. "The stars send us not only that visible and gross light which strikes our bodily eyes, but from them also comes to us a light far more subtle, which illuminates our minds. . . ." Astronomy taught man that there are laws from which he can not escape, and with which there is no possible compromise. It has taught him also the essential character of law, for from Newton he first learns that law is a necessary relation between the present state of the world and its immediately subsequent state. It has also taught us to set aside appearance. "The day Copernicus proved that what was thought the most stable was in motion, that what was thought moving was fixed, he showed us how deceptive could be the infantile reasonings which spring directly from the immediate data of our senses." It has freed us from the illusion that the world is made for man and it has taught us not to fear big numbers. It may be that the stars will become a "majestic laboratory" and "gigantic crucibles" for the chemist; "perchance, even, the stars will some day teach us something about life." Indeed, Poincaré is fond of repeating, it is astronomy that "has made us a soul capable of comprehending nature."

The value of science does not, then, rest in any material achievement in a utilitarian sense, and it is not a mere servant of man through which he attains a dull mastery of an existence which he can subject to his caprice, but science is rather the assertion of that cosmic law through which man becomes more finely molded than the beasts. And everywhere it is mankind, and not men, that truly

[22] "La Valeur de la Science," Ch. VI.

succeeds, and truth, in the legitimate sense of the abstraction, rather than loved truths. "Just as humanity is immortal, although men suffer death, so truth is eternal, although ideas perish, because ideas beget ideas as men beget men."[23]

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MUSIC AND EMOTION

THE esthetic emotions have long figured as one of the least understood parts of the subject-matter of psychology. Psychologists have called these emotions "pseudo-emotions." And, after bestowing upon them such an uncomplimentary title, they proceed to admit that upon the whole "they are something of a mystery." The name, "pseudo-emotion," seems to imply a suspicion that the arousal of emotion through the arts is in some sense not quite normal. Works of art are contrasted with ordinary stimuli as "artificial" to "natural" stimuli. However, when one recalls the age-long alliance between music and the dance, between music and religion, and between music and song, such a contrast seems to be inappropriate. The universality with which music is utilized as a means of man's self-expression would afford indication of the accommodation of the organism to such stimuli. The writer is convinced that, at bottom, music (and all the other arts, for that matter) rests upon the exploitation of that sort of exciting agency which is the "natural," innately appropriate, and adequate stimulus for the calling forth of an emotion through the excitation of the sense-organs. In this paper I wish to undertake to throw some little light upon the connection of music and emotion. The mechanics of the correlation admit of a certain amount of explication. I must preface my remarks, however, with the admission that I can offer little more than suggestions of the direction in which research, I believe, might profitably proceed.

The point of difficulty in understanding the connection of music and emotion is not the general fact that music arouses emotion, but the necessity of finding specific differences in the music-stimuli to account for the specific differences in the various emotions aroused. Air-vibrations seem to be a most colorless medium. That mere air-vibrations should form an exciting agency for the whole gamut of human feelings, its martial ardors, its loves and hates, its joyances and sadnesses, is truly an astounding fact! Equally astonishing in their own way, doubtless, are the effects of pigment and pencil, marble and bronze, and the word-jewelry of the poet. But the medium of music apparently is so diaphanous and intangible, and its

[23] "Savants et Ecrivains," page 175.

appeal so intimate and organically profound, that the ostensible inefficiency of air-vibrations to elicit such responses seems all the more glaring.

It is to be noted, to begin with, that the feelings evoked by sound are often regarded as less definite subjectively than feelings as ordinarily occasioned. In every-day cases of the experience of emotion we can generally specify the object which has called forth the emotion. Or, more correctly stated, the tangibility of objects and situations to which we react emotionally and the frequency with which certain practically identical situations lead to emotional response lend a definiteness to ordinary emotions that is obscured when the stimulus has the intangibility of tonal air-vibrations. With certain exquisitely organized individuals, however, musically evoked emotion appears to be as precise and meaningful as a beggar's rejoicing over the gift of a needed coin. How to explain this definiteness for some individuals is a somewhat involved problem.

Music arouses various kinds of emotions, and there must be some sort of differences between one bit of music and another to parallel the differences in the emotional responses the several pieces of music produce. Why one piece of music gladdens and the other saddens must ultimately be explained by differences in the sound-complexes. This is the crux of the problem. The question is: what differences in the various complexes of air-vibration can be found to account for the specific differences in the experiences of the listener?

On the one hand we have the emotion, on the other the stimuli, that is, air-vibrations. The emotions are varied. They are not vague, at least not to the musically enlightened. They possess a certain exactness, a definitive outline. Often we recognize and name them. Such and such music renders us gladsome; other tone-sequences depress. Some we call funereal. Other musical phrases are indubitably provocative of other frequently experienced emotional tones. If then the emotions differ specifically we must seek specific differences in the stimuli to correlate therewith, just as we correlate one vibration rate of the ether with a certain red, another with a certain green, and so on. Pieces of music resembling one another in emotional value we should expect to find resembling one another in structure. I hope to be able to show that such specific differences exist and such a correlation can be found.

There are two factors to be laid bare. The first concerns our innate organization. The second deals with the familiarization, through the experience of the individual, with certain musical conventions and the myriad associations that go to determine our reactions. It is obvious that the second depends on the first; it arises as a result of, and, as an inheritance, tends to develop further, the first factor.

The first factor is biological: the second is a product of history. The latter represents the elaboration and utilization of the material afforded by the first factor.

To begin with the first factor. For the purposes of this paper we need not consider in detail the various theories concerning emotion and instinct. The interrelation of the two is pretty generally admitted. Now it seems clear that certain types of stimuli are what may be called the organically appropriate and adequate stimuli for evoking instinct and emotion. Furthermore, the bodily expression of an emotion in one individual is often itself a sufficient stimulus to elicit a similar reaction in other individuals. One animal in a herd may be frightened by some unusual occurrence and this, as we say quite properly, is contagious, so that it is communicated to the others of the herd. Yet these others may not have been at all aware of the unusual occurrence. Similarly, with regard to human beings, we speak of the contagion of joy.

In the human being, too, an emotion may result from the occurrence of the appropriate stimuli. And certain broad differences in a given type of stimulus, such as sound, will determine general divergences in the responses. The manner in which the stimulation occurs, and of course the condition of the organism, will also be partial determinants. Thus a loud sound, unexpectedly sudden in its appearance, is apt to cause almost any one to experience fear. In the human herd, too, emotions will arise in one as an organic echo of a disturbance in another person. The infant vibrates emotionally in response to delicate shadings in the voice of the mother even before it understands her words. With increasing experience we learn to react to slighter and slighter differences in the intonation of voice and to subtler and subtler distinctions and nuances in stimuli. The effects secured by the art of acting depend largely on these facts. These slight differences, acquiring different sets of widely ramifying associations, become pulled further and further apart. As a consequence the reverberations of our organisms become more and more correlated with these nuances that may be undiscriminated by consciousness.

It is in this fact of our innate organization that determines us to respond to stimuli in certain more or less definite ways that I find the primitive link between music and emotion. To the extent to which a given piece of music considered as complex air-vibration resembles the vibration-complex which is the stimulus that, with reference to our innate organization, is the appropriate stimulus for a certain emotional response, to that extent will the piece of music evoke that same emotion. Neglecting minor elements in the process, we can put it in this way: if a sound-complex, characterized by mov-

ing in a certain range of pitch, with a general movement tendency within the range, and also distinctive in coloring owing to its overtonic complex, larger and smaller periodicities of rhythm, and so forth, produces a given type of emotional reverberation; then a sound-complex represented by a piece of music that is known to evoke that same type of emotional excitement will be found to have a general resemblance to the first sound-complex. In the same manner the sound-complex of a human voice *expressing* this sort of emotion will resemble the two other sound-complexes. The vocal expression, the "musical" sound, and the organically appropriate stimulus will be found to resemble one another. They will not be identical, of course, but taken in the large they are similar. The music (which presumably is the resultant of an emotionalized condition of the composer) resembles the vocal expression of the emotion simply because the art of composing depends ultimately on the exploitation of what I have called the primitive link between stimulus and organic tendencies to respond.

We have a great deal of more or less direct evidence in support of this contention. Since the correlation between bodily attitude and expression on the one part, and the emotion, on the other, is rather definite, we may consider the resemblances of bodily expression and music and in this wise find the correspondences between the music and the emotion.

Consider martial music as an example. The readiness with which one falls into step in obedience to its rhythm, the erectness of bearing, the general tightening of the muscles, the flash of the eye, and the heightening of bodily tone can be observed in almost every listener. Of course, such attitudes are most apparent in the naïve unreflecting person, whose actions are not constrained by the petty inhibitions of convention; for some people seem to believe that they are lapsing into barbarism whenever they permit free expression to an emotion. Now consider the music itself. All martial music shows, as a rule, certain general uniformities. Its characteristic range of pitch which various examples approximate is indicated by the predominance of the brass in such music. The melody, the focal point of attention, is most frequently given to the brass, especially to such instruments as the cornet, trombone, and horns in general. Military music has always been the music of the brass. The walls of Jericho fell to the sound of trumpets! A certain vigor and obviousness of accent and forward propulsion characterize the rhythm, and the fitness with which the martial step conforms thereto is evident. And brass instruments, and, so far as I can discover, instruments like the fife and bagpipes, tend to approximate a characteristic wave-form. Such instruments are said to owe their timbre largely to the pre-

dominance of the higher overtones coincident with the relative feebleness of the lower overtones. These instruments form the center of gravity of a military band. Now in the same connection, consider the human voice. The martial thrill is apt to voice itself in upward tendencies of pitch within a range somewhat higher than in ordinary moments; it also is apt to become more vibrant, sharper, brighter. In this we see a general resemblance to the martial music. That is, the vocal expression resembles the musical expression, and both fitly parallel the bodily attitude.

I do not pretend, of course, to have exhausted all the factors in this account. Suffice it to show that there is a resemblance, and that various pieces of martial music resemble one another as much as various martial emotions resemble each other.

The dance affords further corroboration of my point. When dancing is an art, we find that the music, the bodily movements, and the emotional reactions show mutual congruity and compatibility. A striking, if somewhat notorious, example of this is to be found in the correlation of "rag-time" and what is called "rag-dancing." A musician once told me that the sorts of dancing, indiscriminately called "rag," were the true movement corrolaries of "rag-time" music. One has but to observe a negro ragamuffin dancing along the street to appreciate the truth of the statement.

The opera affords a more complex and yet more exact confirmation. Here the unity of effect is secured by the congruity and concordance of several elements: the music of the orchestra, the voice of the singer, the words sung, and the acting proper. We can sometimes discern that the music of the orchestra does precisely what the human voice (not necessarily a singing voice) would do when freely giving vent to the very same emotion that the music of the orchestra is supposed to portray. Examine similar tragic moments in the scores of various operas—they will be found to have certain general uniformities of structure. And the human voices in moments that are tragic resemble one another in pitch, tone-quality, and the like. Furthermore (and here is the essential point), the vocal expression and the music also resemble each other. Why then the music evokes that sort of an emotion is easy to see.

For illustration we can take Wagnerian motifs. The motif of Isolde's exaltation in the love-death, the motifs of the Redemption by Love, the Sword, the Siegfried, Guardian of the Sword, show similarities amidst their differences. And they are similar in type, although differing specifically, in their emotional value. The exaltation of Isolde, the exaltation of the Redemption by Love, the heroism of the Sword, and the Siegfried are all emotions that elevate and uplift. Perhaps we may make a very general division of emotions

into two classes: those whose tendency is uplifting and those whose tendency is depressing. The four motifs mentioned would then fall into the first class.

Now as regards the sound-complexes, all four show an upward tendency in pitch; the first two rise rather high in the scale of pitch. The latter two are enunciated principally by the brass, but move through a lower range of pitch; they lie well within the range that is associated, as seen in many examples of music, with the heroic, the valorous, and the martial. The interesting correlation is that all four move upward in the scale of pitch, all four are of the class we have dubbed uplifting, and this upward movement is generally characteristic of the human voice when expressing freely such emotions.

An illuminating contrast is afforded by motifs like the oath-motif, the dragon-motif, the fate and death motifs, and the music accompanying Hagen. They express the fearful, the awesome, the terrible, the tragic. Their range of pitch is low, very low; the movement is downward, and the sound-complex is properly rough and raucous. Consider the human voice under the dominance of the terrible, the awesome, the tragic—does it not evince the same general characteristics? It is certainly not smooth, mellow, or mellifluous; on the contrary, it is apt to be hoarse, cacophonous, low-pitched, even sepulchral.

Turn to songs. The analysis of a really successful one lays bare important correlations. Suppose that the song is a poem of real merit set to befitting music. It can be observed that the emotion verbally expressed is closely paralleled by the music: climaxes coincide; transitions from major to minor and the reverse coincide with similar transitions in the poem. And the singer's voice, obedient to the music, works in a manner similar to its changes if the poem were properly read instead of sung to music. Pushing the point further back, we see that the music is emotionally adequate because it has exploited the organically appropriate provocative of the emotion, and so parallels the vocal expression of the emotion.

This should be sufficient to indicate that there is a general analogy between the sounds in music which call up a certain type of emotion and the tendencies in the vocal sounds that commonly occur in the expression of that same emotion. So far, it is true, I have emphasized only the sound-complex, and there are other factors of great, if not of equal, importance. Tempo, for example, enters in decisively in some cases. We can sometimes infer from the gait of a man something concerning his mood. A brisk, tripping step is very different from a slow, heavy, dragging pace. Two tempos in music, so contrasted, differ as strikingly in emotional value. It is as difficult to conceive of a funeral march in anything but a slow, solemn tempo as it is to

imagine a mourner skipping along happily in the funeral procession. Sadness of heart and a nonchalant demeanor are as incompatible as a funeral march played in a gay swinging tempo is artistically impossible. And the artistic impossibility of the latter is directly dependent upon the physiological incompatibility of the former. Tempo, therefore, is also a determinant of the emotional value of sound.

Rhythms of a subordinate nature are also effective elements in calling to life emotional attitudes. Subordinate rhythms within the larger rhythm of the musical measure are often so prominent as to indicate national types of musical composition. In that musical glorification of the unexpected, "rag-time," these minor rhythms are the chief determinants of the effects of such music. It is worth noting in this connection that "rag-time" requires a rather peculiar sort of temperament and a rather definite sort of mood in the performer in order that it can be played in such a manner as to please even those to whom such productions are worthy of attention. At the hands of certain rare individuals, "rag-time" playing is almost an art. And the elements of the rendition that make it attractive to some persons are elements that are not indicated in the score. The performer literally has to read them into the score. In the last analysis it turns out to be mostly a matter of subordinate rhythm and accent.

There are still other lines of evidence that might be appealed to in corroboration of the general contention. Onomatopoetic words, vowel sounds, and the like, throw light upon the point. Sufficient has been given to show, however, that in music the primitive link which relates music to the heart of our inner lives, and so to human instinct and emotion, is the utilization of the innate correlations between sound-characteristics and emotion, and the additional fact that the habitual expression of an emotion on the part of one person is itself apt to evoke a similar emotion in others. Music has seized upon this connection, and in all its development has never disavowed it. In the history of the growth of musical theory and the means of musical expression, this innate correlation of stimulus and response is the starting-point, the propulsive force, and the raw material of the movement.

A word of caution is appropriate in this place. One must not over-rationalize the process of musical expression. One can not assume that the composer is aware of the psychological and physiological facts upon which his art depends. His choice of key, of mode, of tempo, of orchestral emphasis, is regulated by their felt appropriateness to his mood and emotion. Or if we say that such choices are determined by the technique of his art, that technique is

continually being justified by his reactions to the effects of the laws of his art. Musical theory did not create itself. Mathematical relationships may underlie all music, but mathematics did not give us music. And just as we must not over-rationalize the composer, we must not over-rationalize the auditor. The listener reacts immediately to the music; or if his attitude has the aloofness of critical judgment, the basis of the criticism is the felt appropriateness of the music.

So much for the innate factor. The second factor, the influence of experience, of associations and conventions, supervenes upon the innate factor and develops it. We learn to associate types of music with activities, events, sentiments, and moods. Think of the associations that cluster about a funeral march! Or a mass of Gounod! One may say that it is now a musical convention that a certain sort of music should have such and such a characteristic range of pitch, such and such tendencies within the range, and such and such tempos. But convention, however developed in the theory of the art, does not explain its own origin. Funeral marches have certain recognizable characteristices because at bottom such characteristics are an adequate means of expression for a given emotion and the adequate stimulus for the arousal of that emotion.

This does not diminish the significance of the rôle of history in our experiences of music. Intervals that are regarded as harmonious owe to history their acceptance as harmonious. Only a few decades ago augmented chords were scandalous bits of futurism. The daring of the whole tone scales of Debussy will probably have disappeared for the composers of a few decades hence. We shall learn to react to such things just as we have learned to react to the innovations of Wagner. Conventions and associations that determine our responses are as much a product of the development of music as they are a cause; and they are neither cause nor effect without the innate susceptibility of the organism of which so much has been said. Conventions, associations, familiarizations—in a word, the sum-total of our musical experiences—do not explain the intensity and imaginative sweep of our reactions. It is necessary to realize that such influences have their *raison d'être* in our innate structure.

A final objection remains to be met. It may be said that there is no such uniformity or constancy in our reactions as this contention would lead us to expect. We do not always respond to a given piece of music in the same way. Our responses vary from time to time and from individual to individual. To this objection, however, one might retort that there is as much constancy and uniformity in our reactions to music as there is in our reactions to anything at all. Besides, I believe it could be maintained that there is greater uni-

formity the higher the type of music considered. That uniformity may be obscured by the fact of the extreme complexity of a symphony as compared with a simple song, and the further fact that only a small minority of people react to any extent emotionally to the higher kinds of music. This may be due to lack of innate susceptibility, or lack of experience, or what not. After all, many are called to hear popular tunes, but few are chosen to hear symphonies. However this may be, I think the objection may be disposed of if it is remembered that a response is determined as much by the condition of the individual at the moment as by the stimulus.

It is apparent that if our position be tenable, the modern orchestra is the most adequate means that we possess of expressing that which can be expressed musically. This statement would doubtless receive general assent. There are tone-complexes that can not be produced save by the orchestra; there are literally some musical thoughts that can not be expounded save by the orchestra. The solo instrument, within the range of its possibilities, produces its effects by approximating the sound-complexes to which we are organically resonant. And the human voice is the most flexible of all instruments, for the stimulus it affords is the direct expression of an emotion.

When one considers the complexity of the phenomena which I have been trying to analyze, a lack of definiteness and simplicity of formulation in the results seems somewhat excusable. Many musical experiences remind one of religious experiences. The difficulty of analyzing the latter is well known. I have only striven to show that the power of music over those "whose heart-strings are a lute" is not wholly inexplicable. To such as these, the magic of tone and the wings that music lends to imagination are phenomena so profound that nothing less fundamental than inherited tendencies of our organism would afford a satisfying basis of explanation. Our responses to such stimuli themselves unavoidably suggest that the secret power of music arises from, and comes to rest in, certain intricate tendencies of our innate structure.

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THE SYSTEM OF TRANSCENDENTAL VALUES

A FEW years ago[1] the present writer offered certain suggestions on the problem of the classification of values. Three general groups were distinguished—factual, ideal, and transcendental values. The first group was defined as involving adjustment of the organism to its environment, and included the values of logical truth, utility,

[1] This JOURNAL, Vol. VII., pages 282–291.

and agreeableness; the second group was defined as involving a felt harmony between the organism and some part of its environment, and included the values of beauty, goodness, and religious truth; the third group was defined as involving a complete harmonization between the organism and its entire environment, but the task of naming the values in this group was postponed to some future time. I now seek the opportunity of completing this unfinished task.

In my former article, factual values were entitled "values of adaptation," ideal values, "values of harmony," transcendental values, "values of perfection." At this time it seems better to name the last group "values of completeness." Notwithstanding the ill-repute into which idealism, especially in its absolutist form, seems to have fallen in recent years, I make no apology for taking my position on this unpopular platform, nor for using the despised term "transcendental" to name one of the classes of values. Absolute idealism has its devoted defenders, who need no assistance from me, so I take its standpoint for my own without feeling called upon to defend that position.

By the transcendental, it was explained in the former article, "is meant the ultimate and complete as contrasted with the instrumental and fragmentary." Logical truth, utility, and agreeableness bring us into contact with our environment, but not into harmony with it: beauty, goodness, and spiritual truth bring us into harmony with parts of our environment, but not with the whole environment. Partial comprehension without actual felt harmony is won through our contact with facts, partial harmony without comprehension through our absorption in the ideal; but "a completely rational and comprehensive attitude toward the world is won only by a thorough recognition and realization of the harmony of all reality," and of our relations therewith. Perhaps light will be thrown on the problem of the transcendental values from our former consideration of the concept of meaning.[2]

A fact, we have seen, has meaning so far as it is related essentially to some other fact, but the *complete* meaning of any fact involves all its relations to every other fact in the universe. In the universe, however, there are three distinct categories of facts—facts of the physical world, of the mental world of each individual self, and of the social world of interacting selves—facts of the outer world, of the inner world, and of the fellow world, as Münsterberg calls them[3] —or, more briefly still, physical, mental, and social facts. Though the meaning of any particular fact may be defined in part in terms of some other particular fact, it is more fully defined in terms of the

[2] This JOURNAL, Vol. XI., page 184.

[3] "The Eternal Values," page 80.

general category to which that fact belongs. Thus, the meaning of any particular physical fact is with any degree of completeness determined only by its relations to and in the entire cosmic system, the meaning of any particular mental fact by its relations to and in the entire stream of individual consciousness, and the meaning of any particular social fact by its relations to and in the entire social organism.

But are these larger wholes themselves meaningless? The scientific concept of nature as a cosmic system may serve to give meaning to physical facts which in their isolation would be meaningless, but what is the meaning of the cosmic system as a whole? The scientific concept of evolution may be of value in explaining certain particular facts, in that a given fact may be said to have a purpose so far as it promotes the general evolutionary development of nature: but what purpose does the evolutionary process, as a whole, fulfil? These are philosophical questions, and their persistence in men's minds bears witness to an instinctive dissatisfaction with the merely scientific view of nature. This dissatisfaction idealism overrules by its concept of a spiritual world underlying nature, a world-purpose which transcends the mere causal succession of phenomena, and gives them a deeper meaning and an eternal value.

In the same way mental facts are meaningless apart from the stream of personal consciousness of which they are passing phases, and acquire meaning only in relation to that entire stream; but is the stream itself meaningless? It may be true that mental facts have for their purpose the furtherance of the life of the individual, but has that life in its wholeness no purpose or value? Psychology the science generalizes no further than the stream of consciousness, but the idealist insists that personality, selfhood, lies deeper than the stream of mental states, and that the assertion of a spiritual life transcending the natural is necessary to give meaning, purpose, and value to the series of mental facts.

In the same way, again, the individual self may acknowledge his insufficiency apart from the community, may find his complete meaning and value only in his relations to humanity at large, and may conceive his life-purpose to be to share in the life of his fellow-men and advance the interests of civilization. But what is the meaning of humanity? what purpose does society, as a whole, fulfil? is civilization itself valuable, and if so why? Again we find a host of questions pressing for solution, and in reply the assertion of a spiritual life underlying and binding together, not only the separate mental processes of the individual conscious stream, but also the separate individual members of society.

But we must not postulate any dualism between the facts and the

values thus distinguished. The spiritual world is no double of nature, but nature itself spiritualized or evaluated, infused with meaning and purpose. We may as scientists analyze the fact called nature, or we may as philosophers interpret the meaning and value of nature. So the spiritual life of the individual is not a separate life parallel to the natural life, but the natural life spiritualized or infused with meaning: the psychologist may analyze the fact called mind, but the philosopher seeks to understand the personality revealed through the separate mental processes. So, again, it is the spiritual significance of social life, not the phenomena of that life, in which the social philosopher is interested; but the phenomena and their significance are of course inseparable.

Relatively complete meaning, then, is given to nature in the recognition of nature as a partial expression of spirit, to our individual mental life in the recognition of it as a partial expression of an eternal spiritual life, to our social life in the recognition of it as a partial expression of a universal spiritual life. These are our "transcendental values" which complete all lesser values. But such completeness is still only relative: the final step in the interpretation of the three "worlds"—physical, mental, and social—consists in their correlation and unification as still partial expressions of an Absolute Being. If the Absolute comprehends all reality, every fact which means anything at all will find its complete meaning only in that Absolute; if the Absolute is a living reality, every purposeful fact must have for its highest purpose the sharing in the life of the Absolute; if the Absolute is personal, every finite self must find its deepest and most lasting satisfaction in the Absolute Self.

In religious worship man feels himself to be living this higher spiritual life in intimate relationship with the spiritual world. This spiritual world the religious man calls Heaven, the spiritual community the Kingdom of Heaven or Kingdom of God; the Absolute Self he denominates God, and his individual personality he calls his soul. Philosophers shrink from the use of these terms because of their varying and often extremely vague religious connotation, harboring a special contempt for what religion calls "the immortal soul." The latter antipathy is, I am convinced, due largely to the substantialist doctrines usually connected by the "plain man" with his notion of the soul: regard the soul as a substrate, and the objection fairly holds —think of it in terms of meaning, purpose, and value rather than of substance, and the objection holds no longer. Considering that the ordinary religious man talks of his "soul" with such freedom and innocence of offense, and probably will continue to do so to the end of the chapter, it would seem to at least one humble philosopher better worth while to attempt to clarify this notion, than to expend vain

efforts in the futile endeavor to destroy it. The term "heaven" we may think it best to surrender to religion for its exclusive use, but "God" and "the soul" philosophy needs as well. Religion is a life of communion with God and the spiritual world: Philosophy an attempt, but only an attempt, to understand this life and its objects. In these pages we have been making this attempt through the instrumentality of the concepts of meaning, purpose, and value.

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REVIEWS AND ABSTRACTS OF LITERATURE

Immanuel Kant's Leben. KARL VORLANDER. Philosophische Bibliothek. Band 126. Leipzig: Verlag von Felix Meiner. 1911. Pp. 223.

It is rather astonishing that so little should have been written on the life of Immanuel Kant when his doctrines are dealt with in thousands of volumes. The biographies of Arnoldt, Rudolf and Johannes Reicke, Warda, and others are incomplete accounts presenting to us only certain parts of his life. Even in the works of Kuno Fischer, Paulsen, and Kronenberg the biography constitutes merely an introduction to the study of Kant's system of philosophy. Schubert's biography, published seventy years ago, was the only complete account that we had of the life of Kant. And yet, as Vorlander points out, Schubert's edition adds nothing new to the former publications,[1] contains many inaccuracies, and valuable as it was for its own time, has now become obsolete in the light of the new facts revealed by the more complete publication of Kant's letters, and by the last ten years of fruitful investigations.

Vorlander sets himself the task of presenting a complete account of Kant's life chiefly from his own correspondence and from documents now at our disposal. Although he endeavors to avoid controversial discussions, he subjects former biographies to sharp criticism and many are the errors which he points out in those works.[2] The book contains six chapters and is supplemented by two pages on the sources, a chronological table, and an index of proper names. Side by side with Kant's life we have a picture of his time and a very interesting account of Kant's successive relations with Knutzen, Green, Haman, Herder, Lambert, Moses Mendelsohn, and others.

As an analysis and historical development of the philosopher's thought has already been given in Vorlander's edition of Kant,[3] to which the present volume is a supplement, he studiously avoids here the exposition

[1] It does not seem to mark a great advance on the edition which appeared immediately after Kant's death under the common title of "Immanuel Kant," the well-known joint publication of three different works written by Borowski, Yachman, and Vasianski, and published by Frederick Nicolovius (Koenigsberg, 1804).

[2] See pages 2, 5, 11, 16, 18, 19, 25, 35, 41, 63, 164.

[3] *Cf.* the "Philosophische Bibliothek."

and criticism of Kant's works. Only of a few of the least known writings of 1750 and 1770 is an attempt made to give an analysis, as these were not included in the Bibliothek edition. Moreover, he purposely omits the treatment of Kant's attitude towards politics, religion, and art, reserving this, as he tells us, for a future volume.

In thus systematically remaining within the biographical limits the author succeeds in presenting us a simple and natural narration not only of the outer events, but also of the inner life of Kant. He has shown us that this very simple and quiet life, devoid of external commotions, and with few great epochs, was not without its inner emotions and conflicts which, when understood, throw light on Kant's moral doctrines. Vorlander's deep insight can be seen in his most interesting account of Kant's inward struggles at the time when the reactionary government of Prussia forbade him to teach his own philosophy. The philosopher of the categorical imperative who bids us not to lie even when the life of a human being is at stake faces the necessity of being sincere with himself at such a critical moment in his life. From some of his papers at that time we find that he seals his struggles with the consoling compromise that "if everything we say must be true, it is not our duty to divulge all truths." We have in Vorlander's volume many other picturesque portraits of Kant at the height of his powers and also some very touching ones as an old man abandoned by all his friends and even by his own mind.

This volume leaves us with a somewhat different impression of Kant than most of the biographers are wont to give us. Here we have not the secluded and solitary Kant, "who was born, lived, and died in Koenigsberg." But it is the more human side of this stern philosopher that is put before us. We see him not only in the class-room with his pupils, but also in the kitchen with his servants, teaching his cook the transcendental principles of cooking. It is a Kant of universal interests that could even write a "Kritik der Kochkunst," as his friend Hippel said of him.

The style of the book is pleasant, clear, and almost picturesque. Those acquainted with Vorlander's other works on Kant will find here the same clearness and scientific scrupulousness that characterize them.

NIMA HIRSCHENSOHN.

Advertising and Selling: Principles of Appeal and Response. HARRY L. HOLLINGWORTH. New York: D. Appleton and Company. 1913. Pp. xiv + 314.

As stated in the preface, this book has resulted from the cooperative attempt, on the part of a group of practical business men and one or two individuals whose interests were chiefly scientific, (*a*) to formulate and systematize those facts and laws which relate to the processes of appeal and response in the selling and advertising of goods, and (*b*) to undertake investigations which might result in the discovery of new facts and principles of both practical and scientific interests.

Especially worthy of consideration is the theoretical discussion and the report of experiments having to do with methods of attracting attention. The conclusion is reached that the greatest change in modern meth-

ods of advertising is to be brought about by a substitution of interest incentives for mechanical devices as a means of attracting attention.

Under the discussion on association of ideas the observation is made that the business men are violating some of these laws in a most unfortunate way. They are causing us to think watch when we think of Ingersoll. They should cause us to think Ingersoll when we think watch. They teach us to think of Christmas presents when we think of Copley Prints. They should teach us to think of Copley Prints when we think of Christmas presents.

Experiments are described in which the relative merits of typical types of appeals were determined by laboratory methods. Actual advertisements were also tested in the same way. Based upon these experiments, the inference is drawn that the advertisers could avoid much needless expense by thus testing types of appeals and concrete advertisements before running the advertisements in the magazines and newspapers with the necessary enormous expense.

This contribution to applied psychology is a model in that it sacrifices nothing to popularity and at the same time is interesting and practicable. Each chapter is worthy of study by both the practical business man and the professional psychologist. In this book we have another example of the value of the behaviorist's point of view.

WALTER DILL SCOTT.

NORTHWESTERN UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE DE METAPHYSIQUE ET DE MORALE. November, 1913. *Sören Kierkegaard* (5th May, 1813—5th May, 1913 (pp. 719–732): H. HÖFFDING. – A discourse delivered at the University of Copenhagen at the centenary of the birth of Kierkegaard. The author treats of his double character as a philosopher of personality and critic of philosophy. The dominant feature of his work is his study of the ethico-religious problem. *La relation des jugements* (pp. 733–751): E. GOBLOT. – Believing that verbalism has obscured all logic, the author seeks to get behind propositions and relate the judgments that are expressed by them. *La conscience transcendentale, critique de la philosophie Kantienne* (pp. 752–786): C. RADULESCU-MOTRU. – Those who have continued the philosophy of Kant were deceived by an error in his psychology or they would not have sought the material origins of *a priorism* in genius, in society, in the will, in the *élan vitale,* etc. *Etudes critiques. La philosophie de l'histoire de Julius Bahnsen d'après des documents inédits:* I. TALAYRACH. *Questions pratiques. La morale sexuelle:* TH. RUYSSEN. *L'individualisation de l'impôt. Table des matières.*

Blondel, Charles. La Conscience Morbide. Paris: Félix Alcan. 1914. Pp. ii + 336. 6 F.

Bradley, F. H. Essays on Truth and Reality. Oxford: Clarendon Press. 1914. Pp. xxvi + 480. 12s. 6d.

Coffin, Joseph Herschel. The Socialized Conscience. Baltimore: Warwick and York. 1913. Pp. viii + 247. $1.25.

Derworn, M. Die Mechanik des Geiteslebens. Leipzig: Verlag von B. G. Teubner. 1914. Pp. 92. 1.25M.

Falkenfeld, Hellmuth. Wort und Seele. Leipzig: Verlag von Felix Meiner. 1914. 2.50M.

Hasse, Heinrich. Schopenhauers Erkenntnislehre. Leipzig: Verlag von Felix Meiner. 1913. Pp. ix + 217. 6M.

Von Ihering, Rudolf. Law as a Means to an End. Boston: Boston Book Company. 1913. Pp. lix + 483.

Joël, Karl. Die Philosophische Kritis der Gegenwart. Leipzig: Verlag von Felix Meiner. 1914. Pp. 56. 1.40M.

Medicus, Fritz. Fichtes Leben. Leipzig: Verlag von Felix Meiner. 1914. Pp. v + 176. 3M.

De Poulpiquet, E. A. Le Miracle et ses Suppléances. Paris: Gabriel Beauchesne. 1914. ii + 321.

Prince, Morton. The Unconscious. New York: The Macmillan Company. 1914. Pp. xiii + 549. $2.00.

Richard, Gaston. La Question Sociale et le Mouvement Philosophique au XIXe Siècle. Paris: Librairie Armand Colin. 1914. Pp. xii + 363. 3.50 F.

NOTES AND NEWS

At a meeting of the Executive Committee of the American Philosophical Association in New York City, on March 8, it was voted that the next meeting of the association be held in Chicago on December 28, 29, and 30, in conjunction with the Political Science and American Historical Associations. The three associations will participate in a joint discussion on a topic to be announced later.

For discussion in the Philosophical Association, the following topic is proposed:

"The interpretation of justice, with special reference to problems forced to the front by present economic, social, and political conditions."

A more definite formulation of this topic will be announced after another meeting of the Executive Committee in June. In the meantime members of the association are invited to offer, either by correspondence with the Secretary or by publication, suggestions looking to further definition of the topic and possible restriction of the scope of the discussion.

(Signed) E. G. Spaulding,
Secretary.

A Conference on Individual Psychology was held at Columbia University, April 6–8, by former pupils of the Department of Psychology. Among the thirty-odd names appearing on the programme were those of Professors Brown, of the University of California, Woodrow, of Minnesota, Henmon, of Wisconsin, Jones, of Indiana, Breese, of Cincinnati, Ruediger, of George Washington, Gordon, of Bryn Mawr, Dr. Wells, of McLean Hos-

pital, Dr. Bruner, of the Department of Child Study of the Chicago Public Schools, and many from New York and vicinity. The topic of individual differences was considered on many sides, in regard to sense discrimination, reaction time, attention, intelligence, susceptibility to practise, as well as with reference to education, vocational guidance, pathology, and anthropology. At the close of the Conference, the members gave a complimentary dinner to Professor James McKeen Cattell, in recognition of the twenty-fifth anniversary of his first appointment as Professor of Psychology. He was presented on this occasion with a volume entitled "The Psychological Researches of James McKeen Cattell: A Review by Some of His Pupils," the authors being Messrs. Henmon, Dearborn, Wells, Woodworth, Hollingworth, and Thorndike.

THE following note on "The Art of Refusing Manuscripts" is reprinted from the *Journal des Debats:*

"Le rédacteur en chef du *Tsin Pao,* journal chinois, reçut un manuscrit qui ne méritait pas d'être inséré. Cet accident est commun à tous les directeurs; diverses formules sont employées, qui adoucissent la blessure en même temps qu'on la fait. On dit le plus souvent: 'Votre manuscrit est excellent, malheureusement il ne serait pas compris du public.' Ainsi, l'auteur malheureux est exalté en même temps qu'évincé; le directeur se tire d'affaire tout en agissant d'autorité, et le lecteur est à la fois calomnié et épargné.—On peut encore invoquer la ligne du journal, ligne magique, mobile, et défensive, éternellement opposée au solliciteur. Si le sujet est neuf, il est facile de décliner l'honneur d'en parler; et s'il ne l'est point, il est aisé de refuser l'article. On peut encore invoquer l'absence de place, la susceptibilité des rédacteurs attitrés; on peut même accepter le manuscrit: c'est un des plus sûrs moyens de ne jamais le publier.

"Ainsi font les grossiers Occidentaux. Mais la politesse des fils du Ciel est exquise. Le rédacteur du *Tsin Pao* écrivit en retournant le manuscrit refusé: 'Très vénérable frère du soleil et de la lune! Ton esclave se courbe à tes pieds! Je baise le sol devant toi, et j'implore de toi la permission de parler et de vivre. Ton manuscrit, très vénéré, a passé entièrement sous nos yeux, et nous l'avons lu avec ravissement. C'est avec peur et tremblement que je vous le renvoie. Si je me hasardais à le publier, le président m'ordonnerait aussitôt de prendre ce bijou pour modèle, de ne plus jamais m'en écarter, et de n'avoir jamais la hardiesse de rien publier qui lui fût inférieur. Or, ma longue expérience des lettres m'a appris que de telles perles ne peuvent être produites qu'une fois, une fois tous les dix mille ans. C'est pourquoi je dois vous la rendre. Je vous en conjure, pardonnez-moi. Je suis à vos pieds, esclave de vos esclaves.'"

The Editors trust that all friends of this JOURNAL appreciate that these are their sentiments on any similar occasion.

Vol. XI. No. 10. May 7, 1914

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

A DEFINITION OF CAUSATION. II

PURSUANT to the empirical mode of investigating the causal relation which was explained and defended in the previous paper, we now take up the study of typical cases of causation. Following the outline already given, we consider first the types in the field of Mechanics. This field was divided into three parts: statics, dynamics, and transformation of kinetic into potential energy or the reverse. Under statics were found three principal laws or causal situations, first, that of the transmissibility of forces, second, that of the composition and resolution of forces, and third that of the moment of a force about a point as tending to produce rotation.

1. Cases of Mechanical Causation

Cases in Statics

"*Principle of the Transmissibility of Force.*—When a force acts on a particle, the force will produce the same effect if it be supposed applied at *any* point along a string connected with the particle, the string lying in the line of action of the force."[1] This principle is called an "axiom"; "it is one of the fundamental principles of rational statics, and in most treatises on the subject, it constitutes the basis of the investigation of the conditions of equilibrium" (p. 17). It holds only if the particle acted on remains the same as regards the relative positions of its parts, *i. e.*, if it is a rigid body. Stated in causal terms this means that a force acting at a certain point in a certain direction implies or determines its own existence at all points along that line. For if it were not conceived as already so existing, it could not be assumed at pleasure to be there. This elementary principle is by no means analytically self-evident; it is, in the Kantian sense, a synthetic judgment. Hence it needs explanation. In other words, it is desirable to see by virtue of what properties a force gets this implication. What is the constitution of the whole

[1] G. M. Minchin, "A Treatise on Statics," 5th ed., 1896, page 16.

situation? Let the force act at A in the line AX and the direction from A to X. Then the principle tells us that the force acts at an adjacent point A'. It also tells us that it acts at a point A'' adjacent to A', and at another beyond and adjacent to A'', say A'''—and so on. Only by such a series of points, taken near at will to one another, can the generality of the position of the force along the line be guaranteed. Notice that the series is *started* by two points: the original point of application and the *direction* of the force—for a direction needs two points to determine it. But the universality of the positions of the force is due to the fact that all the positions are members of the series which is thus started.

It is to be remembered that we are not here attempting to deduce the principle of transmissibility, but only to determine the conditions, observed and implied, under which it acts. As we shall meet series analogous to the above in later cases, further examination of it is at present deferred.

Composition of Forces

"If two forces be represented in magnitude, lines of action, and senses by two right lines OA and OB, their resultant is represented in magnitude, line of action, and sense by the diagonal, OC, of the parallelogram $OACB$ determined by these lines."[2]

In order to understand the meaning of this principle, we must ascertain what is meant by a force being "represented" by a right line of finite length. " . . . the magnitude of any force is estimated by the time-rate at which it generates momentum. Nevertheless in statics it is only the *tendency* which forces have to produce motion that is considered. . . . but the magnitude of each force is estimated none the less with reference to the amount of momentum which it would *actually* generate if it were completely unfettered by the action of other forces" (p. 9). The forces, then, which as causes combine to produce another force as effect must be understood as potential rather than actual motions; but their potential character does not prevent them from being actually present. They are in fact regarded as so present, and have different names, such as pressure, tension, attraction, repulsion. Thus, whatever philosophy may have to say of mere potentiality, science at least uses the notion to describe reality.

Next comes the analysis of the cause-effect relation here contained. The principle of composition is proved from the parallelogram of velocities. The latter is a matter of inspection. If a particle move in one second on a board from point A to point B, while the board is being moved so that the line AB passes without change of direction

[2] Minchin, *op. cit.*, page 9.

to the position *CD,* the body has possessed a velocity of *AB* per second and at the same time a velocity of *BD* per second; which is the same as one of *AD* per second. These two velocities are actually united in one body. Hence the forces, which are potential velocities, are also actually united, and without loss of identity on the part of either, into one new force. Superficially this appears to violate the law of contradiction. But it would not do so, even were we dealing with *real* motions; as shall be shown under dynamics. Were that not the case, however, it might still hold in statics: for the forces which combine are not actual motions, but potentialities. The law of contradiction as exemplified in space tells us that one line can not be another line, or one point another point; but it does not in the least imply that a *tendency* acting at one point can not be the same as two other *tendencies* acting at that same point. The law of contradiction tells us nothing at all about it; the whole matter is a question of fact. The concept of causation which is here employed by statics is, then, that of two terms in a certain relation (combination') uniquely determining a third, which is identical with the first two combined. The identity is thoroughgoing in space and time; yet in addition to it there is a difference, *viz.,* the left-hand member determines the right-hand, but not conversely.

Two potentialities may and do combine and produce a third potentiality identical with both yet with an added difference. It is possible to go further: two potentialities which are *entirely opposite in character* may combine to produce a resultant. That resultant is called equilibrium. Even if a body could not move in two opposite directions at once (though dynamics treats it as doing so) yet two opposite *tendencies* can coexist, neither being realized. Equilibrium is a real condition, and is identical with, uniquely determined by, such a coexistence of opposites.

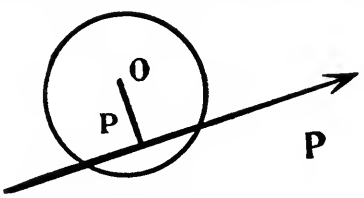
Of course, the concept of potentiality is out of fashion in philosophy just now—except with Thomists, who have always kept a respect for common sense—and must cope with many philosophical objections. It is not our present occupation to deal with them. We wish to know whether and how science *uses* potentiality; and if it finds itself compelled to use it in its causal determinations, that use must be respected, and potential factors must be given as good a title to objective validity as any other causal factors. Our general maxim is, to take what science gives us, and understand it and all that it implies, before we begin philosophical criticism.

Resolution of Forces

"Having proved the principle of the composition of forces, the principle of the resolution of force at once follows."[3] "The force R can be resolved in an infinite number of ways into two other forces" (p. 14). The causation here, however, must be interpreted with care. One force does not of itself give rise to sets of two forces: the pairs are not called resultants, but components. Statistics does not treat this aspect of the matter as a case of causation. Where the result may vary throughout an infinite field, the *Eindeutigkeit* peculiar to causation is lacking: it is rather chance than causation. If any determinate force comes out of the original one, there must be an additional qualification; *one* of the components must be fixed. That being done, the causal structure here is analogous to that of the principle of composition. The cause is twofold, the effect one. There is thoroughgoing identity between cause and effect. The force R being treated from the point of view of its component A is the component B. The subject of this sentence is the cause, the predicate the effect, because the former uniquely determines the latter.

The only reason why we do not like to say that a body tending to fall vertically toward the earth has also a real tendency to move at an angle of 45° with the earth's surface is because usually there is no obvious means of isolating that component. The scientific treatment does not hesitate to say so, when it is desirable in a given problem. The caution perhaps needs to be repeated that we must at present not criticize, but passively receive.

Force as Tending to Produce Rotation



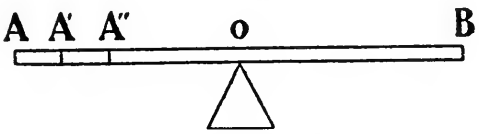
"Let a force P . . . act on a rigid body in the plane of the paper and let an axis perpendicular to this plane pass through the body at any point, O. It is clear, then, that the effect of the force will be to turn the body round this axis (the axis being supposed to be fixed), and the rotatory effect will depend on two things—firstly, the magnitude of the force P, and, secondly, the perpendicular distance, p, of P from O. . . . The product $P \cdot p$ is called the moment of the force about the axis through O."[4]

This is a fundamental statical principle, which seems to be re-

[3] *Op. cit.*, page 13.

[4] *Op. cit.*, page 106.

garded as almost, if not quite, self-evident. The self-evidence does not concern us now; but the way in which it acts does. To simplify matters, let us consider a rigid horizontal bar capable of rotating about a point where it rests on a fulcrum. Suppose a pressure P exerted downward at the end of A. Its moment is $AO \cdot P$. Now how does it happen that this tends to make the bar rotate, *i. e.*, that it communicates an *upward* pressure to the other end, B? This is an elementary case of statical causation, and its constitution must be analyzed.



Let us designate the pressure exerted downward at A by x. The bar is treated as continuous and fairly rigid. This means that x is accompanied by a downward push at an adjacent point A'; if the end of the bar tends to descend, the parts of the bar in its neighborhood tend to go with it. Call the push at A', x'. It is also true that there is a downward push at a point A'' near A, such that it lies between A' and the fulcrum. Call this x''. Proceeding along the bar in this way until we reach the fulcrum, and taking the positions, A, A', A''. . . near at pleasure to one another, we find an endless series of pushes actuating the bar: $x', x'', x''', \ldots$. Abstracting for the moment, after the customary procedure of science, from the fact of the fulcrum and the magnitude of the pushes, we see that each member of this series differs from the next before it only in spatial position. We have, then, the series x, x', x'', x''', . . . where each term after x is similar to the preceding term in a very thoroughgoing fashion. That is, it is similar to it not only in general character as downward push, but in being followed by a term similar to itself. We may for the present purpose describe this series roughly thus: it seems to be determined by a first term x which is followed by the term x' which is in all save position exactly like x. For if this much is granted, x' will have the property which x has, of being followed by another term like itself, *viz.*, x'', which in turn, being like x', will be followed by another x''', and so on. A natural name for this kind of series is a *self-repeater;* it shall later be so designated.

This account neglects the fulcrum and its attendant circumstance, rotation of the bar. The rotation means that the downward push x' is less than x, and x'' is less than x, and so on. For the magnitude of the push is defined by the velocity it gives the body in unit time, and while the point A moves through a certain distance, the point A' moves through less than that distance. The members of the above series have not, then, that all but perfect likeness

above asserted. They differ in magnitude; each being smaller than its predecessor in the ratio of their distances from the fulcrum. This does not effect their likeness in regard to that property of following which holds throughout the series; it simply adds to it by substituting "in all save position and magnitude" in the original description. When the distance from the fulcrum is zero, the downward push has zero magnitude. This does not mean that it is non-existent, for the situation here is one of equilibrium, a resultant of two opposite forces. The downward push is zero because it is really the resultant of a downward push on the fulcrum and the upward push of the fulcrum. When the distance from the fulcrum has a negative value, the magnitude of the downward push also has a negative value proportional to that distance. At B it has a negative value equal to that of A if $AO = -BO$; equal to n/m that of A if $AO = -n/m \cdot BO$.

Lest it seem that we have no right to dub a fact negative, we have to remember the meaning of negative in this connection. It is used in this field to mean of an opposite direction to what is called positive. Of the unreality which is by common cause associated with negation there is, of course, in this usage no trace. Accordingly we can accept as well the statement that an upward push at B added to an equal downward push at B when the arm OB is balanced with OA, constitutes equilibrium at B. It might be considered that two opposite motions of the same body at the same instant can not be: but two opposite simultaneous *tendencies* are, as we have seen, a very different matter, and there is nothing in the nature of space, time, or observed events to forbid the notion. So, at least, the scientific account of the matter thinks.

The whole situation has several distinguishable parts: the downward push of A, the bar joining A and B, the fulcrum, the proportion between push and distance, and the upward push of B. Now is only one of these the cause and one other the effect, or what? Philosophers have puzzled much over this problem of the difference between cause and condition; yet in this case the answer is, I think, a simple one. Let us see what part each element plays in the connection between A and B. The push at A is the starting-point. The series of pushes along the bar forms the connecting link between the starting-point and the end, the upward push of B. The fulcrum, which means the rotation and proportion between push and distance, simply modifies the character of each individual member of the series, without affecting their property of linking A and B. The situation may then be written: push at A—thread of linkage (modified by fulcrum)—push at B. Now the leading-through is done by the middle term, the thread of linkage. This leading is determined, if our description of the series was correct, by two terms, *viz.*, the

push at A and the adjacent push at A' of such a character as to resemble A in all but place and amount. This description in fact really includes the influence of the fulcrum, in the phrase "in all but . . . amount." Accordingly, the last part, the push at B, is completely and uniquely determined by the first two terms of the series (including of course their relation). That alone suffices to guarantee the existence and the character of the push at B.

Since, then, there are, from the point of view of unique determination or explanation, just *two* parts of this whole complex—the determining one being two related terms, the determined one being any term later in the series—there is nothing to do but to consider the former as the cause and the latter the effect. There is here no distinction between cause and condition, unless one of the two related terms be arbitrarily designated cause and the other condition. But this has no ground, since both appear necessary to start the series.

This analysis of statical situations might be considered itself somewhat arbitrary. We have picked out certain elements—mainly spatial ones—and neglected others such as color, kind of substance, time of day, etc. Mach seems to regard this as prejudicial to the objectivity of science.[5] It needs but to recall our present purpose. If science has found its causal explanations by neglecting certain points, we have to accept that fact. It has been able to succeed in its quest by so doing; hence we must conclude that the facts neglected make no essential difference.

All other cases of statical causation, so far as I know, reduce to the above cases and combinations of them. By the principle of composition, such combinations contain in the very fact of being combinations, no new causal principle. They are themselves cases of composition (or resolution). Non-coplanar forces are treated by the aid of the above principles alone. Hydrostatics and the statics of gases, again, involve no new types; ready mobility being the main differentia of these branches. Of course coefficients of friction, resistance of media, density, elasticity, enter into the statical equations: but this is once more a compounding of different causal types, and these latter shall soon be examined on their own merits.

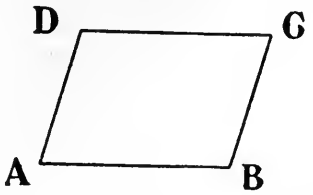
Types of Causation Found in Dynamics

The fundamental types here seem to be the composition and resolution of velocities and accelerations, and the laws of motion. Under the latter belong cases of a body at rest or in uniform motion, of a body acted upon by external forces such as gravitation, and of bodies under impact or collision with other bodies.

[5] "Mechanics," page 9.

Composition and Resolution

The way in which the parallelogram of velocities is constituted has been shown under statics. That of accelerations is completely analogous. Now force in dynamics is represented by the acceleration given to a certain mass. Therefore, forces are compounded and resolved in dynamics just as in statics. In fact, the only reason for discussing this type of case here is that it seemed, according to the treatment above, that only potentialities or tendencies could be compounded without loss or destruction. Thus, if a particle have



acceleration *AB* and also at the same time acceleration *AD,* then in a unit of time it moves through a distance and in a direction which gives it acceleration *AC;* but thereby it reaches point *C,* and not *B* nor *D.* Hence the forces represented by accelerations *AD* and *AB* seem not to have been actually realized.

It all depends upon what we mean by a force. Two ways of interpreting it are possible; and on one of these ways the composition and resolution become fictions, on the other truth. A force may be through and through particular, defined by a particular point of application, a particular magnitude, a particular direction; or it may have something of the universal in its nature, which permits it to be transferred or transmitted from one place to another while remaining the same force. These two interpretations are *a priori* possible; but science in its empirical procedure has adopted the second. It speaks of forces being transmitted, and treats them as if they were transmitted; just as it speaks of velocity being transferred, momentum imparted, etc. Indeed it is not science that is nominalistic, but certain philosophic views *about* science. Suppose now we take this universalist interpretation of a force: then a force may itself be translated through space while remaining just itself. The force which imparts acceleration *AC is* that force which gave acceleration *AD,* its point of application being translated with acceleration *AB.* It has shifted its point of application, but has retained the same direction and magnitude. It has moved the particle from *A* in the direction *AD* by the amount *AD;* for the point *D* is actually removed by that amount and in that direction from *A.* If it be objected that in dynamics a force is not an entity in itself, but simply the acceleration of a mass, the same argument holds; for the basis of it is that accelerations may be compounded. The only ground for rejecting real composition seems to be that a line, considered by

itself, *is not* two other lines. But a line, considered in relation to other lines or points, may have a property that it has not when considered alone, *viz.*, the property of leading in different directions according to the lines with reference to which it is considered.

Accordingly the law of composition implies a true identity between the forces (accelerations, velocities) which combine and the resultant force. The structure of the causal relation is the same as in the corresponding case of statics.

A special case is that of two equal and opposite forces. This seems at first to be a *reductio ad absurdum* of the principle, inasmuch as the resultant is zero. How can zero be identical *in dynamics* with two real forces (accelerations, velocities)? Now in statics this was, as we have seen, perfectly possible; for *there* we had only potentialities, tendencies, not actual motion. But in dynamics, where there is no motion there is force. Hence we either pass in this case into statics—kinetic energy becoming potential, as in a body propelled upward against gravitation—or into some other form of energy than either, as when impact of inelastic bodies gives rise to heat. These cases shall be later examined; but even now it is evident that the effect of two opposite forces never is *merely* zero acceleration.

The resolution of forces is analogous to the same in statics.

It may here be asked, why do we not include a principle corresponding to that of rotation in statics? For perfect symmetry it ought to be done. But the structure of the causal situation is obviously the same as that of the statical principle; so we pass it entirely over.

Inertia and Rectilinear Motion

There has been a great deal of discussion as to the proper formulation of Newton's laws; but it is our good fortune at present to be able to avoid it. The nature of our problem enables us to take the statement of any standard text-book, treating it as *very nearly* what happens in the actual world. The first law says:

"A body continues in its state of rest, or of straight uniform motion, except in so far as it is compelled to alter that state by impressed force."[6]

The direct implication is that a body, being at one moment in a state of rest will, if the forces acting on it remain the same, be in the same state at a later moment; and similarly if it be in straight uniform motion for one period of time it will, if other conditions acting on it remain, etc., have the same straight uniform motion at

[6] Williamson and Tarleton, "Dynamics," London, 1889, page 25.

a later period. Its earlier state determines its later state; the later state is accounted for by the law which connects it with that earlier state. It might conceivably have been otherwise. Bodies might begin to move of themselves, or to stop of themselves; this was indeed a primitive belief. But they do not. Why? It is not self-evident, or an analytic judgment, though such a view has been defended; for time goes on and other things change while a certain body remains (nearly) at rest in a given system. But even if it were self-evident, it is a type of the behavior of bodies in which the earlier state is by science believed to determine the later. That is, it is a causal situation.

If a body is at rest in a given system (or in the universe, as defenders of absolute motion would say) for a given period of short duration, then at a slightly later period, with the same duration, it is at rest, and also at another similar period, later by the same difference than the second. If difficulties are here raised by the terms "same duration" and "same difference" the reply is that we mean by them just what they are used in dynamics and physics to mean. This series we have begun continues indefinitely in time. Denote the body throughout the first period by x, throughout the second by x', and so on. Then the series is defined by the following: a term x is followed by another x' which resembles it in all save position, and is therefore followed by a similar term x''. The series thus begun will go on indefinitely, just as, to use Royce's illustration, a map of England in England implies a map within itself, and so on. This is moreover an *adequate* description of the series which defines this case of inertia. For it holds, however small the successive periods become, and however near together, and it holds through the whole time. The causal structure here is analogous to that of transmission of pressure along a rigid bar rotating about a fulcrum, in statics.

If a body is in uniform motion in a straight line, the terms of the series become equal displacements in equal times; otherwise the series is the same. However short the motion is, it has been repeating itself indefinitely often.

The question of relativity of motion, time, space is indifferent to this analysis. If a body's motion is uniform in a given system then, other conditions being unaltered, it continues uniform in that system. The fact that a line which is straight in one perspective is sometimes not so in another is also irrelevant, provided the same perspective is maintained. A uniform circular motion, or spiral motion, continues uniform and of the same kind (circular, spiral) so long as the conditions are unchanged; being a compound motion, the resultant of two or more which are uniform. A uniform accelera-

tion, which is the combination of an original motion with a constant force (as in gravitation) continues uniform while the conditions are unchanged (*i. e.,* distance from the center of mass of the earth). We need not discuss the question, whether all forces *must* be defined by straight lines. This is claimed by some,[7] but its necessity lies beyond the scope of our problem. Dynamics and physics *do* so define it and thereby succeed in explaining their phenomena; here we only take passively what these sciences give us.

A certain *reductio ad absurdum* here appears. The endlessly repeating series must by its very definition go on forever; but rest and motion of the bodies we know, do not go on forever. But, as the treatment of impact and of some later types will show, *momentum is* always conserved; that is, the same amount of motion of the same mass. When a resting body is moved, the rest becomes force of inertia or tendency to resist motion; a real and measurable condition, though only a potentiality. When a moving body is stopped or turned in another direction, the motion in the original direction continues, either as element of a composition of motions, or as transferred without loss to some other body, or as internal motion in the shape of heat.

As to the concept of mass here used, it is not necessary to assume that it represents quantity of matter. It may be defined, as Mach and others claim, by means of acceleration produced in other bodies. The conservation of mass is an empirical result, and is unaltered by conceptual analysis. It is *found* that the total power of producing accelerations in a given body remains unaltered by change of position or spatial configuration. Perhaps, as Natorp, Wundt, Meyerson, and others suggest, this is *a priori* necessary, because space by its very definition would be incapable of affecting mass. But we have here no concern with attempts to prove any causal process *a priori* necessary. In the sequel the question of necessity must be discussed; at present our task is only to understand what causation is.

The Case of a Body Acted Upon by External Forces and Consequently Changing Its Motion (or Rest).

If the force acting on the body is uniform (or nearly so) and continues acting indefinitely, as is the case in gravitation, the velocity given the body in a short period of time is simply added to that rate of motion it had just before. The series of short successive periods is then composed of members each of which has a constant numerical ratio to the one before it; x is followed by x' which is just so much greater than x, and x' resembles x otherwise in all but its

[7] E. Meyerson, "Identité et Réalité," page 76.

position in the series; *i. e.*, x' is followed by x'' which again is greater by the same ratio than x' — and so on. The type of causation is the same as before. Here the force of gravitation is spoken of as the cause; but little, if anything, is known of the way in which this force arises and influences the motion of bodies. Hence we must confine our attention to the way in which the motion of bodies goes on under the influence of this force; regarding the earlier displacement, velocity, acceleration, as, under that influence, determining the later displacement, etc.

With an *impulsive* force, whose action ceases almost instantaneously, the series of conditions *after* its action has ceased is one of uniform motion. The *communication* of the impulse may occur in any manner, and consequently will come under one of the types of causation later discussed. One of these is taken up in the next section.

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VALUE AND EXISTENCE IN ART AND IN RELIGION[1]

BETWEEN the profound and the commonplace the difference is obscurity of statement: a profundity is a commonplace formulated in strange or otherwise unintelligible terms. This must be my excuse for beginning with the trite remark that the world we live in is not one which was made for us, but one in which we happened. I say this with all due deference to idealists and other pious persons who believe that the trouble is only with us, and not at all with the world, and I wish I could agree with them. I can't, because for one reason, if the world were actually as they think it, they could not think it as they do. Indeed, they could not think. For thinking arises always as reaction to discomfort, to pain, to uncertainty, to problems, and these could not exist in a world which was made for us. It is notable that those who believe it to be such devote most of their thinking to explaining the discrepancy between the world's seeming and the world's being. Their chief business, after proving that the world is all good, is solving "the problem of evil." Now if really there were no evil, this evil consequence could not have ensued: existence would have been a beatitude and not an adjustment, and thinking would have been self-absorbed contemplation, blissful intuition, not painful learning by the method of trial and error.

[1] Read at the annual meeting of the American Philosophical Association, 1913.

What "might have been" does not, however, become, by force of a discursive demonstration that goodness alone exists and is real, and that hence evil is non-existence, unreality, appearance. The appearance of evil is in so far forth no less an evil and the best witnesses to its reality are the historic attempts to explain it away. For this appearance has a definite and inexpugnable character of its own, even as appearance, which can not be destroyed by subsumption under the "standpoint of the whole," "the absolute good," the "over-individual values"; and it can not be abolished by the epithet "appearance." To deny reality to evil only intensifies the evil, since it makes two "problems" grow where only one grew before and serves no end as a solution of the real problem how evil *can* be effectively abolished.

Because of these considerations I hold myself safe in assuming that the world we live in was not made for us, and is, humanly speaking, open to improvement in a great many directions. It will be comparatively innocuous also to assume as a corollary that in so far as the world was made for mind, it has been made so by man: civilization is the adaptation of nature to human nature. And as a second corollary it may be safely assumed that the world does not stay made: civilization has brought its own problems and peculiar evils.

All this apparently irrelevant talk is intended to suggest that the "problem of evil" can perhaps be best understood in the light of another problem: the problem, namely, of why men have created the problem of evil. For it is obvious that evil can be problematic only in an absolutely good world, and the idea of an absolutely good world is not a generalization *upon* experience, but a contradiction *of* experience. If there is a metaphysical "problem of values," hence, that problem may be restated as the "problem of why men contradict their own experience."

The problem so put suggests its own solution: first of all, that nature and human nature are not compatible; that, consequently, conclusions are being forced by nature on human nature which human nature resents and rejects; and that traits are being assigned to nature by human nature which nature does not possess, but which, if possessed, would make it congenial to human needs. All this is so platitudinous that I feel ashamed to say it, but then, how can one avoid platitudes without avoiding truth? And truth here is that what is called value has its seat necessarily in human nature, and that what is called existence has its seat necessarily in nature, of which human nature is a part, and apart. Existence, hence, is by no necessity a content of value. Non-human existence becomes valuable by its bearing on humanity, and value is relation to conscious-

ness, *is* consciousness.[2] Existence is wider than consciousness and independent of it: where consciousness exists value exists, but where existence occurs value need not and in most cases does not occur. Value is a specific kind of existence among other existences. When it is said that value is non-existent nothing more is meant than that the nature of value is not coincident and coexistent with the nature of other existences, just as when it is said that a thing is not red, the meaning is that red is not copresent with other qualities. Conversely, value may be said to be existent in nature when nature and human nature, mind, are in any respect harmonious or identical. What human nature tries to force upon nature must be, by implication, non-existent value, so that the nature of value must be held inseparable from the nature of mind.

It follows that value is, in origin and character, completely irrational. At the foundations of our existence it is the relation between their objects and our major instincts, our appetites, our feelings, our desires, our ambitions,—most clearly, the self-regarding instinct and the instincts of nutrition, reproduction, and gregariousness. Concerning them, as William James writes, "Science may come and consider their ways and find that most of them are useful. But it is not for the sake of their utility that they are followed, but because at the moment of following them we feel that that is the only appropriate and natural thing to do. Not one man in a billion, when taking his dinner, ever thinks of utility. He eats because the food tastes good and makes him want more. If you ask him *why* he should want to eat more of what tastes like that, instead of revering you as a philosopher, he will probably laugh at you for a fool. The connection between the savory sensation and the act it awakens is for him absolute and *selbstverständlich,* an *a priori* synthesis of the most perfect sort, needing no proof but its own evidence. . . . To the metaphysician alone can such questions occur as 'Why do we smile when pleased, and not scowl? Why are we unable to talk to a crowd as we talk to a single friend? Why does a particular maiden turn our wits upside down?' The common man can only say '*of course* we smile, *of course* our heart palpitates at the sight of a crowd, *of course* we love the maiden, that beautiful soul clad in that perfect form, so palpably and flagrantly made from all eternity to be loved.' And so, probably, does each animal feel about the particular things it tends to do in the presence of particular objects. . . . To the broody hen the notion would probably seem monstrous that there should be a creature in the world to whom a nestful of eggs was not the utterly fascinating and precious and never-to-be-too-much-sat-upon object it

[2] *Cf.* my paper "Goodness, Cognition, and Beauty," this JOURNAL, Vol. IX., page 253.

is to her.'' In sum, fundamental values are relations, responses, attitudes, immediate, simple, subjectively obvious, and irrational. But everything else becomes valuable or rational only by reference to them.

Study them or the others empirically,[3] and they appear as types of specific behavior, simple or complicated, involving a strong emotional tone, and aggregates of connected ideas, more or less systematized. In the slang of the new medical psychology which has done so much to uncover their method and mechanism, they are called ''complexes''; ethics has called them interests, and that designation will do well enough. They are the primary and morally ultimate efficacious units of which human nature is constituted, and it is in terms of the world's bearing upon their destiny that we evaluate nature and judge her significance in worth.

Now in interest, the important thing is emotional tone. Whatever else is sharable, that is not. It is the very stuff of our attitudes, our acceptances and rejections of the world and its contents, the very essence of the relations we bear to these. That these relations shall be identical for any two human beings requires that the two shall be identical: two persons can not hold the same relation to the same or different objects any more than two bodies can occupy the same space at the same time. Hence, all our differences and disagreements. Mere numerical density compels us to act as separate centers, to value things with reference to separate interests, to orient our worlds severally, and with ourselves as centers. This orienting is the relating of the environment to our interests, the establishment of our worlds of value. However much they may cross and interpenetrate, coincide they never can.

Our interests, furthermore, are possibly as numerous as our reflex arcs. Each may, and most do, constitute distinct and independent valuations of their objects, to which they respond, and each, with these objects, remains an irreducible system. But reflex arcs and interests do not act alone. They act like armies; they are integrated, and when so integrated their valuations fuse and constitute the more complex and massive feelings, pleasures and pains, the emotions of anger, of fear, of love; the sentiments of respect, of admiration, of sympathy. They remain, through all degrees of complexity, appraisements of the environment, as subject to empirical examination by the psychologist as the environment itself by the physicist.

With a difference, however, a fundamental difference. When you have an emotion you can not yourself examine it. Effectively as the

[3] *Cf.* Thorndike, ''The Original Nature of Man''; S. Freud, ''Die Traümdeutung, Psychopathologie des Alltagsleben,'' ''The Origin and Development of Psycho-analysis,'' etc.; McDougall, ''Social Psychology.''

mind may work in sections, it can not with sanity be divided against itself nor long remain so. A feeling can not be had and examined at the same time. And though the investigator who studies the nature of red does not become red, the investigator who studies the actual emotion of anger does tend to become angry. Emotion is infectious; anger begets anger; fear, fear; love, love; hate, hate; actions, relations, attitudes, when actual, integrate and fuse: to know them is to have them, while to know things is simply to have a relation to them. The same object may be both loved and hated, desired or spurned, by different minds at the same time or by the same mind at different times. One, for example, values whiskey positively, approaches, absorbs it, aims to increase its quantity and sale; another apprehends it negatively, turns from it, strives to oust it from his world. Then according to these direct and immediate valuations of whiskey, its place in the common world of the two minds will be determined. To save or to destroy it, they may seek to destroy each other. Even similar positive valuation of the object might imply this mutual repugnance and destruction. Thus, rivals in love: they enhance and glorify the same woman, but as she is not otherwise sharable, they strive to eliminate each other. Throughout the world of values the numerical difference of the seats or centers of value, whatever their identity otherwise, keeps them ultimately inimical. They may terminate in a common object, but they originate in different souls and they are related to the object like two magnets to the same piece of iron that lies between them. Most of what is orderly in society and in science is the outcome of the adjustment of just such oppositions: our civilization is an unstable equilibrium of objects, through the cooperation, antipathy, and fusion of value-relations.

Individuals are no better off; personality is constructed in the same way. If, indeed, the world had been made for us, we might have been spared this warfare to man upon earth. Life might have been the obvious irrational flow of bliss so vividly described by William James, nature and human nature would have been one; bridging the gulf between them would never have become a task for the tender-minded among philosophers. Unfortunately our mere numerical difference, the mere numerical difference of the interests which compose our egos, makes the trouble, so that we are compelled to devote most of our lives to *converting* the *different* into the *same*. The major part of our instincts serve this function recognizably, *e. g.*, nutrition, and the "higher powers" do so no less, if not so obviously. Generalization is nothing more, thinking nothing else. It is the assimilation of many instances into one form, law, or purpose; the preservation of established contents of value, just as nutrition is the preservation of life by means of the conversion of foreign

matter into the form and substance of the body. By bowels and by brain, what is necessary, what will feed the irrationally given interest, is preserved and consumed: the rest is cast off as waste, as irrelevance, as contradiction.

And this is all that a mind is—an affair of saving and rejecting, of valuing with a system of objects of which a living body and its desires and operations, its interests, are focal and the objects marginal, for its standard. Mind, thus, is neither simple, nor immutable, nor stable; a thing to be "changed," "confused," "cleared," "made-up," "trained." One body, I have written elsewhere,[4] "in the course of its lifetime, has many minds, only partially united. Men are all too often "of two minds." The unity of a mind depends on its consistent pursuit of *one* interest, although we then call it narrow; or on the cooperation and harmony of its many interests. Frequently two or more minds may struggle for the possession of the same body, that is, the body may be divided between two elaborately systematized tendencies to act. The beginning of such a division occurs wherever there is difficulty in deciding between alternative modes of behavior: the end is to be observed in those cases of dual or multiple personality in which the body has ordered so great a collection of objects and systematized so large a collection of interests in such typically distinct ways as to have set up for itself different and opposed "minds." On the other hand, two or fifty or a million bodies may be "of the same mind."

Unhappily, difference of mind, diversity and conflict of interests, is quite as fundamental, if not more so, as sameness of mind, cooperation and unity of interests. This the philosophic tradition sufficiently attests. To Plato man is at once a protean beast, a lion, and an intellect; the last having for its proper task to rule the first and to regulate the second. According to the Christian tradition man is at once flesh and spirit, eternally in conflict with one another, and the former is to be mortified that the latter may have eternal life. Common sense divides us into head and heart, never quite at peace with one another. There is no need of piling up citations. Add to the inward disharmonies of mind its incompatibilities with the environment, and you perceive at once how completely it is, from moment to moment, a theater and its life a drama of which the interests that compose it are at once protagonists and directors. The catastrophe of this unceasing drama is always that one or more of the players is driven from the stage of conscious existence. "It may be that the environment—social conditions, commercial necessity, intellectual urgency, allies of other interests—will drive it off; it may be that its own intrinsic unpleasantness will banish it, will put

[4] This JOURNAL, Vol. IX., page 256.

it out of the mind; whatever the cause, it is put out. Putting it out does not, however, end the drama; putting it out serves to complicate the drama. For the 'new psychology' shows that whenever an interest or a desire or impulsion is put out of the mind, it is really, if not extirpated, put into the mind; it is driven from the conscious level of existence to the unconscious. It retains its force and direction, only its work now lies underground. Its life henceforward consists partly in a direct oppugnance to the inhibitions that keep it down, partly in burrowing beneath and around them and seeking out unwonted channels of escape.'' Since life is long suppressions accumulate, the mass of an existence of feeling and desire tends to become composed entirely of these suppressions, layer upon layer, and every interest in the aggregate striving to attain place in the daylight of consciousness.

Now empirically and metaphysically, no one interest is more excellent than any other. Repressed or patent, each is either in a completely indifferent universe, or before the bar of an absolute justice or under the domination of an absolute and universal good, entitled to its free fulfilment and maintenance. Each is a form of the good; the essential content of each is good. That any are not fulfilled, but repressed, is a fact to be recorded, not an appearance to be explained away. And it may turn out that the existence of the fact may explain the effort to explain it away. For where interests are in conflict with each other or with reality, and where the loser is not extirpated, its revenge may be just this self-fulfilment in *unreality,* in idea, which philosophies of absolute value offer it. Dreams, some of the arts, religion, and philosophy may indeed be considered as such fulfilments, worlds of luxuriant self-realization of all that part of our nature which the harsh conjunctions with the environment overthrow and suppress. They are ideal reconstructions of the surrounding evil of the world into forms of the good. In them humanity has its freest play and amplest expression.

This is most specifically true of philosophy. The environment with which philosophy concerns itself is nothing less than the whole universe; its content is, within the history of its dominant tradition, absolutely general and abstract; it is, of all great human enterprises, even religion, least constrained by the direction and march of events, the mandate of circumstance. Like music, it expresses most truly the immediate and intrinsic interests of the mind, its native bias and its inward goal. It is constituted, for this reason, of the so-called ''normative'' sciences, envisaging the non-existent as real, forcing upon nature pure values, forms of the spirit incident to life in this world, unmixed with baser matter. To formulate ultimate standards, to be completely and utterly lyrical is the prerogative of phil-

osophy alone. As these standards reappear in all other reconstructions of the environment and most clearly in art and in religion, it is pertinent to ennumerate them, and to indicate briefly their bearing on existence.

It is obvious that to a mind constituted as is the human mind a fundamental normation must be *unity*. The history of philosophy from Thales to Bergson is significantly unanimous in its attempts to prove that the world is, somehow, through and through one. That the oneness requires *proof* is *prima facie* evidence that it is a value, a desiderate, not an existence. And how valuable it is may be seen merely in the fact that it derealized the inner conflict of interests, the incompatibilities between nature and man, the uncertainties of knowledge, and the certainties of evil, and substitutes therefor the ultimate happy unison which the identity of the different compels.

Unity is the common desiderate of philosophic systems of all types, neutral, materialistic, idealistic. But the dominant tradition has tended to think this unity in terms of *interest,* of *spirit,* of *mentality.* It has tended, in a word, to assimilate nature to human nature, to identify things with the *values* of things, to envisage the world in the image of man. To it, the world is all spirit, ego, or idea; and if not such through and through, then entirely subservient, in its unhumanized parts, to the purposes and interests of ego, idea, or spirit. Why, is obvious. A world of which the substance is such is a totality of interest and purpose which faces no conflict and has no enemy. It is fulfilment even before it is need, and need, indeed, is only illusion. Again, mind is more at home with mind than with things: the pathetic fallacy is the most inevitable and the most general. Although the totality of spirit is conceived as good, that is, as actualizing all our desiderates and ideals, it would still be felt, that, even if the totality were evil, and not God, but the Devil ruled the roost, the world so constituted is a better world than one utterly non-spiritual. We can understand and be at home with malevolence: it offers at least the benefits of similarity, of companionship, of intimateness; but no horror can be greater than that of utter aliency. How much of religion turns with a persistent tropism to the consideration of the devil and his works, and how much it has fought his elimination from the cosmic scheme! And the philosophic tradition, though it has cared less for the devil, has predominantly repudiated aliency.

That *eternity* shall be used to complete unity and spirituality as cosmic desiderates follows from its nature. In content either a meaningless negation, not-time, of the same character as not-man or not-donkey, or a designation of the persistence of quality, it is at bottom the assurance that value-forms can not and will not be altered

in character and in relation to man. There is no recorded attempt to prove that evil is eternal: eternity is *eternity of the good alone.*

Unity, spirituality, and eternity, then, are the value-forms which the dominant philosophic tradition designates as the foundation and metaphysical reality of universal nature. Of man, it posits *immortality* and *freedom,* and even materialistic systems have in some form tended to conserve these goods. For the desiderative character of immortality, no argument is necessary. With freedom, however, the case is different. The controversy over "free-will," the casuistic entanglement of this ideal with the notion of responsibility, and its theological development in the problem of the relation of an omnipotent god to a recalcitrant creature, have so much obscured its primal significance that it is worth while pointing out how esentially the ideal of freedom is compensatory. It is an ideal that could have arisen only in the face of *obstruction to action* directed toward fulfilling and satisfying interests. Even deterministic solutions of the artificial "problem of freedom" are in fact nothing more than the removal of obstructions. Spinoza's solution is typical, and its form is that of all idealisms as well. It ensues by way of identification of the obstruction's interests with those of the obstructee: the world becomes the ego or the ego the world, with nothing outside to hinder or to interfere. In the absolute existence is value *de facto;* in fact, *de jure.*

Is any proof necessary that these value-forms are not the contents of the daily life? If it is, why this unvarying succession of attempts to prove that they *are* the contents of the daily life, that goes by the name of history of philosophy? In fact, experience as it comes from moment to moment is not one, harmonious and orderly, but multifold, discordant, and chaotic. Its stuff is not spirit, but stones and railway wrecks and volcanoes and Mexico and waters and trees and stars and mud. It is not eternal, but changes from instant to instant and from season to season. Actually, men do not live forever; death is a fact, and immortality is literally as well as in philosophic discourse not so much an aspiration for the continuity of life as an aspiration for the elimination of death, purely immortality. Actually the will is not free, each interest encounters obstruction, no interest is completely satisfied, all are ultimately cut off by death.

Such are the general features of all human experience, by age unwithered, and with infinite variety forever unstaled. The traditional philosophic treatment of them is to deny their reality, to call them appearance, and to satisfy the generic human interest which they oppose and repress by means of the historic reconstruction in imaginative dialectic of a world constituted by these most generalized

value-forms and to eulogize the reconstruction with the epithet "reality." When, in the course of human events, such reconstruction becomes limited to the biography of particular individuals, is an expression of their concrete and unique interests, is lived and acted on, it is called paranoia. The difference is not one of kind, but of concreteness, application, and individuality. Such a philosophy applied in the daily life is a madness, like Christian science: kept in its proper sphere, it is a fine art, the finest and most human of the arts, a reconstruction in discourse of the whole universe, in the image of the free human spirit. Philosophy is reasonable because it is so unpersonal, abstract, and general, like music; because, in spite of its labels, its reconstructions remain *sure* desiderates and value-forms and are *not* confused with and substituted for existence. But philosophers often have the delusion that the substitutions are actually made.

It is the *purity* of the value-forms imagined in philosophy that makes philosophy normative. The arts, which it judges, have an identical origin and an indistinguishable intent, but they are properly its subordinates because they have not its purity. They, too, aim at remodeling discordant nature into harmony with human nature. They, too, are dominated by value-forms which shall satisfy as nearly as possible all interests, shall liberate and fulfil all repressions, and supply to our lives that unity, eternity, spirituality, and freedom, of our central desire. But where philosophy merely negates the concrete stuff of experience and defines its reality in terms of desire alone, the arts acknowledge the reality of immediate experience, accept it as it comes, eliminating, adding, molding, until the values desiderated become existent *in* the concrete immediacies of experience as such. Art does not substitute values for existences by changing their rôles and calling one *appearance* and the other *reality:* art converts values into existences, it realizes values, injecting them into nature as far as may be. It does not claim for its results greater reality than nature's. It claims for its results greater immediate harmony with human interests than nature. The propitious reality of the philosopher is the unseen: the harmonious reality of the artist must be sensible. Philosophy says that apparent actual evil is merely apparent: art compels potential apparent good actually to appear. Philosophy realizes fundamental values transcendentally, beyond experience: art realizes them immediately within experience.

How completely it does so descriptions of the esthetic encounter make clear. The artist's business is to create the other object in the encounter, and this object, in Miss Puffer's words, is such that "the organism is in a condition of repose of the highest possible tone, functional efficiency, enhanced life. The personality is brought into

a state of unity and self-completeness." The object, when apprehended, awakens the active functioning of the whole organism directly and harmoniously with itself, cuts it off from the surrounding world, shuts that world out, and forms a complete, harmonious, and self-sufficient system, peculiar and unique in the fact that there is no passing from this deed into further adaptation with the object. Struggle and change are at an end, and whatever activity now goes on feels self-conserving, spontaneous, free. The need of readjustment has disappeared, and with it the feeling of strain, obstruction, and resistance which is its sign. There is nothing but the object, and that is possessed, completely, satisfyingly, and as if forever. Art, in a word, supplies an environment from which strife, foreignness, obstruction, and death are eliminated. To this environment the mind finds itself completely and harmoniously adapted by the initial act of perception. In the world of art, value and existence are one.

If art may be said to create values, religion has been said to conserve them. But the values conserved are not those created: they are the values postulated by philosophy as metaphysical reality. Whereas, however philosophy substitutes these values *for* the world of experience, religion makes them continuous with the world of experience. For religion value and existence are on the same level, but value is more potent and environs existence, directing it for its own ends. The unique content of religion, hence, is a specific imaginative extension of the environment with value-forms: the visible world is extended at either end by heaven and hell; the world of minds, by God, satan, angels, demons, saints, and so on. But where philosophy imaginatively abolishes existence in behalf of value, where art realizes values *in* existence, religion tends to control and to escape the environment which exists by means of the environment which is postulated. The aim of religion is salvation from sin. Salvation is escape from experience to heaven and the bosom of God: while hell is the compensatory readjustment of inner quality to outer condition for the alien and the enemy, without the knowledge of whose existence life in heaven could not be complete.

In religion, hence, the conversion of the repressed array of interests into ideal value-forms is less radical and abstract than in philosophy, and less checked by fusion with existence than in art. Hence religion is at the same time more carnal and less reasonable than philosophy and art. Its history and protagonists exhibit a closer kinship to what is called insanity—that being, in essence, the substitution in actual life of the creatures of the imagination which satisfy the repressed needs for those of reality which repress them. It is a somnambulism which intensifies rather than abolishes the contrast between what is desired and what must be accepted. It offers itself

rather as a *refuge* from reality than a control of it, and its development as an institution has turned on the creation and use of devices to make this escape feasible. For religion, therefore, the perception that the actual world, whatever its history, is now not adapted to human nature, is the true point of departure. Thus religion takes more account of experience than compensatory philosophy; it does not derealize existent evil. The outer conflict between human nature and nature, the inner conflict between the interests that constitute human nature, are expressed in the idea of *sin.* The desired abolition of these conflicts, the *salvation,* are expressed in the ideas of heaven and reunion with God. The machinery of this abolition, *i. e.,* the reunion of the divided, the conversion of the different into the same,—is the furniture of religious symbols and ceremonials—myths, baptisms, sacraments, prayers, and sacrifices: and all these are at the same time instruments and expressions of desires. God is literally "the conservation of values."[5] "God's life in eternity," writes Aristotle, who here dominates the earlier tradition, "is that which we enjoy in our best moments, but are unable to possess permanently: its very being is delight. And as actual being is delight, so the various functions of waking, perceiving, thinking, are to us the pleasantest parts of our life. Perfect and absolute thought is of perfect and absolute things. . . . And what God possesses is just this absolute vision of perfection."[6] Even the most somnambulistic of the transcendental philosophies has repeated, not improved upon Aristotle. "The highest conceptions that I get from experience of what goodness and beauty are," writes Royce, "the noblest life that I can imagine, the completest blessedness that I can think of, all these are but faint suggestions of a truth that is infinitely realized in the Divine, that knows all truth. Whatever perfection there is suggested in these things, that he must fully know and experience."

What religion demands of these ultimate value-forms is that *they shall work* and its life as an institution depends upon making them work. Christian science becomes a refuge from the failure of science, magic from mechanism, and by means of them and their kind, blissful immortality, complete self-fulfilment, is to be attained—after death, There is a happy life beyond, but it is beyond life. In fact, although religion confuses value and existence, it localizes the great value-forms outside of existence. Its history is on the one side a history of the retreat and decimation of the gods *from* the world, a movement from animism and pluralism to transcendentalism and monism; and on the other, of an elaboration and extension of institutional devices

[5] *Cf.* my paper, "Is Belief Essential in Religion?" *Int. Jour. Ethics,* October, 1910.

[6] "Metaphysics," Book Lambda.

by which the saving value-forms are to be made and kept operative *in* the world. In so far forth, religion has been an art and its association with the arts has been notorious. But in so far as it has tried to make values operative without making them existent, it has been a *magic.* It has ignored the actual causes and nature and history of things, and has substituted for them non-existent desirable causes, ultimately deducible to a single, eternal, beneficent spirit, omnipotent and free. To convert these into existences, an operation which is the obvious intent of much contemporary thinking in religion,[7] it must however give up the assumption that they already exist *qua* spirit. But when religion gives up that assumption, religion gives up the ghost.

In religion, hence, value is non-existent and is said to exist. In art existence is without value and is converted into value. Art makes actual existences over into actual values; religion makes actual values over into hypothetical existences.

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REVIEWS AND ABSTRACTS OF LITERATURE

Probleme der Sozialphilosophie. ROBERT MICHELS. Leipzig und Berlin: B. G. Teubner. 1914. Pp. 208.

The author's purpose as announced in the foreword of this little volume is twofold, namely, to emphasize that social problems still exist in spite of the tomes written upon them, and incidentally to throw light upon their solutions without attempting an exhaustive treatment. With this end in view he has discussed the following topics: cooperation, eugenics, caste, progress, coquetry, the proletariat, the future of the nobility, the international bourgeoisie and the relations of economics to politics.

On the whole the author has accomplished his purpose. He has given us a series of interesting discussions in which, however, he has allowed himself the greatest freedom of method, due to the fact, perhaps, that he intends to stimulate and suggest rather than to offer final results. His thought is needlessly obscured at times by long and involved sentences where subject and predicate are separated by fifty and sixty words. Some sentences, covering the better part of a page, give the impression that the writer began and doggedly continued them until he had written himself dry on that particular phase of his thought. Thought and style are good illustrations of the proverbially German *Mangel an Formsinn.*

Undoubtedly the chief attraction of the book is its freshness and concreteness. *Sachlichkeit* is the dominant characteristic of the writer's

[7] *Cf.* R. B. Perry, "The Moral Economy"; E. S. Ames, "The Psychology of Religious Experience"; J. H. Leuba, "A Psychological Study of Religion."

thought. The work, therefore, is strikingly free from those theoretical prepossessions which often give to books of this kind an atmosphere of unreality. Loyalty to facts is perhaps responsible for what will appear to many a weakness of the work, namely, the hesitating and tentative, not to say negative, character of many of its conclusions. In the discussion of progress, for example, after marshaling the facts in two chapters to show that progress is relative and that *Fortschritt schlechtlin* (an indefinable term) does not exist, Michels concludes that "progress" is a meaningless word which should be banished from "the terminology of scholars" and that all investigation of the problem of moral progress is a "useless waste of time." This is discouraging and, we feel somehow, at variance with the *gesunden Menschenverstand.* We remind ourselves, however, of Hume's whimsical confession of the fundamental inconsistency between his sceptical conclusions and human life, and take courage. Two things, apparently, force the writer to these negative conclusions, namely, the complex and contradictory nature of the facts and his inability to apply to them a scientific (statistical) method. "Morals hardly admit of numerical measurement." True, but it does not follow from this that we must write *ignoramus et ignorabimus* as the last word on the question of moral progress.

The writer's relative conclusions as to progress are made the basis for a remarkable justification of war. He asserts "war is irrational, but not immoral"—a frank repudiation of the Socratic dictum that insight is of the very essence of right action. War, furthermore, is absolutely indispensable to the unfolding of national life. Situations arise when "the necessities of national expansion shatter all bonds of reason and ethics. Only weak and slavish peoples are just and dream of international brotherly love" (p. 77). It would be hard to find a more brutal justification of the mailed fist of militarism.

A most interesting chapter is devoted to the problem of cooperation. After tracing the rise of the various forms of cooperation the writer concludes that the age of individualism in business is definitely ended. He is not persuaded, however, that cooperation will prove the solution of all social problems. It carries within its own bosom the seeds of disintegration. For cooperation is an eternal *Janus Bifrons.* It aims ostensibly at the solidarity of all mankind and yet it owes its origin and growth to the negation of solidarity in that it lives only by virtue of the conflicts and differences of interests between social groups. Only one field of human endeavor admits of complete cooperation, namely, science.

Eugenics deals with the fundamental problem of the social sciences, which Michels states as follows: "whether the undeniable inferiority of the lower classes rests upon a firm anthropological basis of which class distinctions are only the result, or whether the subordinated 'race' is only a phenomenon resulting from economic conditions, that is, whether the inferiority of human material of the propertyless classes is to be derived from wages and living conditions" (46). The problem of eugenics and that of the proletariat are, according to Michels, closely related, but he suggests no solution for either. He closes his discussion of the proletariat

with this question: "Is this mentally and physically defective proletariat, as he appears to us in the study of politico-social anthropology, ripe for his emancipation as a class, and, if we must answer this question in the negative, what have we to do in order to make him ripe?"

The nobility are in the judgment of the author a permanent element in European society owing to the fact that they are constantly drawing new blood from the bourgeoisie. The chapter on the international bourgeoisie, containing an interesting comparison of this class in Germany, Italy, and America, closes with the following statements which indicate the writer's method and attitude throughout the book. "Our scientific task, the task of social philosophy, or, if you will, of sociology, is not mainly to point out ends, . . . but for the present solely to clarify. . . . It does not consist in determining what is good or what is bad in arrangement, but in establishing what the actual relations are and whither the unfolding tendencies lead" (p. 188). The writer has essayed, therefore, to discuss the problems of social philosophy with no well-defined philosophy of his own. In this fact is to be found the strength as well as the weakness of the book.

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Dante and Aquinas. PHILIP W. WICKSTEED. London and New York: E. P. Dutton and Company. 1913. Pp. ix + 271.

There is much truth as well as aptness in the generalization which the author of this volume advances in his preface: "Aquinas regards the whole range of human experience and activities as the collecting ground for illustrations of Christian truth, and Dante regards Christian truth as the interpreting and inspiring force that makes all human life live." This is a more penetrating view than the one commonly adopted, according to which the "Commedia" is "Aquinas in verse." Moreover, the promise, also contained in the preface, to give "a disinterested and popular treatment of the subject, free from all propagandist and polemical intention" is at once refreshing and inviting.

On the whole, the learned author has redeemed this promise with praiseworthy thoroughness. It is safe to say that even the critic whose propagandist and polemical intention is in evidence, will agree with the following estimate: "My own impression is that we are on much safer ground when we use the works of Aquinas as the best means of introducing us into the mental and theological atmosphere that Dante breathed, than when we assume, without special evidence, that he had actually steeped himself in the study of them and knew their exact teaching upon every point" (p. 136). In this way it was possible for poetry "to glide on the wings of theology" and not be compelled to "dance in the shackles" of theological definitions and proofs. There are, undoubtedly, points of divergency between the philosophy and theology of Aquinas and the doctrine of the "Commedia," in spite of the universally accepted fact that the groundwork of the poem is the Thomistic teaching. However, one may hesitate in accepting as an instance of divergence the doctrine

of Parad. VII., 133–138, and Parad. XXIX., 34, in regard to the separate creation and existence of formless matter, particularly as the author himself admits that this special feature of Dante's teaching stands apart from the organic and constructive movements of the poet's mind (p. 150).

It is true, the doctrine of St. Thomas and of the scholastics generally in regard to formless matter is so subtly technical that even a profound student of the text of the "Summa" may be pardoned if he fails to distinguish, as the school did: (1) *Pure Actuality,* meaning absolute perfection, the infinite, and *Pure Actuality,* meaning relatively perfect immaterial beings, the angels, and (2) *Formless Matter* created so as to coexist with the first created substantial forms, and *Formless Matter* created to exist without any form and pre-existing (*quoad tempus*) before the forms to which it was united. These, as has been said, are subtle points of doctrine. The same excuse, however, can not be adduced in the case of the account which the author gives (p. 73) of the Church's attitude toward the introduction of Aristotelian philosophy in the first half of the thirteenth century. It is now an oft-told tale. And yet, it seems, it must be told again, with emphasis on the fact that there were two Aristotles under consideration, the Arabian and the Greek. Again, the "relation of reason to revelation" is admirably described (as taught by St. Thomas), up to a certain point (pp. 96 ff.), the point, namely, at which the author apparently confounds the task of the Christian philosopher with that of the Christian theologian (p. 103). Finally, it is less than justice to that much-misrepresented genius, John the Scot, to say that his assertion that authority must rest on reason "amounts to a tacit exclusion of a really authoritative revelation" (p. 43).

Notwithstanding the exception taken to these few points of detail, the volume on "Dante and Aquinas" is heartily recommended to all students of medieval philosophy as well as to those who are striving to get a clear understanding of the "Divina Commedia." It was written with this twofold purpose in view, and it will, unquestionably, accomplish both. Especially successful is the attempt (p. 112 ff.) to describe "the characteristic qualities of Thomas's mind."

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. November, 1913. *Les Fondements Objectifs de la Notion d'Electron* (pp. 449–478): A. REY.–A discussion of the hypothesis of the invariability of the elementary electric charge, with particular reference, in this first article of the series, to electrolysis, cathode rays, etc. *Le Monde comme Volonté de Représentation* (pp. 479–510): JULES DE GAULTIER.–An account of a phenomenalistic (illusionistic) metaphysics, which, "instead of a moral purpose that has shown itself to be self-contradictory," attributes to existence, "according to a

new hypothesis, an esthetic and spectacular purpose, a will to representation." *Remarques sur la Théorie Logique du Jugement* (pp. 511–525): EDMOND GOBLOT. – With reference to quality, the admission of a third kind of judgment, besides the affirmative and the negative judgments, would involve the destruction of the principle of contradiction; "the affirmative judgment is always an affirmation, the negative judgment is the negation of an attribute that is always positive." *Analyses et Competes Rendus.* Leslie J. Walker, *Theories of Knowledge, Absolutism, Pragmatism, Realism:* A. BENJON. Montes, *Precursores de la Ciencia Penal en Espana:* GASTON RICHARD. Garcia Lopez, *Questions Pénales:* GASTON RICHARD. Picece, *Monismo e Scienza Giuridico-sociale:* GASTON RICHARD. Alimena, *Note Filosofiche d'un Criminalista:* GASTON RICHARD. Vincenzo Miceli, *Lezioni di Filosofia del Diritto:* GASTON RICHARD. Del Vecchio, *Il Concetto del Diritto:* GASTON RICHARD. Pagano, *L'individuo nell Ètica e nel Diritto:* GASTON RICHARD. G. A. Colozza, *Il Metodo Attivo nell "Emilio":* J. PÉRÈS. P. Hachet-Souplet, *De l'Animal à l'Enfant:* J. M. LAHY. Marius Latour, *Premiers Principes d'une Théorie Générale des Émotions:* L. DUGAS. Dr. Georges Génil-Perrin, *Histoire des Origines et de l'Evolution de l'Idée de Dégénérescence en Médecine Mentale:* PH. CHASLIN. Gudmundur Finnbogason, *Den Sympatiske Forstaælse:* ALFRED BLANET. *Notices Bibliographiques. Revue des Périodiques.*

Lee, Vernon. The Beautiful. Cambridge: University Press. New York: G. P. Putnam's Sons. 1913. Pp. viii + 155.

Mayo, Marion J. The Mental Capacity of the American Negro. Archives of Psychology, No. 28. New York: The Science Press. 1913. Pp. 70.

NOTES AND NEWS

THE Section of Anthropology and Psychology of the New York Academy of Sciences met in conjunction with the New York branch of the American Psychological Association at Columbia University, on April 27. The following papers were read: "A Study of Appetite," Garry C. Myers; "Equivalence of Repetitions for Recall and Recognition," Edith F. Mulhall; "Studies in Recognition," W. S. Monroe; "A Study of Bagobo Ceremonials, Magic, and Myth," Laura Watson Benedict; "Is There Such a Thing as General Judicial Capacity?", Mary Ross; "Individual Differences in Judicial Capacity," Lillian Walton; "Some Etiological Factors of Mental Deficiency," Max G. Schlapp; "Sex Differences in the Solution of Mechanical Puzzles," H. A. Ruger.

THE First Congress of Mathematical Philosophy met in Paris at the Sorbonne, April 6 to 8, inclusive. The conference was given under the auspices of the editors of the *Mathematical Encyclopedia* and the French Society of Philosophy. The opening address was delivered by Emile Boutroux, President of the Congress.

PROFESSOR NORMAN WILDE, head of the department of philosophy and psychology at the University of Minnesota, has been granted a year's leave of absence. Professor David Swenson will act as chairman of the department during Professor Wilde's absence.

Vol. XI. No. 11. May 21, 1914

The Journal of Philosophy
Psychology and Scientific Methods

THE PERCEPTION OF MOTION

THE recent papers of Messrs. Hollingworth[1] and Pitkin[2] upon what the former calls "The Law of the Resting Point" suggest that some analogous observations of my own may be of general interest. I will venture to leave my statement in the form in which it was written before Dr. Hollingworth's article appeared.

I

The key to our conception not only of the continuity, but also of the reality of nature is our perception of change. Hobbes's dictum, "Always to perceive the same thing is equivalent to perceiving nothing at all," is the assertion of what all experience seems to substantiate, *viz.*, that our perceptions gain their reality from their variety; and variety can be defined only in terms of change, or of passage from one thing to another. On the other hand, if the change or transition were absolute, if our perceptions were merely of isolated and unrelated things, we should again have no variety and no reality; Hobbes's dictum would apply to each thing in separation, and instead of a sum we would have only a set of meaningless ciphers: we might paraphrase Hobbes, "Never to perceive the same thing is equivalent to perceiving nothing at all." Perception of reality is contingent upon perception of sameness coupled with difference, unity with variety; and neither of these can be clearly conceived apart from the other.

The relation of sameness to difference, unity to variety, the one to the many, we represent to ourselves by means of the notions of change and motion. For example, we define any given line $m - n$ as the path of a moving point, passing from m to n; m and n represent the elements of difference in the total conception, the path, p, the uniting sameness; no element in the group is significant apart from the others. All our notions of motion, and hence all our notions

[1] "A New Experiment in the Psychology of Perception," this Journal, Vol. X., page 505.

[2] "The Law of the Resting Point," this Journal, Vol. X., page 657.

of space (which is a construct of lines), are built upon this idea. The case of non-spatial change is analogous. The succession of two experiences in time we conceive as a kind of addition, $\alpha + \beta$, in which the $+$ is a sort of tie at once joining and holding apart the qualities α, β, distinguished as *before* and *after*. Indeed, time in general is commonly symbolized by lines (time-curves, and the like) showing the fundamental identity of spatial and temporal continuities.[3] Purely ideal changes follow the same plan, as may be clearly seen in the syllogistic inference: *A is B, B is C, therefore, A is C; A* and *C* represent the differences united by the middle term *B*, which is the tie that justifies the passage from *A* to *C*, and which must be felt, even if it be not expressed, in the conclusion. A beginning, a middle, and an end, are alike present in our spatial, temporal, and logical perceptions; and in this general form of perception, the middle is the fluid or moving connection which tells us that *this* solid beginning has passed into just *this* solid end. "Everything that changes," saith Philosophus, "is something and is changed by something and into something"; and if we make that by which a thing is changed an inherent force (as ultimately we do), this saying will serve as a pattern for all our perception of reality.

The Greeks accepted as an axiom of physics that "some things are in motion and some at rest." This but states formally what our sense experiences continually assert. We see moving objects, but we see them as moving only because they traverse a stationary background, or because we ourselves are in motion, in body, in head, or in the eye muscles. From vision alone, unaccompanied by kinesthetic sensations, it is frequently impossible to tell whether it is the perceived objects or our own bodies which move. A familiar illustration of this is the experience of uncertainty which comes when one is seated in a railway car beside another train, as to whether it is one's own or the parallel train that is starting; the visual sensation of motion so strongly suggests the accompanying kinesthesis that it is only by comparing the observed train with some object known to be sta-

[3] Kurt Bernhard, in an article on "Die Relativität der Zeit" (*Archiv. für Systematische Philosophie,* XIII., 3), gives space a kind of conceptual priority to time for the interesting reason that "time is a straight line," *i. e.*, we fall back upon spatial representations when we wish to express temporal relations, but feel no corresponding necessity in regard to space, which (as geometry shows) is describable in terms of its own characteristics. The "*Zeitlinie*" is not a circle nor a closed curve, nor a type of curve leading into infinity; it has no single points, and it is continuous; the straight line, one dimension, is its proper image. This view is interesting in connection with Minkowski's suggestion ("Raum und Zeit," *Jahresbericht der Deutscher Mathematiker Vereinigung,* Vol. XVIII.) that time may be treated, mathematically, as a fourth dimension. . . . The problem involved seems to be one of the symbolization rather than of the intuition of these "forms of experience."

tionary that we can assure ourselves that we are not in motion. Similarly, if a train passes at express speed your own more slowly moving car, it gives you not only the visible, but also the bodily feeling of slowing down; you are able properly to judge your own speed by observation of telegraph poles or other stationary objects—which themselves have the illusion of motion. Thus it is evident that perception of motion is normally visual-kinesthetic; and in ordinary experience it is the kinesthetic element which tells us whether our bodies or the perceived objects are in motion; in other words, kinesthesis gives us perception of bodies in motion, vision of bodies at rest; or, in any given motion $m — n$, vision defines for us the limiting stations, m, n, kinesthesis supplies the connective p.

This must not be taken to mean that the sense of sight can not by itself give perception of motion. Most of our perceptions of motion are purely of this sense. Particles too small for detection while at rest become visible so soon as they are in motion; even so large an insect as the house fly is often difficult to discern if it remain stationary. Perhaps the most astonishing illustration of this power is the fact that the illuminated paths of ions—the infinitesimal particles of the infinitesimal atoms that compose the invisibly minute molecules—have been shown to be visible. And in the biological realm the fact that the very young of many animals escape observation by lying unmoving, while most animals may be startled into motionlessness, illustrates the relative imperceptibility of stationary objects. Furthermore, there is an obvious difference between visual perceptions of motion dependent upon a general kinesthesis and purely visual motion. In the former case, the movements observed are indistinct and blurred as compared with the minute discriminations of which pure vision is capable. Rapid motion of the body or the head or the eyeballs results in an impression of confused rather than of clear-cut change; it is only when the eyes are definitely focused upon an object that minute changes can be observed,—a glance at a sunny meadow shows it all green, while to our steady gaze it resolves into a play of colors. Perhaps we can generalize with the statement that bodily movement (kinesthesis) tends to resolve motions into *continuities,* static vision into discrete *elements.*

For it is not at all certain that our perceptions of motion, even in vision, are not ultimately kinesthetic. The structure of the eye is such that delicate accommodations are constantly taking place, and these are accentuated the moment the gaze is directed to follow a moving object. Further, the more rapid motions are not seen as motions, but as things. In the case of the ions, above mentioned, what is actually seen is an illuminated *path,* a streak or line, not at all a motion; it is like the wake of a meteor or a flash of lightning

which visually assumes an extended form because the motion is too swift for the eye to follow. This appears to be the case throughout nature; we see things as stationary when their motion is too rapid for the eye to follow; all vision is mediated by radiant energy, which represents the most rapid motion known to us, though it is never seen as motion, but only as color or light; so that we might say in general that a motion becomes visibly such in proportion to its slowness, or, at any rate, in proportion to its susceptibility to visual-kinesthetic analysis. A common illustration of the tendency of rapid motion to lose its character as motion is the case of the spokes of a rapidly revolving wheel, which with sufficient speed resolves into a disc of color, or into bands varying in hue with the distance from the hub. We might well liken the bands of the solar spectrum to a similar modification of the etheric vibrations whose different rates correspond to the several colors. Thus again we see actual movement perceived as visible magnitude—as thing or element rather than as transition.

It might be assumed that hearing and smell and the other senses exemplify a similar condition, that what appear to them as qualities are in fact but motions too rapid to be followed in their proper character, and hence are converted into states viewed as if constant. This would square admirably with the physical conception of the objective world as composed entirely of forces, or active energies. It is susceptible also of an obvious biological explanation. Motions which we are to perceive as motions would naturally be such as our bodies could accommodate themselves to; that is, our perception of motion as such is directly proportional to our powers of physical reaction. There is no biological reason why we should see as motion the infinitely swift movement of the lightning, for the reason that we could not dodge it could we see it coming; on the other hand, there is every reason why we should be able to follow the swiftest motions of other animals,—and in general it seems to be that our powers of analytic vision of motion are limited by the range of animal locomotion, the whirring wings of the humming bird and dragon-fly just passing our powers at one extreme, the vermicular slowness of the snail at the other; we can not quite see the mushroom grow, we can not quite see the lightning speed, but we do not *need* to see either. And in the case of sound, our analytic perception is again roughly bounded by the range of notes open to animal production, the almost inaudibly shrill pitch of some insects at one end of the gamut, the bass growling of the huger mammals at the other; outside of these there is mainly confusion and noise.

II

The actual relation of vision to the perception of motion is beautifully illustrated by certain artistic conventions. The swift motion of a quadruped running has been represented from ancient to

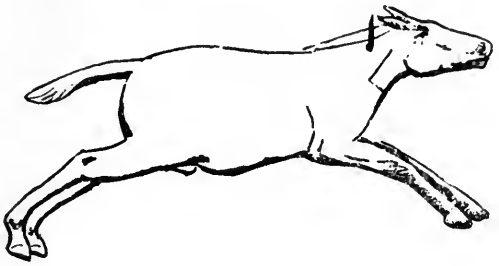

FIG. 1. Running wild ass; low relief, Nineveh.

modern times by picturing the limbs as extended, parallel before and behind, at their greatest reach (Figs. 1, 2). Instantaneous photography shows that at no time are all the four limbs raised in this manner; the position is a false one. As emphasizing the falsity and conventionality of civilized art in contrast to the superb naturalism of paleolithic European drawing, an interesting comparison has been made between these representations of running horses and the

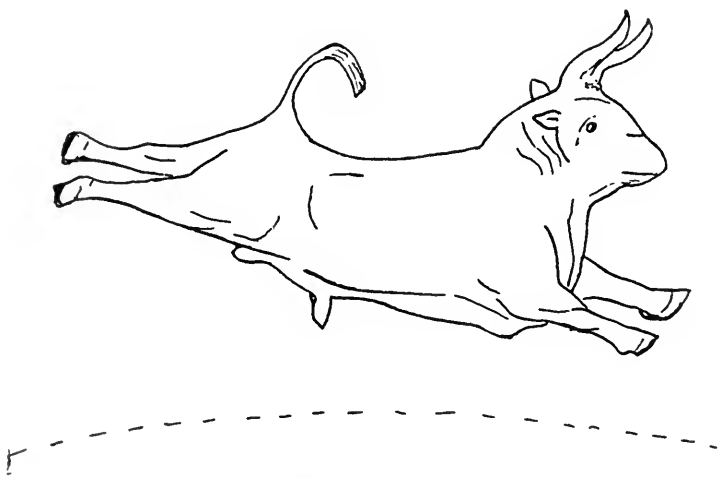

FIG. 2. Running bull; gold cup, Vaphio.

galloping or ambling deer drawn on an ancient bit of horn (Fig. 3); the attitude caught by the primitive artist is just one assumed by the galloping horse, as shown by instantaneous photographs (Fig. 4) and never reproduced in civilized art until so shown.[4] This is no doubt an interesting commentary upon the realistic truthfulness of paleolithic perceptions; but a moment's regard of the pictures will show that the artistic truthfulness of representation is all with the

[4] S. Reinach, "Apollo," Paris, 1904, pages 6–7.

civilized picturing,—the image of a horse running at top speed is properly suggested by the false drawing.

What is the reason for this? Clearly it is an idiosyncrasy of our vision of motion, and this may be stated: the movements of

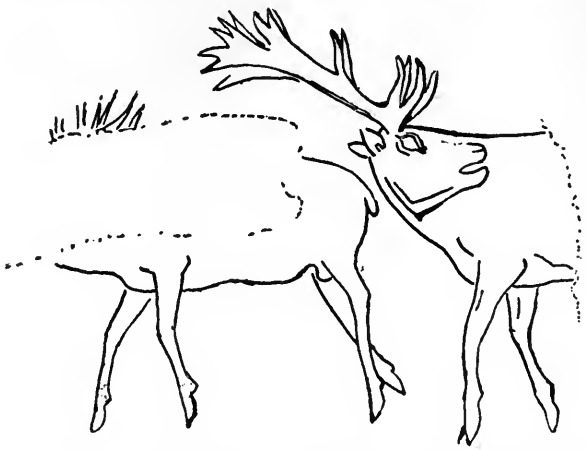

FIG. 3. Galloping reindeer; incised bone, Caverne de Lorthet.

rapidly moving objects are visually indicated by their points of comparative rest, which are also their points of maximum acceleration. This may be graphically indicated by the image of a pendulum (Fig. 5); at the extremity of its swing (*a*) it is in momentary pause, but just this position suggests rapid motion far more effectually than any intermediate position (*b*), while at the point of swiftest motion (*c*) it appears to be stationary.[5] The limbs of the running quad-

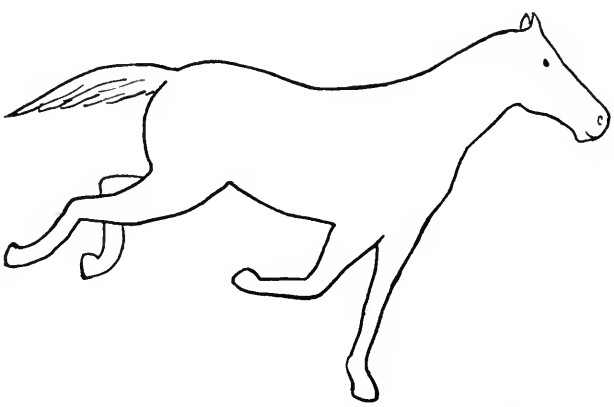

FIG. 4. Galloping horse, after an instantaneous photograph.

ruped are similarly seen at their highest swing, a point of momentary slackening and pause preparatory to regression. Of course this is actually the point of the greatest rate of change of motion, and it may indicate the maximum strain upon visual accommodation.

[5] I borrow this illustration from the suggestion of H. G. Spearing, "The Childhood of Art," New York, 1913, page 103.

Another illustration might be drawn from the revolving wheel; motion is actually seen, or best seen, in the twinkling of the spokes nearest the hub, where the movement is really slowest. Again, if you will watch a rapidly receding train or car, instead of a uniform shrinking of the image, it will be seen to diminish in a succession of contractions, the eye interpreting the constant motion as a series of

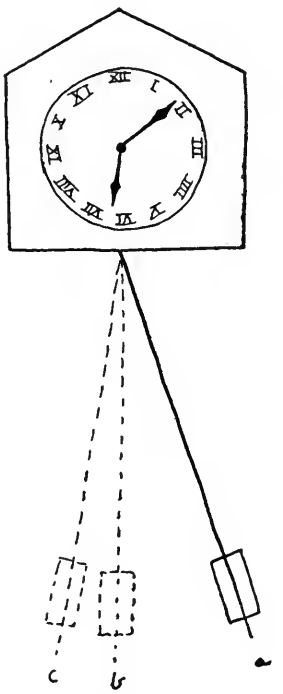

FIG. 5.

positions or pictures, very similar in effect to the flicker of a cinematographic picture. Thus, again, we find the function of pure vision to be the representation of rests rather than motions, the continuities which it perceives being in space rather than in time, and made up of stations or points rather than of transitions; the transitional element is mainly, if not exclusively, kinesthetic, so that we may reasonably doubt whether the fixed eye of a person congenitally anesthetic to muscle sensations would be able to perceive any motion at all.

An artistic convention of a different type gives us light from a different vantage. This is the tendency to *elongate* the bodies of moving animals. Doubtless the actual extension of the running horse or dog, head low and tail out, or of the flying duck, with neck straight, is greater than that of the same animal in repose; but there is no such elongation of the body itself as appears, for example, in the running bull of the Vaphio cup (Fig. 2) or in the ivory acrobats from Knossos.[6] The instinctive rationality of this

[6] *Cf.* Spearing, "Childhood of Art," Fig. 336*a*.

convention we must realize when we reflect, for instance, upon the relative ease with which we represent rapid motion in the case of the trout as compared with the bass, or the minnow against the sunfish; chubbiness is all at odds with speed, which pictorially tends to assume the general form of a streak.

The instancy with which we transpose motion in time into extension in space—visual movements into visual things—was beautifully illustrated by Professor Cattell's experiments with his wheel chronoscope.[7] "In the ordinary vision of daily life," he writes, "the eyes, the head and the whole body are in continual movement. There are no distinct and lasting images on the retina; the physical conditions are those of the photographic plate when the camera is constantly moved hither and thither. But the world that we see appears to each of us distinct and unshifting. When I glance across the room—along a row of books covering its side, for example—images follow one another in rapid succession, but I see this time continuum as a space continuum with all the objects duly arranged side by side." Professor Cattell's experiment hinges upon a moving stimulus rather than a moving eye (a distinction which is probably of moment, although the results are analogous, as see p. 283 above), but his records very clearly demonstrate the inevitability with which we spatialize our visual perceptions of change. I have observed the same fact in a slightly more complicated form: the after-image of a wheel (in the case noted, a brass electric fan) revolving so rapidly as to appear as a disc, when the eyes were suddenly cast to one side, spread out into an elongated band of color. Here, of course, we have both an obvious retinal and an obvious kinesthetic element, the two uniting to form an exaggerated spatial continuum. The elongation of the body of the Vaphio bull would seem to have a sound psychological *raison d'être.*

And here an adversion to Lessing seems in place—especially since the world of esthetics is just now torn between cubistical artists bent on proving him wrong with the brush and shocked critics manfully maintaining with the pen his invulnerable righteousness. *"Es bleibt dabei: die Zeitfolge ist das Gebiet des Dichters, sowie der Raum das Gebiet des Malers,"* is Lessing's famous dictum.[8] The crust of his discussion is the unpicturableness of motion, the preeminence of repose as the theme of plastic and graphic art. It is first to be noted that Lessing (yielding to an esthetic instinct which was surer than his critical theory) compromises his own generalization. His doctrine of the "fruitful moment," when he comes to apply it to the problem of motion (as distinguished from emotion),

[7] "On Relations of Time and Space in Vision," *Psych. Rev.*, VII., 4, page 325.

[8] "Laokoon," XVIII.

induces an immediate modification. "All bodies exist not only in space, but also in time. They endure, and can in each successive moment of their duration appear otherwise and stand in other relations. Each of these momentary appearances and combinations is the effect of a preceding and can be the cause of a following moment, and so can be regarded as the center of an action. Consequently, painting can imitate actions, though only indicatively through bodies."[9] In acceding to Herr Mengs's comment on the treatment of draperies by Raphael, Lessing is again concessive. He quotes Herr Mengs[10] as follows: "Every fold has with him (Raphael) its reason, be it on account of its own importance or from the movement of the limb. Often one may observe from the arrangement of the folds, how they have just been disposed; and Raphael finds significance in this. One sees, in the draperies, whether a leg or an arm, previous to its motion, has been advanced or retracted, whether the limb proceeds from bending to extension, or whether, having been outstretched, it contracts." It is undeniable that the artist, in this case, represents two distinct moments in a single image, says Lessing,—just as the poet, by multiplying his epithets, may outstay his artistic right in some unwontedly charming bit of space. The two arts must be mutually hospitable of such encroachments, like friendly neighbors; but "just as there, with the painter, the two distinguished moments border upon one another so immediately that, without hesitation, they may pass for a single one; so here, with the poet, the several indications of different parts and qualities in space follow one another with such compression and celerity that we believe ourselves to hear them all at once."

It is evident enough that Lessing was dealing with a bigger problem than the limited psychology of his time could qualify him to handle. In a certain broad way he is probably right as to the essential distinction between poetic and plastic "imitation." Nevertheless, when he comes to the minutiæ of his distinction he fails to give any satisfying account of the painter's significant moment, in so far as it is concerned with the technical portrayal of motion. May it not be that this moment is to be found just at that point in the progress where, perceptually, the movement is crystallized into the visual thing, the action converted into a visible embodiment? The primitive conventions which we have noted seem to imply this.

Of course it would be begging a number of esthetic questions if we were to permit such a satisfaction of Lessing's problems to legalize the "boundaries" which he sets for the arts. Modern painting makes use of spaces undreamt of in his day, and there is no compelling

[9] *Ib.*, XVI.

[10] *Ib.*, XVIII.

reason why the artist should not experiment with observational moments as well as with angles of regard; it is a mistake to suppose that we are going to stay by the mask of La Mettrie after we have discovered in it the gaping fool, and it may be that we will have caught and passed it in just that instant in which it is triumphantly the laughing philosopher; every one knows that pictures have their moments of glamor, and that it is just for these moments that we love them. Why may not the artist legitimately work for these rapt eternities rather than for the tedious interregna which we fill with conscious criticism? This need not be interpreted that I pretend to understand the cubists!

III

It would offend my temperament to leave this subject without suggesting some of its implications. I have touched upon these in the field of esthetics. For psychology they are quite as interesting. Instead of dealing with perception of time and perception of space as if they were as independent as ever Kant thought them, while perception of motion follows as a sort of evolution from their fusion, ought we not to start with perception of motion (or back of that with change) and proceed thence to the explanation of time and space? It is all very well, mechanically, to treat time and space as constants of thought; but mechanics is artifice, and psychically experience seems to follow an inverse mode. The geometers, who develop the idea of space from the idea of motion, seem to have the empirical right of way.

It would be a dereliction to fail to mention Bergson in this context—and supererogation to point the application. But may it not be true that *la durée réelle* esthetizes itself in Lessingian moments? Or again may it indeed be that infinite space and all the extended splendors of the universe are but the contemplated other of the timelessly egoical absolute? For metaphysics, too, our observations seem pertinent.

HARTLEY B. ALEXANDER.

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SOCIETIES

NEW YORK BRANCH OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

THE New York Branch of the American Psychological Association met in conjunction with the Section of Anthropology and Psychology of the New York Academy of Sciences, on November 24 and on February 23. The November meeting was held at the psychological laboratories of Columbia University and the February meeting

at the psychological laboratory of Princeton University. The following papers were presented:

Professor Thorndike's Attack on the Ideo-motor Theory: PROFESSOR MONTAGUE. (To appear in full in a forthcoming number of this JOURNAL.)

The Color Vision of Animals: MRS. CHRISTINE LADD-FRANKLIN. (No abstract offered.)

The Character of Ideas: JOHN PICKETT TURNER.

Recent psychological literature shows a wide divergence of opinion as to what the proper task of psychology should be. On the one hand psychology is defined as the science of behavior. It is claimed that the student in his investigations can totally disregard what was once thought to be the true field of psychology, states of consciousness, ideas, etc. Such is the position of Watson. On the other hand, it is said to be the task of psychology "to study the structure of the mind as if there were no such thing as body," working in the main "as though there were nothing in the world except psychic facts." Both of these positions show the unconscious influence of the Cartesian tradition,—a disposition to set ideas apart in a class by themselves. There seems to be a general disposition among psychologists to take ideas out of nature. This is unfortunate; for ideas so regarded have lost their true character. Ideas are in and of nature. They are events in nature just as much as bodies, motions, and qualities are events in nature. Events in nature come into various relations. There are qualities known as color; so there are qualities known as meaning. Certain events imply certain other events. The psychologist should study ideas as events in nature. To do this he must rid himself of the unhappy habit of associating ideas exclusively with men's bodies. The important thing is that certain events are effectively related to certain other events, cortical or others. The one thing to remember is that ideas can be successfully studied only in the concrete. Such a position calls for the reinstatement of introspection in its former place of honor.

Measurements of Judgments of Certainty: RICHARD H. PAYNTER.

The purpose of this article is to state briefly the results of a series of experiments in which measurements of judgments of certainty or accuracy of recognitions were obtained. There have been many investigations concerning judgments of various psychological processes, but judgments of certainty have received much less attention. In the present paper different degrees of certainty are used, and the validity of judgments of certainty is measured in terms of the actual facts. By this method it has been found possible to say just how much value to assign to the judgment of one's own absolute certainty

or confidence. In order to compare the judgments of certainty of two or more individuals they must all have an equal number of recognitions. No attempt, however, is made to do this here. By asking the subjects to sort their recognitions of quarter-page advertisements just seen in piles of 100 per cent. certainty, 75 per cent. certainty, and 25 per cent. certainty, it is possible to measure not only the accuracy of recognitions for each of the piles, but also the judgments of the three degrees of certainty. This is done in the following manner. It is first necessary to get the per cent. of accuracy of recognitions of each pile. This is obtained by the use of Strong's formula

$$\frac{\text{correct recognitions} - \text{incorrect recognitions}}{\text{correct recognitions} + \text{incorrect recognitions}} \times 100.$$

The judgments for each of the three degrees of certainty are then obtained by calculating the per cent. the accuracy of recognitions of each pile is of the certainty or accuracy required by the pile. It was found that there are individual differences in judgments of certainty and they are largest in the lower degrees of certainty; that different degrees of certainty under the same conditions are not judged equally well; that the more valid judgments are found in the pile of absolute certainty; that the same degree of certainty is judged differently under different conditions; that the judgments are less valid in the more difficult situation; and that there is a general tendency to underestimate the high degrees of certainty and the underestimation increases with the difficulty of the task. Judgments of certainty in experiments on perception or recall memory may be measured in the same way as those in recognition memory. Finally it is of practical importance that no two statements of absolute certainty or any other degree of certainty be considered of equal value unless actually found so on measurement.

Transfer and Interference in the Substitution Test: HENRY A. RUGER.

The purpose of the study was to determine whether a well-formed rival habit or a poorly-formed one had the greater influence on the formation of a given habit. The plan of the experiment included an initial and final test series with a given key and a practise series with keys formed by varying the arrangement of the test key. For the practise series the group representing the well-formed habit practised on a single rival key; the group representing the poorly formed habit either constantly changed to a new key or practised fewer times on the same rival key. In addition to these two main groups there were three control groups and one group which practised on the test key. One of the control groups read newspapers during the practise period; another did addition, and the third worked on a different type of substitution. All the groups took the initial and final tests

with the test key. All the groups did better in the final than in the initial test. However, the rival-habit groups showed much less improvement than the control groups. Consequently there was a dominant interference effect. This interference effect was greater in the group that formed the one strong rival habit than in the one that formed one or many weak rival habits. The control groups were so planned as to have different degrees of relatedness in their practise series to the test keys. The newspaper group simply read what interested them—spontaneous attention; the addition group worked with voluntary attention and at top speed. The substitution-control group worked on material similar to the test series, but not conflicting with it. The three groups followed this, the above, order in the extent of the improvement of the final over the initial test. Since the difference, however, is less than the probable error, the control groups may be considered as equivalent in this particular case. The group which practised on the test keys showed two and a half times the improvement of the control groups, while the control groups showed twice the improvement of the poorly formed rival habit group and three times the improvement of the well-formed rival habit group. Improvement was measured in terms of substitutions per second.

Three hundred and fifty subjects took part in the experiment. Woodworth's and Well's color-naming and geometrical substitution tests were employed. The symbols forming the keys were five different letters or figures.

Some Tests for Efficiency in Telephone Operators: H. C. McComas.

Two methods may be followed in testing telephone operators; one, by analyzing the activities at the switchboard and examining each, the other by testing these activities as a whole. The latter was followed in the work at the Princeton Laboratory. The apparatus duplicated an actual switchboard, on a small scale. The operator made connections at the board and these were timed by a kymograph in an adjoining room. The kymograph records showed the time which elapsed between the appearance of a light over a call connection and the moment an operator "plugged in"; also, between the moment a number was called and its appropriate connection made. Fifty records in succession were taken for each subject. The operators were ranked according to the quickness of their reactions. This ranking was compared with the composite ranking made by two telephone supervisors independently. The test easily detected the two best, and two out of three of the poorest, of the nine operators supplied by the Princeton exchange.

This rather difficult test was supplemented by one which called for very much simpler apparatus; practically a test in motor coordination. The operator sat before a table supporting an upright board

upon which was fixed a sheet of paper containing ten crosses, arranged in three irregular rows. With a pencil she sought to touch the intersections of the crossed lines in quick succession. After each thrust at a cross the pencil point was brought down upon a blotter on the table. This gave a movement similar to that of the switchboard. Each subject was instructed to make the movements as quickly as possible, but not to sacrifice accuracy for time. Tests were made for each hand and with the sheets in various positions. The records in time were taken with a stop-watch; those for accuracy, by measuring the distances of the pencil marks from the intersections of the lines. The rankings thus obtained agreed remarkably well with the estimates of the supervisors, showing a correlation of .6250, with a probable error of .14 (by Spearman's Footrule). We have, then, in this form of the motor-coordination test a valuable means of detecting the quickness and accuracy of telephone operators,—two of the most important traits which make for success at the switchboard.

An Experimental Critique of the Binet-Simon Scale: CARL C. BRIGHAM.

The Binet-Simon scale was applied to 294 children from 6 to 16 years of age, the majority of cases (226) being under 12 years. Experimental conditions were adhered to as strictly as possible. The three investigators were always in ignorance of the physical age of the child being examined.

A normal distribution of cases about the "at age" position was found, 83 per cent. of the cases under 12 testing "at age," 3 per cent. "above age," and 14 per cent. "below age."

The scale was not uniform for all ages, as shown by the average age difference of each physical age group, given in the following array:

Physical age	7	8	9	10	11	12
Average difference	0	0	0	— 0.5	— 0.7	— 1.4

The lack of tests above twelve years, and the difficulty of the "twelve year" tests cause the deviations from the norm at 10, 11, and 12 years.

The teachers and the principal graded the children into five groups according to mental capacity. The average age difference of the five groups correlated with the teachers' judgments were as follows: "Very bright" + 0.9, "Bright" 0, "Average" — 0.5, "Dull" — 0.9, "Very dull" — 1.8. In 4 per cent. of the cases there was a disagreement between the judgments of the school authorities and the results of the tests.

From the results of the investigation, it was found possible to conclude that the scale, as now standardized, measured the development

of intelligence of the children examined with at least 96 per cent. efficiency, and served as an adequate measure of comparatively slight individual differences in groups of the same physical age. The "twelve year" tests were found to be unsatisfactory. Sex differences were slight, girls possibly tending to vary more than boys. The influence of the personal equation of the experimenters upon the results of the tests was found to be negligible.

Recall in Relation to Retention:[1] GARRY C. MYERS.

Ten words were pronounced with regular tempo to 300 boys and girls of normal school, academy, seventh, and eighth grades. The subjects were made to believe it was a regular spelling test. At various intervals the several groups of each grade were surprised by the request to recall as many of the words as they could remember. All groups compared gave a final recall after the same interval (one hour, one-half hour, or three weeks). One group had two intervening recalls, one had one, and one had no intervening recalls.

The results for final recall are best with two intervening recalls, and for one intervening recall much better than for none. The gain by the five minute over the immediate recall is noticeably greater in its effect on the final recall, than the gain of immediate recall over no intervening recalls. The total percentages for the respective groups of girls are 89, 71, 58; for the boys, 73, 61, 52 (final recall after 30 minutes). The total percentages show a strong gain in efficiency in the final recall after one hour, as a result of immediate recall—girls, 76, 43; boys, 61, 40

On the whole the girls are noticeably superior to the boys and their mode is one degree higher for each period of time. For immediate recall and recall after one hour the mode for the boys is at 5, for the girls, at 6. After three weeks it is at 4 and 6, respectively. The average deviation from the mode is consistently greater for the girls than for the boys.

The pedagogical significance of these findings, especially in relation to drill and frequent reviews, is obvious.

A Comparison of Stylus and Key in the Tapping Test: H. L. HOLLINGWORTH.

During a prolonged series of tests both stylus and telegraph key were used in the tapping test by the same persons. The paper presented some comparison of the results secured by the two methods. Data secured by the two methods can not be treated as even qualitatively comparable,—the two methods not only do not yield the same results, but they do not seem even to test the same function. The key is much slower than the stylus, the difference increasing with practise.

[1] This paper is published in full in the *Journal of Educational Psychology*, March, 1914.

The best individual by one method is not the best by the other. There is 20 per cent. gain as the result of practise, when using the stylus, but no gain at all in the use of the key. The variability of the records is greater with the key than with the stylus. With respect to amount of improvement through practise, individuals stand in the same relative order by the two methods, but the individual variabilities are quite different in the two cases.

The Work Curve for Brief Period of Intense Application: R. S. WOODWORTH.

Though the question of mental fatigue has been most examined in prolonged work, it is possible that a characteristic work curve should be obtained from short periods. In collaboration with Drs. Wells and Pedrick, the author has studied periods of 5–40 seconds in controlled association tests (logical relations, color naming, simple directions), series of 10 or 20 stimuli being visually presented all at once, and the subject being required to react to the stimuli one after another without intermission. The time of each single reaction was recorded in order to see whether the speed of reaction changed in the course of the series. The work curve so obtained varies from trial to trial, but on the average, runs a definite course. The initial reaction is the slowest, the next few the quickest of all, then comes a gradual decline of speed till the last reaction, which is quicker than those just before it. In the traditional language of the work curve, we find here a rapid warming-up, followed by progressive fatigue and an end-spurt. These conceptions are, however, of questionable value when applied to so brief a period of work, and a truer interpretation may be had from the notions of overlap and interference. The "fatigue effect" is here, probably, an index of the steady accumulation of interferences, while the warming-up and end-spurt effects can be connected with the overlapping of the reactions to successive stimuli. Overlap acts to the advantage of the performance as a whole, in spite of the division of attention involved; but in the case of the first reaction, the division of attention is present without any chance of gain from the overlap, while in the final reaction the division of attention lapses and the advantage of overlap remains. When the same test material is used with an interval of a few seconds between the presentation of successive stimuli, both overlap and interference would be expected to drop out; and, in fact, the work curve under these conditions reduces practically to a dead level.

A Comparison of the Influence of Strychnine and Caffeine on Mental and Motor Efficiency: DR. A. T. POFFENBERGER, JR.

The paper is based on a comparison of the results of two recent studies, namely, "The Influence of Caffeine on Mental and Motor Effi-

ciency,'' by H. L. Hollingworth,[2] and ''The Effects of Strychnine on Mental and Motor Efficiency,'' by A. T. Poffenberger, Jr.[3] Striking differences appear in the action of the two drugs upon certain mental and motor processes. The two tests were conducted on the same general plan, and comparison of the two is both permissible and easy. The tests were those well known in every psychological laboratory. Motor ability was tested by the tapping test, coordination test, and the steadiness test, while the mental ability was tested by the color naming test, opposites test, cancellation test, and calculation tests.

Caffeine caused an increased efficiency in most of the tests, the amount of increase varying with the size of the dose. Exceptions to this statement were few, the principal one being the decrease in steadiness with the increase in the size of the dose of caffeine. No after effects were noted during the course of the test which extended over a period of about forty days.

The strychnine test, covering about the same period of time, showed none of these effects, except in the case of the steadiness test where there was a suggestion of decreased steadiness after a dose. There was neither an increase in efficiency nor a retardation measurable during the period of the test.

The explanation of the difference is to be looked for in the seat of the action of the two drugs in the nervous system, the latter acting primarily on the cord and medulla and the former affecting the higher centers of the cerebrum.

H. L. Hollingworth,
Secretary.

Columbia University.

IDEALIST TO REALIST, ONCE MORE: A REPLY

In a recent number of this Journal[1] Mr. J. E. Turner makes a justifiable criticism not, I think, upon my argument against ''neo-realism,'' but upon a questionable expression in my statement of the argument. He objects to my attributing to the realist the ''certainty that he is . . . having a complex experience described by the terms yellowness, coolness, etc.''[2] As Mr. Turner truly says the realist would hold that he is describing ''the object, not his experience as yellow.'' Mr. Turner's criticism is simply met, and

[2] ''Archives of Psychology, No. 22, 1912.

[3] *Am. Jour. Psychol.*, 25, 1914, 82 ff.

[1] ''Miss Calkins on Idealism and Realism,'' this Journal, Vol. XI., pages 46 ff.

[2] This Journal, Vol. VIII., page 453, quoted, Vol. IX., page 603. The sentence is not quoted entire by Mr. Turner.

my meaning is correctly expressed, by replacing the word "described" by the word "indicated."[3] For however firmly the realist asseverates that he is describing an extra-mental entity he can not, and does not, deny that by the term "yellow" he also indicates that part of his experience (or consciousness) which he calls "seeing yellow."[4]

The idealist's argument may then be restated, omitting the term which Mr. Turner criticizes. Such a restatement runs, briefly, as follows: Both the idealist and the neo-realist admit (1) that they have a consciousness indicated by the terms "yellow," "cold," and the like. The neo-realist holds (2) that he also perceives directly an extra-mental object, yellow and cold. But if this second statement be challenged (as by one who says "the object is gray, not yellow") the neo-realist must fall back upon the position which he occupies with the idealist. No reiterated assertions, "the object is yellow," "yellow . . . is an adjective applicable only to material objects"[5] will prevail against the stubborn counter-assertion, "No. The object is gray." There is nothing left to the realist except the insistent statement "I have the consciousness indicated by the term 'yellow,' not by the term 'gray.'"

This proof, from the admitted occurrence of illusion,[6] that the object of immediate certainty is experience (*i. e.*, consciousness) is merely the first step in an idealistic philosophy. But it is an undemolished barrier to all forms of neo-realism.

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REVIEWS AND ABSTRACTS OF LITERATURE

Proceedings of the Aristotelian Society. 1912–1913. N. S., Vol. XIII. London: Williams and Norgate. 1913.

It has been noted by several observers that the influence of Bergson in England has been much stronger than in America. This opinion is confirmed by a comparison of the "Proceedings of the Aristotelian Society" for last year with the topics discussed before the American Philosophical

[3] I have used this expression in the paragraph next to that from which Mr. Turner quotes. *Cf.* this JOURNAL, Vol. VIII., page 453, paragraph 3.

[4] This JOURNAL, Vol. XI., page 48, paragraph 2. There is much to be said for Mr. Turner's contention that the term "experience" can not be unambiguously used. In the idealist's mouth it means "consciousness," whereas the realist often interprets it to mean "object as experienced."

[5] Turner, *op. cit.*, pages 48–49.

[6] *Cf.* A. O. Lovejoy, *Philosophical Review,* 1913, XXII., pages 410 ff., for criticism of the various attempts of neo-realists, in "The New Realism," to explain illusion.

Association during the same period. Of the thirteen papers in the British volume, three deal directly with the French vitalist and three more indirectly criticize some of his dominant hypotheses. Besides these six there are two which reveal an interest in the problems of vitalism. Interest in Bergson, however, is far from being identical with Bergsonism. And after reading this volume, nobody will accuse the Aristotelian Society of having degenerated into a revival meeting of neo-vitalists.

Mr. Bertrand Russell's leading article, "On the Notion of Cause," at once disappoints and pleases the reviewer. Mr. Russell seeks to show that the law of causality, as usually stated by philosophers, is false and is not employed in science. What he actually succeeds in proving—and most clearly, too—is that the definitions of causality (and necessity) given in Baldwin's "Dictionary" are false and never used by scientists. The reviewer would gently protest that Mr. Russell unduly flatters this literary *informe ingens cui lumen ademptum* when he assumes that it represents the opinions of philosophers on the nature of cause. Rather than attack this blind Cyclops, Mr. Russell might better have selected the statements of half a dozen contemporary thinkers. That would have been fairer to philosophers, at any rate.

Mr. Russell next considers the nature of scientific laws; and he finds that, far from stating that one event A is always followed by another event B, they state "functional relations between certain events at certain times, which we call determinants and other events at earlier or later times or at the same time." No *a priori* category is involved in this; scientific laws are purely empirical and not universal except in a trivial and useless sense. The most interesting point in Mr. Russell's paper is his argument (which unfortunately falls short of being a proof) that "a system with one set of determinants may very likely have other sets of quite a different kind; that, for example, a mechanically determined system may also be teleologically or volitionally determined." This, of course, has come to be pretty familiar among those who have worked in the mathematical-logical problems of philosophy; and it is susceptible of a variety of proofs, some of which have been set forth by various writers, but without particular reference to the philosophy of causation. Would it not have been useful, in Mr. Russell's essay, to have repeated the proof with this reference?

To the reviewer, it appears that Mr. Russell ought to have expanded considerably the most difficult and novel proposition in his analysis, namely, that the scientific law of cause makes no difference between past and future. "The future determines the past in exactly the same sense in which the past determines the future." The word "determine" here has a purely logical significance; a certain number of variables "determine" another variable if that variable is a function of them. With this the reviewer entirely agrees, as far as it goes; but it does not bring under scrutiny those very peculiarities of the so-called "necessary connection" which differentiate it from other instances of simple logical determination. There is a specific difference between the relation of lightning to thunder

and the relation of the two sides and included angle of a triangle to the third side. For instance, the thunder-lightning relation seems to be a *real* irreversible in spite of the fact that, in its logical determination, the later event determines the former and *vice versa*. Briefly, then, the causal determination is a species of the genus function-variable. The scientist deals with causes and effects generically, and finds this very useful; even as the politician may deal with men generically as vertebrate bipeds with appetites and reactions. But the metaphysician *ought* to study his objects, be they causes or people or what not, in their full specificity. But the mathematician who reconsiders thunder and lightning merely as instances of function and variable is being pragmatic in the bad sense of this foggy adjective.

The second essay of the volume, by Mr. G. Dawes Hicks, considers "The Nature of Willing." In a most happy manner, the author shows the all but incorrigible vagueness of philosophers in their use of the term "will." He then restates Lotze's acute description of man's complete ignorance of all that happens between an act of conscious volition and the fulfilment of the resolve. Mr. Hicks, accepting this account, concludes that "what specifically characterizes volition as a fact of mind must be, to a large extent, independent of the execution which is its normal consequent." Because of this, argues the writer, "it is exceedingly improbable that in the primitive stages of conation there could have been in any way prefigured or foreshadowed in a specific conative act the results which would ensue from that act." "Anything, therefore, of the nature of an idea of end or purpose must, in that case, be absent from the early phases of the life of consciousness." Primitive life lacks volition; and even in mature life, the willing agent, "from being comparable to an operator, to whom the various details of his apparatus are familiar . . . might more appropriately be likened to a subordinate laborer who, to the working of the machine, the inner structure of which he has neither seen nor comprehends, contributes merely the external appliances necessary to set it going." Mr. Hicks ends by casting doubts upon the propriety of invoking "dispositions" to explain how the act of will or the idea of the end desired passes over to fulfilment. "Disposition" merely blankets our ignorance of the process with an easy name. The conclusion of the article is that mental activity can not be identified with conation.

In "Purpose and Evolution," Mr. Arthur Lynch, a reformed Spencerian, intones a pleasant song of revolt against Spencer and Darwin. There is a purpose in the world; but the singer does not argue his case. He asserts it fierily, with frequent choruses from eminent natural scientists (in the footnotes). Mr. Lynch is profoundly impressed with the fact that man is gaining a mastery over Nature and is working his way toward "independence of authority" and free imagination.

"A New Logic" is presented by E. E. Constance Jones. It is a criticism of Charles Mercier's recent book of the same title. Mr. Mercier wishes to discard the traditional analysis of a proposition into subject

and predicate and to substitute therefor the relation of "Ratio": thus, "*A* is unequal to *B*" would be analyzed into the terms *A*, *B*, and the specific relation of inequality. Miss Jones points out that, as the number of distinct "ratios" (types of relation) is indefinitely great, no classification of propositions would be possible. The critic heaps objection upon objection, until Mr. Mercier is—or ought to be—confounded.

The fifth paper is by Mr. Frank Granger, on "Intuitional Thinking." This is a peculiarly worded, but significant analysis of perception and "higher" intuitions. Mr. Granger shows, among other things, that normal perception is stereoscopic in time; that is, we do not perceive instantaneous characters, but rather genuine duration characters in which past, present, and future are "fused"—or, to quote the author, "gathered into one aspect." The reviewer must protest against the language here, but not against the fact which Mr. Granger notes. The words suggest that a "mind" somehow seizes things in different times and places and condenses (interpenetrates) them into one time (and perhaps one place). Now this is not what Mr. Granger means; he means, I take it, that the act of intuition is itself extended in time and nevertheless truly single. The stereoscope does condense; it brings two space fields into one field. But apparently this is not strictly analogous to the intuiting of time and things in time. The intuiting itself is approximately coterminous temporally with the things intuited.

The most ingenious point in the essay is Mr. Granger's explanation of the felt difference between an intuited object and a conceived one. The real order is a time order, says he, and irreversible; but the conceptual order is timeless and hence can be thought of, so to speak, forward or backward or in any artificial arrangement we choose to cast its elements into. The feeling of this plasticity is the mark of a concept. Formal logic is a mechanicism for economizing the elements of the intuitional series, and so rendering them more adequate to present reality in its narrative form. Reality is irreversible; and real propositions are (consequently?) inconvertible.

"What Bergson Means by Interpenetration" is told by Miss Karin Costelloe. Bergson's "duration" is a process of indivisible and spontaneous change; and it is in this process that interpenetration occurs. In describing duration, Miss Costelloe makes one very obscure and startling statement. "The thing of really fundamental importance in *durée* is interpenetration. Spontaneity really follows from this." This alleged dependence is not made evident, and certainly it calls for more light. To establish it would be a metaphysical triumph of no mean order. Interpenetration occurs when and where "the parts depend for their qualitative character upon their connection with the whole of the rest of the process." A discrete process, on the contrary, is one whose parts are independent and externally related. Duration thus shows itself to be very different from time, which is a dimension whose elements are uniquely ordered and reciprocally external.

In "The Analysis of Volition," Mr. R. F. A. Hoernlé concludes that

volition is a word of as many meanings as there are psychologists; and that "the disagreement between psychological theories is not, at bottom, of the kind which can be settled by an appeal to 'fact,' in the sense of introspective evidence. On the contrary, it is due to differences of principle." Psychologists differ as to the nature and aim of analysis, about the methods, and about the concepts to be used. The issue is: what kind and what degree of abstraction should psychology practise? This is met indirectly by a discussion of the following questions: Is volition simple or complex, derivative or unique? Does realization or action belong to the essence of volition? What are the limits of a single volition within the stream of consciousness? And what is the relation of volition to will? The aim of the discussion being to bring out the conflicting presuppositions behind them, Mr. Hoernlé's remarks touch many problems in many ways and so can not be adequately summarized here.

Next follows a brief abstract of L. P. Jacks's essay: "Does Consciousness Evolve?" It shows that the evolution "of consciousness" is quite distinct from the "evolution" of consciousness. The former is the development within the conscious series; the latter is the genesis of the series itself out of something else. This distinction becomes important in all discussions of purposive activity. Action prior to consciousness seems purposive when considered by consciousness; how, the query then arises, does the purpose operate? There is the temptation to say, as Caird does, that the end is dimly present to the mind. Jacks goes on to show how this view involves the psychologist's fallacy.

William W. Carlile, in his paper entitled "Kant's Transcendental Esthetic with Some of Its Ulterior Bearings," extends the application of the Kantian doctrine considerably beyond its original range. He shows that many propositions not ordinarily considered analytic (in Kant's sense) really are. The necessary analytic proposition rests on the law of contradiction. Any proposition, then, the denial of which would contradict, explicitly or implicitly, either the proposition itself or any other one which is presupposed by it, must be analytic. Thus, "a man who is stone-blind can not distinguish red from yellow" is analytic; for the term, stone-blind, means inability to see colors. The very process of naming, therefore, fixes the character of the analytic proposition; and "it consequently affords no basis whatever for the view that the origin of truths of this sort is, in any sense, independent of experience." Now, the striking thing about Mr. Carlile's essay is that it extends this view so as to include Kant's synthetic truths. In working out this hypothesis, the author undertakes to show that all metageometry is vitiated by its initial assumptions, all of which involve contradictions. Incidentally, he sees no difficulty in proving Euclid's postulates of parallelism, the indemonstrability of which first suggested the logical independence of the Euclidean postulates and led to the attempts to deduce systems from other than the Euclidean set of propositions.

Miss L. S. Stebbing writes on "The Notion of Truth in Bergson's Theory of Knowledge." Miss Stebbing renders a genuine service in re-

porting Bergson's highly significant, but all too little known "Introduction à la Metaphysique" published in 1903 in the *Revue de Metaphysique et de Morale*. More clearly than any other words from his pen, this sharp essay reveals how completely the neo-vitalist is enmeshed in the ancient substance-attribute notion of things. There are two ways of knowing a thing, he there tells us: one by considering the thing from the outside, and one by entering the inside of it. The former is relative and analytic; the latter gives us the real thing. The inside of a thing contains its real nature. Intuition, in that essay, is not opposed to intellect as in Bergson's later writing; it is rather a sort of "intellectual sympathy," to quote Bergson.

But this is not the main consideration in Miss Stebbing's paper. She is chiefly interested in showing that Mr. F. C. S. Schiller is entirely wrong in claiming that Bergson and his two disciples, Le Roy and Wilbois, champion a pragmatic theory of truth. The reviewer agrees heartily with Miss Stebbing's contention that both Bergson and Le Roy take a view of truth which is entirely different from the James-Schiller theory. But she will probably be assured by the Bergsonians that they are in hearty agreement with both James and Schiller, not to mention every other person who loves that blessed word Anti-intellectualism. This, too, in spite of the palpable fact that Bergson and Le Roy assert that thinking serves only practical needs and, in so doing, deforms the truth to suit those needs; whereas Schiller considers truth itself as a mere value. For Le Roy there is a point of view beyond reason; for Schiller, all mental life is purposive and hence never can attain insight to a world "in itself." For Le Roy, truth is not a value; it is movement, action, growth. In it there is nothing permanent; it is progress and not certain results. Still more clearly than Le Roy, Wilbois feels the need of going beyond the limited pragmatic interpretation of conceptual knowledge and finding truth elsewhere. Miss Stebbing goes on to draw a somewhat audacious parallel between Aristotle's doctrine of *nous poietikos* and the Bergsonian active intuition; and yet, audacious though it is, the comparison doubtless is profound, especially if one charitably minimizes the importance of the rational in Aristotle's hypothesis. The significant thing about Bergson's "intuition" is its supposed power of leaping the barriers of normal pragmatic thinking and coming to grasp the real world in an entirely impractical fashion. For Bergson this, the highest achievement of consciousness, is essentially useless; that is, it serves no particular purpose. How different from Schiller and James!

Finally, Miss Stebbing exhibits the utter confusion of the Bergsonians in failing to separate the problem of the nature of truth from the problem about the criterion of truth.

Next follows a lengthy symposium on the question: "Can there be anything obscure or implicit in a mental state?" This is discussed by Messrs. Henry Barker, G. F. Stout, and R. F. A. Hoernlé. Mr. Barker argues that "the notion of implicit, like that of unconscious, mental elements is . . . at variance with the very nature of consciousness itself." Mr.

Stout maintains the opposite. There are, he says, contents which are not separately discerned. Mr. Hoernlé agrees with neither, but with Mr. Mitchell's view of the implicit.

As one might guess from its title, "Memory and Consciousness," Mr. Arthur Robinson criticizes Bergson's "Matter and Memory." He considers four points: the adequacy of Bergson's account of memory, the part consciousness plays in his theory, the nature of the unconscious, and the power of intuition to transcend intelligence. His answers to these four problems run as follows: Bergson's treatment of memory neglects the fact that memory is an assertion . . . and falls into serious difficulties through an analysis which rests on the presupposition that everything which can be called structure falls on the side of matter. Secondly, if recollection is to aid choice, it must be possible for consciousness to illumine the situation; but Bergson holds that freedom diminishes with every increase of intelligence, and that intuition is unavailable because it is divorced from action. Here the reviewer is constrained to say that Mr. Robinson has seriously misconstrued Bergson; *practical* freedom does not diminish with increased intelligence, according to him. Only theoretical truth in metaphysical matters dwindles. Thirdly, Bergson falls into a contradiction when he makes the past completely present in every later stage of reality and yet insists upon the reality of change. Finally, psychology and philosophy can never "join hands," if Bergson is right in making science use intelligence, and philosophy employ only intuition.

The volume closes with a study of "The Philosophy of Probability" by A. Wolf. This is an endeavor to show that both complete determinism and complete indeterminism must fail to afford logical justification for the estimating of probabilities, and hence we must postulate partial determinism. This, says Mr. Wolf, is the normal assumption of common sense. There is real, "objective" chance, particularly in living creatures, but not in physical stuffs.

Walter B. Pitkin.

Columbia University.

The Authorship of the Platonic Epistles. R. Hackforth. Manchester: University Press. 1913. Pp. 203.

After a general introduction of thirty-five pages, which contains a review of the history of the question as to the genuineness of the Platonic Epistles, a summary of the supposed results of the stylometric investigation of the Platonic canon together with a revision of Raeder's list of rare words found in the Epistles, there follows a separate discussion of the claims of the thirteen letters in numerical order. As a useful summary of the previous work of numerous scholars, so far as it was known to the author, the discussion possesses a certain value; but too much of the best work was quite unknown to him, and the author contributed too little original matter or argument to affect the judgment of a scrupulous critic. The conclusion to which the inquiry leads the author may be given in his own words (p. 188): "The result to which we have been led by the fore-

going discussion is that we may hold five of the Platonic Epistles genuine, viz., iii, iv, vii, viii, xiii, that we must reject five, viz., i, ii, v, vi, xii, and that the remaining three, ix, x, and xi, must be left doubtful."

The very statement of this result ought, it would seem, to give the critic pause; for it raises more questions than it purports to solve. Above all, one is tempted to ask how so heterogeneous a collection—for even a superficial glance at the series of Epistles will show that it is a collection deliberately made for a purpose—could have come into existence if more than half of its constituent members was spurious and the remainder genuine. Our author's explanations fail to carry conviction; for they do not touch upon the vital points. Unfortunately for the success of Mr. Hackforth's study, but most fortunately for those who are seriously interested in the question of which he treats, another scholar about the same time opened up an entirely new vista by addressing himself to the more fundamental problem of the existence and purpose of the collection itself. I refer, of course, to the essay of Professor Otto Immisch, then of Giessen, now of Königsberg, "Der erste platonische Brief" (*mit einer Einleitung über den Zweck und einer Vermutung über die Entstehung der platonischen Briefsammlung*), in *Philogus,* LXXII. (N. F. XXVI., pp. 1–41). It is not too much to say that the whole question must be reopened and the results of renewed studies awaited before we can pronounce upon the genuineness of the collection; although I am as thoroughly convinced of its spuriousness now as I was eighteen years ago when I published my "Pseudoplatonica."

W. A. Heidel.

Wesleyan University.

J. G. Fichtes Werke in sechs Bänden, mit drei Bildnissen Fichtes, herausgegeben und eingeleitet von Professor Dr. Fritz Medicus. ca. 4500 pp. in 4°. Leipzig: Fritz Eckardt und Felix Meiner.

"Neoromanticism" is one of the most favored catchwords of modern thought in Germany. Springing from the very midst of this new movement a young German publisher, Fritz Eckardt, undertook some years ago to prepare a new edition of the classics of German philosophy in the early nineteenth century: Fichte, Schelling, Schleiermacher, Hegel—the romanticists in philosophy. These new Eckardt-editions, combined with the well-known editions of the "Philosophische Bibliothek" (formerly Dürr) have been taken over by another publishing house, that of Dr. Felix Meiner.

The Fichte-edition has just been finished in memory of the—apparently little noticed—one hundred and fiftieth anniversary of Fichte's birth (May 19, 1912). The only heretofore existing Fichte-edition, published by J. H. Fichte, has become rare. Moreover, it was full of inaccuracies and misprints, and the demand for a new edition became so great as almost to be an urgent necessity. The new edition, with its careful text, tries to meet this demand. It is, however, not quite complete. A few of the less important writings by Fichte, especially those of a biographical nature, have been omitted. All his other writings appear unabridged and

in chronological order. The paging of the earlier Fichte-edition has been followed in the new, so that references relating to the former may readily be looked up in the latter. Finally, a very detailed index, which amounts almost to a Fichte dictionary, and an instructive introduction, both by Fritz Medicus, one of our best Fichte scholars, form an addition which is not the least important feature of the work.

GÜNTHER JACOBY.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. January, 1914. *The Problem of Knowledge from the Standpoint of Validity* (pp. 1–16): ARCHIBALD A. BOWMAN. – The fact of knowledge is the *reality* with which epistemology starts. The standard of validity, thus becoming an internal one, takes the form of the distinction between the scientific and the non-scientific. Rationalism affirms the identification of the scientific with the valid; pragmatism denies this. This antithesis, it is asserted, contains a common presupposition, and from this presupposition the validity of knowledge is determined, with illustrations from the critical philosophy of Kant. *Truth, Reality, and Relation* (pp. 17–26): JOSEPH A. LEIGHTON. – Examines in some detail the arguments of Professor Perry in support of the neo-realistic theory of relations; criticizes his ontological pluralism; concludes that "there can be no absolutely independent facts out of all relation to other facts or themselves devoid of relational structure." *Hocking's Philosophy of Religion: an Epirical Development of Absolutism* (pp. 27–47): DOUGLAS CLYDE MACINTOSH. – The idealism of Professor Hocking is a synthesis of the historical forms of mystical, logical, and psychological idealism. Accepting (though this acceptance is criticized) the claims of naturalism, realism, and subjective idealism, he proceeds by dialectic to the position of absolute idealism, the dialectic supported at all points by an appeal to intuition. A critical examination of this intuitional appeal reveals, it is maintained, too exclusive emphasis upon mysticism, an unwarranted use of the ontological argument, and too little regard for the empirical and practical. *Discussion: Unreal Subsistence and Consciousness* (pp. 48–64): W. P. MONTAGUE. – A reply to Professor Lovejoy's criticism of the New Realism. Defends the writer's own view of the problem of error, agrees with his critic as to the "menace of relativism," and restates and defends his own theory of consciousness. *Reviews of Books:* Heinrich Richert, *Die Grenzen der naturwissenschaftlichen Begriffsbildung: Eine logische Einleitung in die historischen Wissenschaften:* GEORGE H. SABINE. Josiah Royce, *The Problem of Christianity:* A. C. ARMSTRONG. Emile Myerson, *Identité et Realité:* JOSEPH A. LEIGHTON. *Philosophische Abhandlungen, Hermann Cohen zum 70sten Geburtstag* (4 *Juli* 1912) *dargebracht:* WALTER T. MARVIN. G. J. Blewett, *The Christian View of the World:* HENRY W. WRIGHT. *Notices of New Books. Summaries of Articles. Notes.*

REVUE PHILOSOPHIQUE. December, 1913. *Mémoire Affective et Cénesthésie* (pp. 561–595): P. SOLLIER. – The existence of such memory is a fact, although the fact is generally obscured by the greater utility of other types of memory; the former types are more difficult to evoke, but are as persistent as sensorial memory; kinesthetic memory is "only a manifestation of 'cenesthesie,'" the latter being the basis of the linking of our recollections to our personalities. *La Logique du Rêve et le Rôle de l'Association et de la Vie Affective* (pp. 596–613): J. PERES. – "The thought of dream puts itself directly in opposition to the world of waking by the predominance, not alone of our internal sensations, but also of the entire automatic material of representation. . . ." These conditions, coupled with the play during sleep, of the laws and habits of normal thought, lead to the characteristic incoherencies and contradictions of dreams. *Les Fondements Objectifs de la Notion d'Electron* (pp. 613–642): A. REY. – This second installment utilizes the phenomena of the ionization of gases (Thomson and Rutherford) as further evidence for the objective reality of the elementary quantity of electricity. *Revue Critique. L'Histoire des Théologies et des Philosophies Médiévales:* MAURICE MILLIOUD. *Analyses et Comptes Rendus.* Augustin Guyau, *La Philosophie et la Sociologie d'Alfred Fouillée:* E. BOIRAC. A. Cresson, *L'Espèce et son Serviteur:* DR. JANKÉLÉVITCH. *Revue des Périodiques. Notices Bibliographiques.*

Proceedings of the American Society for Psychical Research. Vol. VII., No. 3. Pp. 391. $2.00.

Hartmann, Henry G. A New Conception of Relativity and Locke. Cincinnati: University Press. 1914. Pp. 96. $1.00.

Keller, Ludwig. Die Freimaurerei. Leipzig: Verlag von B. G. Teubner. 1914. Pp. 147. 1.25 M.

Müller-Freienfels, Richard. Poetik. Leipzig: Verlag von B. G. Teubner. 1914. Pp. vi + 98. 1.25 M.

Münsterberg, Hugo. Grundzüge der Psychotechnik. Leipzig: Verlag von J. A. Barth. 1914. Pp. ix + 767. 16 M.

Rand, Benjamin. Shaftesbury's Second Characters or the Language of Forms. Cambridge: University Press. 1914. Pp. xxix + 182. $2.50.

NOTES AND NEWS

THE meeting of the *Kant-Gesellschaft* held this year in Halle, April 18–20, was in the nature of a "*Jubiläumsveranstaltung*" to celebrate the tenth anniversary of its organization. In honor of the visitors a special performance of Mozart's "Magic Flute" was given in the Opera House. The founder of the society, Dr. Hans Vaihinger had written a "Prolog" for this opera, in which he disclosed the intimate relation existing between its theme and Kant's works. Dr. Bauch, of Jena, and Dr. Felix Krueger, of Halle, gave the principal addresses of the meeting. The former in his paper "Ueber den Begriff des Naturgesetzes," agreed with Helmholtz's

statement that a law of nature is a universal concept, and held that this must be understood, not in a nominalistic or realistic sense, but in the mathematical sense of a "function." Dr. Krueger, "Ueber den Begriff des Wertes" emphasized the necessity of distinguishing sharply the questions of value, of being, and of knowing. Since Kant's time we hold in mind that no "*Ding, oder Zweck an sich*" has value, but that every value has to justify itself before the reason. Out of mere being it is impossible to deduce an ought. Our judgments of value are, for the most part, experienced as "*Wertgefühl*" and it is not the content but the "*Wertgefühl*" that gives value. That which gives value, *viz.*, "the feeling of value," must possess *absolute* value. Since the founding of the society on April 22, 1904 (the hundredth anniversary of Kant's birthday), the membership has increased from 32 to 800 and the endowment from 15,000 M. to 42,000 M. The interest from the fund is used in giving prizes for the most acceptable treatment of given subjects, in supporting scientific journals, and in reprinting rare philosophical works of the eighteenth and nineteenth centuries. Besides a large number of German philosophers, several from Russia, Switzerland, and Austria were in attendance.

Dr. Josiah Royce, since 1885 professor of the history of philosophy at Harvard University, has been transferred to the Alford professorship of natural religion, moral philosophy, and civil polity, left vacant by the retirement of Professor Palmer.

Mrs. Christine Ladd-Franklin has recently given lectures at Cornell University on Color, and at Chicago on Color and Logic. She will also lecture at the University of Illinois on these subjects.

Dr. Edward K. Strong, Jr., of the department of psychology at Columbia University, has been appointed professor of psychology and the psychology of education at George Peabody College for Teachers.

Professor W. V. Bingham is on leave of absence from Dartmouth College for travel and for study at Cambridge University. He will return in time to continue his directorship of the Dartmouth summer session.

Dr. Mary T. Whitley, instructor in educational psychology, Teachers College, Columbia University, has been promoted to an assistant professorship in that institution.

The editors of the *Psychological Review Publications* have announced the election of Dr. Shepherd I. Franz to the editorship of the *Psychological Bulletin.*

Dr. David Camp Rogers, associate professor of psychology at the University of Kansas, has been appointed professor of psychology at Smith College.

Professor Henri Bergson gave the first of his Gifford Lectures in Edinburgh, on Tuesday, April 21. The subject was "The Human Personality."

There will be a joint session of the Mind Society, the Aristotelian Society, and the British Psychological Society at Durham, July 3 to 6.

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A DEFINITION OF CAUSATON. III

IN the two preceding papers we have carried out the empirical method of investigating the meaning of causation through the field of statics, and through part of dynamics. In accordance with the plan drawn up in the first paper, we shall now continue the inquiry through the remainder of dynamics, the "properties of matter," and the field of electricity. These, we decided, offer in the present state of science the only types of causal connection which are deserving of analysis, since all other types are reduced to some or all of these three. The next case in order is that of

Impact

This may be viewed as a case under Newton's second law, if we consider the acceleration given by one of the bodies to the other: if we consider the motion of both bodies before and after the collision, it falls under the third law. It seems to be a typical case, in dynamics, of action and reaction between moving bodies. The interest of it lies in its being treated as the type *par excellence* of *all* causation, by those who defend a mechanical philosophy of nature. Some, though not much, work has been done toward analysis of it in monographs little known to English-speaking philosophers.[1] This case also differs from anything previous in being more complex. There appears to be a decided change of quality between cause and effect, in contrast with the simple uniform series and the simple combination of two forces into one, which were examined in the last paper.

We shall begin with an artificially simple case. The bodies are supposed smooth and non-rotating perfect spheres, perfectly elastic or imperfectly elastic. The question, whether there is actual contact, may be neglected.

Elastic smooth spheres in direct collision, where there is no rotation, obey the following law. If the bodies have, respectively, masses

[1] R. Schellwien, "Das Gesetz der Kausalität," page 17; A. Kowalewski, "Ueber das Kausal Problem," pages 14–17; A. Farges, "Theorie Fondamentale de l'Acte et de la Puissance," pages 223–24; *et al.*

A and B, velocities u and v before collision, U and V after collision:

$$Au + Bv = AU + BV.$$
$$u - v = V - U.$$

$Au + Bv$ is the total momentum of the two bodies before collision; when they are moving in the same direction Bv is positive, when in opposite directions Bv is negative. In the same way, $AU + BV$ is the total momentum after collision. This means that whatever momentum A loses is taken up after collision by B, and conversely. For $Au - AU = BV - Bv$, where the left-hand member is the loss in A's momentum and the right hand member the gain in B's momentum. At contact with B, A's momentum is simply split into two parts and one of them transferred to B. It is analogous to a resolution and subsequent combination of forces, except that it here applies to momenta and occurs in the same straight line. The two parts of the whole process, before and after impact, thus reveal identity at every stage, in spite of the apparent difference. But the identity is yet more complete. The total momentum is not only the same throughout, but it travels along in the same direction and at a uniform velocity. It is going just as fast before the impact as during the impact and after the impact. That is, the center of mass of the whole system (a property already accounted for by the principles of statics) moves onward continuously at a steady rate. Its velocity is easily found to be $(Au + Bv)/(A + B)$. The whole system, then, is a case of the first law of motion: even the individual momenta considered by themselves are preserved, though the same velocity does not continue with the same mass. The reason why the case of impact seems irreducible to one of the first law is that velocities suffer change after impact. It is a reason analogous to that which made composition of forces seem paradoxical. One line can not by itself *be* another line, we admitted: but when it is considered from the point of view of its relations to other lines, it can have several directions at once. So here: the velocities before and after impact are different; but when we remember that velocity is not something by itself, but is *of a particular mass*, the later velocity may be seen to admit a possible identity with the earlier velocity. The transfer of a velocity unchanged from one mass to another greater or less mass is *not* the transfer of something identical from one situation to another; for the same velocity of a greater or less mass is a very different thing. In the case of a uniform motion under the first law, the mass is constant and hence the velocity persists unaltered: but it did so because it was the velocity of a constant mass. Here, too, the velocity is preserved, but because it is the velocity of a different mass after impact, it assumes a different value. The loss in velocity of A is $u - U$; the

gain in velocity of B is $V-v$; but $V-v=(u-U)\cdot A/B$. The velocity which B gains is just that which A lost, adapted to the mass of B. The apparent differences are then due to the original elements of the event persisting in new circumstances.

We can represent the whole process as a series whose elements x are successive positions of the momentum of A; at the instant of impact this is resolved, but the sum of the resolved momenta continues this series uniformly onward. Thus:

$$x_1, x_2, x_3 \cdots x_n \left(= \begin{matrix} x_{A_1} \\ x_{B_1} \end{matrix} \right), \quad x_{n+1} \left(= \begin{matrix} x_{A_2} \\ x_{B_2} \end{matrix} \right) \cdots .$$

And we may do the same with the successive positions of the momentum of B; and with the motion of the center of mass of the whole system. This reduces the case to one of the first law, with the principle of resolution included. No new type of causation is found here.

Of wholly inelastic bodies in direct collision the same holds. The differentia of this case is that, instead of $u-v=V-U$ we have $U=V$. The bodies do not rebound, and consequently move on together after impact, in the direction in which the body with the greater momentum was moving. Just as with elastic bodies, the loss in momentum of A is gained by B, the center of mass moves onward uniformly, the velocity is transferred, adapted to B, and a resolution of momenta occurs along the line of motion. The kinetic energy after the collision is less than before, because some of it has gone into heat in the bodies; but the momenta are preserved just as with elastic bodies. Consequently—with the exception of this transfer to heat—this case is of the same type as above. Now the phenomena of heat are explained by physics on the supposition that it is motion of the molecules of a body. It presumes that the kinetic energy, *i. e.*, half the squares of the velocities times the masses, of all the particles of the bodies, which is not continued in the form of molar motion after the impact, could with sufficient knowledge of detail be equated to the same function of the internal motions. Even here, then, there is believed to be no exception: the motions of masses continue undestroyed, though we can not trace the causal sequence in detail. Of partially or imperfectly elastic bodies,—which comprise all known actual cases—the equation $u-v=V-U$ becomes $e(u-v)=V-U$, where e is the "coefficient of restitution," representing the amount of return to its original shape of a body after the deformation due to impact. The introduction of e is indifferent to the conservation of the momenta; it simply determines the amount of kinetic energy transformed into heat. For the way in which elasticity acts we may refer to the later discussion. Apart from that, no new principle is involved.

Oblique collision is treated by the same methods as direct collision, *after* the velocities have been resolved into suitable components.[2] It is, therefore, a combination of the above types with that of the type of resolution of velocities, and offers nothing new for our purposes.

Change from Potential to Actual Motion and the Converse

When a body is shot upward from the earth's surface with a certain initial velocity, that velocity decreases uniformly until the body reaches the highest point of its journey, passes through zero velocity, and returns with uniform acceleration. Let us suppose the rise and fall of the body to be exactly vertical. Imagine also that at the turning-point of its flight a rigid support is suddenly thrust under it, fixed there for a time, and then removed. This furnishes a clear picture of the change from actual to potential motion and the converse. The whole process is subject to law and is, therefore, causal throughout. What is its make-up?

As the body flies upward to its highest position, each stage through which it passes is compounded of two causal processes—the attraction of the earth and the continuation of initial velocity—each of which processes conforms to the type already described. We need not concern ourselves further, then, with this portion of its flight. The velocity which results, at every stage, decreases regularly until it has the value zero. If no support were put in, it would pass through the zero value and become negative, *i. e.*, a velocity of contrary direction. The whole series would thus be quite analogous to the case of pressure at one end of a bar balanced on a fulcrum, which is transmitted to the other end of the bar; a case examined under the head of statical causation. But when the support is thrust in, the motion ceases for a finite period of time. The body is then said to have potential energy due to its position, or the work already done in raising it. The downward motion does not exist; no motion exists, and there is said to be a *tendency* to move downward.

Observe first that this is a real condition, and an identifiable one, described by more than the word *rest*. The body exerts *pressure* upon the support, and this pressure *is* its potentiality. When the physicist speaks of this potential energy as something "metaphysical"[3]—meaning, of course, inaccessible to observation—he is, I venture to think, more modest than is necessary. Pressure might be objectively as real as form and size. There is no reason *a priori* why the content of touch-sensations should not be as objective as the qualities given in visual sensation. The thing is a question of fact.

[2] *Cf.* Williamson and Tarleton, *op. cit.*, pages 70–72.

[3] Thomson's and Poynting's "Heat," London, 1911, page 116, note.

Is there evidence that pressures continue—as colors, sounds, etc., do not—when we do not perceive them? There is such evidence. *Whenever* the support is removed, the body falls. Therefore it was pressing downward, tending to fall, all the time. Its existence is as objective as motion is, and as independent of our perception; it is not a "secondary quality." In fact, the reason assigned for believing in potential energy by the authors above referred to is that the energy of motion which is lost appears again when the body falls;[4] just the reason why we believe in the existence of the bodies themselves when we look away from them.

As soon as the support is placed under the body, a composition of forces occurs, giving equilibrium. The downward pressure of the body is exactly equal to the upward pressure of the support. The series of velocities constituting the hitherto motion continues, but is at this point compounded with another series; the continuous upward push of the support. It is the same sort of thing that we found in the collision of bodies. *There* the uniform motion was not destroyed, but compounded at the moment of impact with another uniform motion. So here, the series of velocities in the rising body continues, but is compounded with the resistance of the support and, as it were, turned in a different direction. The potentiality here is simply a special case of composition, such that the forces compounded are equal and opposite. In fact, we might define potentiality as equilibrium. Nothing whatever is destroyed; rather something is added to each of the factors, *viz.*, the opposite factor. This explains the familiar Thomistic-Aristotelian doctrine that a potentiality by itself is never a cause of an event; for nothing happens unless the equilibrium is destroyed. It agrees also with Ostwald's second law of energetics, that no event occurs unless there is an uncompensated difference of potential factors; since an uncompensated difference is equivalent to the fact that there is no equilibrium. Or, again: "when the parts of a body or of a system of bodies are in any degree free to adjust themselves under forces that exist within the system, they will always so arrange themselves as to make the potential energy of the system as small as possible,"[5] *i. e.*, the differences compensate themselves as far as possible. So far, then, there is a continuation of the original series plus a compounding of it with the pressure of the support.

As soon as the support is removed, the composition is succeeded by a resolution. The support no longer combines with gravitation to produce equilibrium, and the latter force acts alone in the manner stated under the topic of gravitation. In the whole process, from

[4] *Op. cit.*, page 110.

[5] D. W. Hering, "Essentials of Physics," New York, 1912, page 45.

beginning to end, there does not seem to be any new type of causation besides the serial type and the type of composition.

This completes the list of cases under mechanical causation. It will be observed that the principle of composition plays a large part; so large, indeed, that all the complex cases are reduced to simpler types by its aid (or that of its closely allied form, the principle of resolution). A principle so ubiquitous and so useful would seem likely to have some philosophical significance. In the writer's opinion it has; and accordingly before passing to the topic of "Properties of Matter" we had best pause to consider that significance.

A Generalization from the Principles of Composition and Resolution

We have seen that a combination of forces may really contain the components intact. They may, in combining, pass from the actual to the potential state, or the converse, or may be combined as already potential and remain so, or as actual and remain so. This is philosophically a significant result. One philosophical objection to the objective reality of the scientific concepts is based on the assumption that they are not, when combined as they are in reality, preserved in the same form as they have when treated alone. Now, as a result of empirical investigation we have found that this is not true. They are at least sometimes so preserved. As a *general* criticism of science, then, this philosophical view should not stand. When, however, the view is based, not on an assumption which can not be verified, but on an ultimate doctrine of internal relations, it is a different matter. Such a view declares that whether parts are changed or not when combined into wholes, the ultimate metaphysical *account* of the parts must be formulated in terms of the whole. That is not inconsistent with the empirical facts, and shall not here be discussed. Our only present concern is to point out that if science is not metaphysically ultimate, it is not because the parts with which it deals fail to exist. The analytic treatment is true to existence.

A corollary of some importance to the philosophical estimation of our present method is that it is right (barring dialectic, etc.) in treating types of causation singly. In the manifold and very complex combinations of them which constitute real individual events, each kind of causation may well be preserved intact. The artificially simplified laws of the text-books may never be realized alone, but they are real *tendencies* and sometimes real *processes,* working uninjured by the environment with which they combine. Had the deniers of the existence of abstractions considered the detailed empirical evidence, they would, perhaps, have avoided such a doctrine.

Are there, then, real rigid bodies, projectiles moving in straight lines or perfect parabolas, totally inelastic bodies, etc.? There are

bodies whose tendency to behave as perfectly rigid, etc., combines with other tendencies to produce a resultant which is not as a whole the behavior of a rigid body, etc. The abstract concepts of science denote, in general, real tendencies in Nature, which are never destroyed or lost, but combined with other and often opposing tendencies. We may say, if dialectic, idealism, or other views command it, that science does not deal with ultimate reality; but we should not, it appears, say that science deals with the non-existent. Tendencies exist as much as anything else.

This completes the list of cases under mechanical causation. We pass next to the second of the three groups marked out above.

II. Properties of Matter

1. *Elasticity*

The elasticity of gases and liquids depends upon that of the solid particles composing them; so we need examine only the properties of elastic solids.

An elastic solid has the following property: "if the applied forces and the consequent strain [of the body] be confined *within certain limits,* the body offers continuous resistance to the strain, so that *it requires the continued exertion of external force* to maintain the body *in a given state of strain*; and when this force is removed the body *tends to return* to its natural state . . ." other conditions being equal.[6] Also "It always requires the same force (or system of forces) to maintain the same strain at the same temperature . . ." (p. 6). This, however, holds only of perfectly elastic solids; it is not a universal law of matter. Even a very elastic body has its *limits,* such that any strain greater than a certain amount renders it *ductile.* "In this condition the resistance still increases with the strain, but much less rapidly than before the limit was passed, and the tendency to return towards the natural state is much diminished, so that, when the external force is removed, the body is found to have acquired a 'set' or *permanent strain*" (p. 4). Beyond this region of greatly diminished elasticity lies breakage; sometimes, as in the case of brittle bodies, breakage supervenes almost directly upon the elastic limit. Also, "by sudden and violent changes of temperature, many substances, and notably metals and glass, may be entirely altered in all their elastic properties" (p. 5), which property "is obviously analogous to that [change] produced by straining it beyond its elastic limits" (*ibid.*). But even *within* the limit, resistance to strain varies with the rate at which the strain is imposed, as well as with frequency and recency of strain (fatigue).

[6] W. J. Ibbetson, "Mathematical Theory of Elasticity," page 4.

We may, then, classify the events that occur in this domain under two heads: (1) cases of approximately perfect elasticity, such as the behavior of metals, crystals, glass, jellies, etc., within their elastic limits, not subject to viscosity or fatigue or "temper," and (2) all other cases, including even approximately inelastic substances such as tallow, putty, etc. Let us discuss these separately.

1. The elementary event is this: when a certain force has been applied to a body, followed by a change of shape or volume, then upon release the original volume or shape is restored. Scientists believe that there are certain intramolecular stresses which bring about this restoration. This is in itself no more mysterious than gravitation, which pulls back to earth a raised body. But it is not known how these forces move the particles of the elastic body; with what velocity and acceleration or with what relation to the mass or displacement. The behavior of gravitating bodies has been accurately described and measured, and found to conform to Newton's first law; but of the molecular behavior of elastic bodies we know little or nothing, and can not say whether it reduces to a mechanical or to some other type. We must wait for further evidence.

2. The other cases confirm this statement. The intramolecular forces do not always work. Sudden strain, too great strain, too prolonged or recent strain, etc., render them ineffective, or nearly so. Why this is so, is not understood; which is only another way of saying that the nature of the molecular stresses is not known. If we knew their behavior we should know how it is that these conditions affect it. Here, then, the result is disappointing. We get no data for causal analysis.

Nevertheless, so far as the behavior of these forces *is* known, we may say that it is a case of potential energy leading to kinetic energy, the latter being that of the motion undergone by the particles in restoration to the original shape and volume. The potential energy becoming kinetic is a case of the kind already considered under dynamics. It appears to be an energy of position, giving rise to motion of masses upon release of the detaining force.

2. *Friction*

This is of two kinds, sliding and rolling friction. Sliding friction is explained thus: "When one of the bodies tends to move over the other, the projections interfere and tend to stop the motion."[7] Why the coefficient of friction is different in different substances is known only in a general way, *viz.*, some substances are rougher, have more projections, more rigidity, than others. No exact explanation of the particular values of coefficients is at present available. That there

[7] E. L. Hancock, "Applied Mechanics for Engineers," page 261.

should be such a thing as friction seems, from the above explanation, to be due to the fact that bodies resist change of shape. The motion is then transformed into heat, *i. e.*, motion of the particles: this reduces to a case of impact, therefore, and is a dynamical type. When a body resists change of shape or breakage, we have a case of cohesion—of which later. That sliding friction is nothing more than these, is indicated by the laws of Morin: the friction between two bodies is directly proportional to the pressure, and independent of the area of contact.[8] For increase of pressure means increase in the number of collisions between irregular projections in the surfaces. And the fact that static friction is greater than kinetic is due to the fact that in the state of rest there are more points of contact between the two bodies—owing to the sinking of the upper body on the lower —than in the state of motion. As far as sliding friction has been analyzed, then, there are no types of causal connection found but mechanical ones.

When the surfaces are lubricated, "the projections of one do not fit into the other, but are kept apart by a film or layer of the lubricant."[9] Here it is not a matter of collision between projections, but of internal friction in the lubricant, of the attraction of its particles for one another, of their adhesion to the surfaces of the bodies, and of the substitution, in part, of rolling friction for sliding friction. The events herein involved—except for the rolling friction—come under the head of molecular attraction and cohesion: of which later.

Rolling friction depends upon deformation of one surface by the pressure of the other: a wheel is flattened by the road and the road depressed under the wheel. Instead of collisions we have pressure. When the road-surface is very elastic, the depression is relatively deep, and the road rises immediately behind the wheel almost as steeply as in front. The depth of the depression here occasions slipping, *i. e.*, sliding friction; the case just considered. The unique characteristic of rolling friction is, then, resistance offered by pressure, and the causation is here statical and dynamical.

3. *Resistance of a Medium*

This situation is due partly to inertia of the particles of the medium, and partly to another factor classed with friction under the head of "passive resistances."[10] "If a mass m be supposed to move in a straight line, without rotation, in a resisting medium, the resistance is a function of the velocity of the body. . . . If the resistance be represented by $\phi(v)$, the equation of motion becomes

[8] *Op. cit.*, above, page 263.

[9] *Op. cit.*, page 265.

[10] Minchin, "Statics," page 75.

$$m\frac{dv}{dt}=F-\phi(v),$$

where F is the external force acting along the right line. It is usual to assume, with Newton, that $\phi(v)=\mu v^2$, where μ is a constant depending on the density of the medium.''[11] This law, however, is of limited range; in some cases the resistance increases with higher powers of the velocity. The causes are, in fact, unknown; we can not tell in detail how the resistance acts. The data give us no definite type of causal connection.

4. *Density*

This property is not regarded as explained, except, in the case of gases, by the number of molecules. Its causes are believed to lie in the structures of the various substances, but just where or how is not known. No material is here given us for analysis.

5. *Cohesion*

This is believed to be a general property of matter which probably reduces to molecular attraction of some sort, but whose detailed behavior and laws are little known. If two smooth surfaces are pressed together very hard they tend to adhere as if glued. Gluing makes bodies adhere because, after drying, there is very little space between the particles. ''There is no real difference between adhesion and cohesion.''[12] Unfortunately, this amount of information will not suffice for a causal analysis.

6. *Gravitation*

The source of this property is also unknown, though theories are extant.[13] It is also unknown whether or not it acts instantaneously. It is believed, however, to act uniformly in a straight line, for it obeys the law of inverse squares, like light, radiant heat, and many other phenomena which proceed in straight lines. The law of inverse squares is a simple deduction from the property of action uniformly in a straight line, as that action radiates in all directions from a given body in space. The mode of action of gravitation, then, is analogous to that property of uniform motion by which it continues uniform in a straight line. Its type of behavior will, therefore, come under the same serial description as uniform motion (discussed in the preceding paper).

[11] Williamson and Tarleton, ''Dynamics,'' page 219.

[12] Ganot's ''Physics,'' Eng. tr., 18th ed., page 10.

[13] *E. g.*, W. Sutherland, in *Philos. Mag.*, December, 1904.

7. *Crystallization*

"Definite chemical compounds almost always possess *some* power to crystallize, though certain usually crystallized substances may be made to assume an amorphous [non-crystallized] form by very much accelerating their rate of solidification . . ." "Substances which are only known in the amorphous state are usually of indefinite chemical composition, like coal, amber, or opal."[14] Crystallization thus appears to be a general property of matter, so far as it possesses definite chemical structure. As to its make-up: "The physical behavior of crystals . . . necessitates *units of structure,* or elementary particles by whose regular arrangement the crystal is built up. As such units we may assume the physical molecules . . ."[15] "If the crystal elements or physical molecules of a given substance possess the same size and the same attractive forces, then, in case these molecules are perfectly free to act and react upon each other, they must all assume a similar position relative to one another, *i. e.,* such a position that equivalent directions of attraction and repulsion in all the molecules shall be parallel" (p. 5). That is "*the grouping about any molecule must be the same as about every other*" (p. 6). "Thus the study of crystal structure becomes an investigation of the possible networks of points in space which satisfy these conditions" (p. 6). In other words, this situation is one of statics and dynamics. The causes of crystallization are "molecular forces which tend to produce a regular internal structure in matter as it slowly solidifies," and these forces are conceived to act under the laws of statics and dynamics.

Further, "we may have crystals identical in composition and in all their physical properties, but bounded by very different sets of planes, all of which are equally possible with the same internal structure. Such differences in form among crystals of the same substance condition what is known as *crystal habit*" (p. 12). "Exactly what it is that determines the habit of a crystal is not known" (p. 13). "*The growth of crystals, i. e.,* the relative development of the different faces, is very variable, and often irregular. . . . The conditions controlling these distortions are not well understood."[16]

So far, then, there does not seem to be any definite type of causal process in the formation or the growth of crystals, over and above those already discussed. The nature or origin of the molecular forces is not known; their mode of action in determining structure is mechanical; "habit" and growth are not understood.

[14] G. H. Williams, "Elements of Crystallography," page 7.

[15] *Op. cit.,* page 4.

[16] W. Nernst, "Theoretical Chemistry," page 79.

8. *The Principle of the "Indestructibility of Matter" (i. e., of Mass)*

"Numerous investigations have shown that neither by physical change of a substance, as, for example, by pressure, heating, magnetization, etc., nor by chemical decomposition, does there occur a variation of its mass as measured by the attraction of the earth."[17] In fact, the whole atomic theory of chemistry is a reduction of apparently diverse facts to terms of ultimate permanent units. This is on a par with what we found in physics, as to conservation of momentum. From the point of view of a series of instants or short periods in time, the unchangeable character of mass appears as a process whose logical structure is the same as that of the series describing uniform motion, inertia, etc.

The principle of the conservation of energy seems obviously to come under the same rule. It is, however, so broad and general and, where formally stated, so lacking in concrete detail that by itself it gives but a faint idea of the operation of causation; hence we content ourselves with this brief mention of it.

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REGULATION IN BEHAVIOR

SEVERAL years ago there appeared in *Nature* an account of a statistical inquiry into sex determination. The results indicated that children born to young mothers were predominantly girls and that those born to old mothers were predominantly boys. Whether this hypothesis has been borne out by further results I do not know, but, assuming it to be a law, it is an example of what has been called regulation in behavior. The purpose which such a process serves is clear. When there is a shortage of women in a community girls are likely to marry when very young, due to the increased opportunity afforded them on account of the under-supply of more mature women. If such marriages result in a number of female infants greater than the normal expectation, the balance between supply and demand is thereby reestablished. A similar compensation is had when, in a society where females predominate, and hence are not married so early in life, male offspring are in excess.

The world is full of instances of this sort. Organisms utilize the very difficulties they encounter in order to bring about the removal of these difficulties. Their make-up insures this regulation. They do not depend on outside guidance to carry them through adverse situations. The adverse situations in combination with an organism

[17] W. Nernst, "Theoretical Chemistry," Eng. tr., page 4.

are self-eliminating. Of course this is not always true for the individual, but the social group, which is the larger organism, survives because the procreation of its parts is as rapid as their destruction.

We often so construct a piece of machinery that this principle of auto-adjustment holds in its behavior. This is done so that we may not have to manipulate it and direct it to any great extent. The floating ball disconnects the circuit and stops the pump when the tank is full. The pendulum swings to one side and releases the air pressure which tilts the wing tip of the aeroplane when a gust of wind causes it to pitch or roll, and this restores equilibrium. The electric sterilizer is supplied with a soft metal plug which melts off and releases a spring, so breaking the circuit, when the water is exhausted. Otherwise the rheostat would be burned out. But now the heat prevents itself from being dangerous. A general statement of these and other forms of regulation might be valuable. It might indeed serve as a rule of thumb for inventors.

Bancroft[1] gives many excellent examples of regulatory behavior as illustrating his "universal law." This law is that "a system tends to change so as to minimize an external disturbance." Some of the cases he notes are:

The readjustment of prices through supply and demand.

Tears caused by and discharging an irritating substance from the eye.

A splinter causing its own sloughing out.

In chemistry, the occasional prevention of further reaction by some reaction products.

An insult causing a response which may prevent further insult.

The bending of trees to spill the wind.

It is certainly tautologous to say that organisms behave along lines of least resistance, for our only definition of least resistance is the resistance that a system is first to overcome. But any suspicion that the statement of Bancroft's law falls short in a like way of being a synthetic judgment, is removed after he has clarified it by illustration and comment.

Adaptation of a group of animals or plants *by selection* is a case of regulation if we regard the group as an organism. The capacity for all the responses is not resident in all the individual animals or plants, but is distributed among the parts (individuals) of the entire organism (group). The existence of the organism is maintained along with the life of those parts which respond adaptively to the present condition, notwithstanding the death of those parts which are not adjusted so to respond. This is shown in the adaptation of

[1] Bancroft, W. D., "A Universal Law," *Jour. Am. Chem. Soc.*, XXXIII., No. 2, February, 1911.

wheat to climate. A bushel of late ripening wheat will contain some grains of early ripening wheat. Planted under certain conditions, these latter alone will mature, but they will serve as seed for the next crop, which will inherit their characteristics for the most part, and which will be almost entirely early ripening wheat.

When an apparently new structural adaptation is developed in an organism by a set of new conditions, the presumption is that the organism's capacity for this change of structure was previously resident in the organism, and not that the change was wholly caused by the new condition. The condition was the necessary factor which had to be added to the organism's potential capacity, in order that the adaptation should result. An organism may in this way be so adjusted as to respond adaptively to any one of a number of possible conditions which may be mutually exclusive. So when one response is realized, the others may be latent. This is shown by the substitution of hair for wool in the coat of a sheep that is taken to a warmer climate. In the domain of behavior a similar rule is obvious. Here a given stimulus calls forth a particular reaction which is especially fitted to the situation.

The Vital Manifold

Organisms living in an environment of changing conditions are, for the most part, constantly readjusting themselves to the change. They avoid bad conditions and seek better. Or, when an unfavorable condition can not be avoided, a change takes place in their structure which makes it possible for them to live in that condition. If, when in a certain medium some metabolic change takes place in them, which to be set right demands some other medium, they seek out that other medium either by trial and error reactions or, following certain clues present in their surroundings, by some specially appropriate instinctive or habitual reaction. If we admit that such processes are regulatory, we have made a beginning towards defining regulation. We may further say that it is characteristic of organisms having a certain structure. It is the result of the interaction of such organisms and their media. The organism and the media constitute a manifold which, though constantly operating, so functions as to prevent disintegration of the organism. The life-long stability of arrangement possessed by the organism and its offspring further differentiates it from the media and makes most significant the distinction between biology and the inorganic sciences. The field of the science of animal behavior of which the processes in such a manifold constitute the data, is in part hardly to be distinguished from some of the subject-matter of dynamic biology. The former science, however, always classifies these processes on the basis of the *regulation* which they display.

Negative Regulation

Regulation occurs when any process in the manifold which reduces the stability of the organism results in such a change, either in the media (through the organism's migration or otherwise) or in the organism itself, that the stability of the organism is regained, so that the deviation toward instability has come to be *the cause of its own remedy.* Such regulation is the *avoidance* of those states in the organism or of those conditions in the media which are or have become unfavorable to the stability of the organism, so let us call it *negative regulation.*

Frequent examples of negative regulation are found in the behavior of inorganic manifolds, of plants, and of the lower animals. When a boat in a heavy sea rolls to one side it rights itself into the perpendicular again. It does this because of the fact that the further it tilts from the perpendicular the greater is the leverage by which the pull of gravity, which tends to bring it back, is applied. Its behavior conforms to our definition of negative regulation. The way in which paramœcium retains favorable conditions must be described by the same principle.[2] The valve action at the boundary of the optimum will work for the animal's good in either novel or familiar conditions. A river (organism) shows regulation in migrating from its original channel to one of greater stability, and in overcoming obstacles, such as log jams or landslides, which serve as the cause of their own remedy.

In the above examples correction is *the result* of the excess of process, or deviation from stability. The correction and the condition which needs correction may, however, both be the results of the same cause, having no causal effect on each other. For instance, in crayfish oxygen starvation is corrected by the very activity which causes it, namely, walking. The gills are placed so as to be moved by the legs, for which reason walking causes both depletion and repair of the oxygen content of the blood. Another example is found in the protective color changes in the coat of northern mammals. These changes are possibly not the result of the color environment (the seasonal variation of which is a deviation toward instability), but rather the result of some accompanying condition such as food or temperature plus certain internal factors. That is, the brown fur does not become white because of the whiteness of the snow. The cause to which is due in part the occurrence of the snow, namely, a decrease in temperature, is largely responsible for the adaptive change in the color of the fur. Again, for example, the sunshine which on a summer day would otherwise overheat a man, is in part the cause of the breezes which assist in keeping him cool. The cause, that is, which

[2] Jennings, "Behavior of Lower Organisms."

produces the deviation from the optimum brings about also a condition which helps to restore the optimum.

We may then occasionally find this relation between the deviation from stability and its means of correction. The mutual cause of these two processes may indeed be indefinitely remote. This phase of regulation is not recognized in the above definition, so we may add: *Negative regulation also occurs when a process in the manifold which is the cause of a deviation from stability results independently in its correction.*

Positive Regulation

An organism may be so constituted that it reacts to some condition which is favorable, adapting itself so as to obtain benefit from it, even when failure so to react to the condition would cause it no more harm than the loss of an unusual benefit. This form of reaction is sometimes given to a condition which the organism does not reach by locomotion, such as a condition which is generally periodic and has no fixed special position (*e. g.*, a weather condition). But if the organism has means of locomotion, the reaction more usually involves a movement toward the favorable condition. This favorable condition may be only occasionally present or it may be only occasionally needed by the organism. The favorable condition to which the organism reacts may be at a distance from, or may impinge upon, the organism. If it is at a distance it must act mediately upon the organism and the organism must have the power of locomotion in order to take advantage of it. The favorable condition may be relatively fixed in space, such as air at the top of the water, or it may be relatively fixed in time, such as the regular recurrence of sunlight. To distinguish this form of regulation let us call it positive.

Positive regulation occurs when some change in the environment or in the physiological state of the organism causes such an adaptive reaction of the organism or such an alteration in the media that the interaction of the newly arranged organism and media which follows brings about increased stability in the organism. In such a process both organisms and media have a double function. The media act first as the stimulus to the organism's adaptive reaction and second as a contributing cause of the increased stability of the organism. The organism likewise must be set or arranged to adjust or orient itself to the changed conditions and also to interact with the novel media so as to cause increased stability in the new relation. The squirrel's storing its food, the butterfly's seeking its mate, and the prospector's digging for gold are all examples of positive regulation.

In positive regulation the favorable condition and the adaptive change do not always have the direct relation of cause and effect. They may be as well results of a single cause. This is especially true

in the higher forms of behavior, such as the behavior of a group of sympathetic organisms in a colony or society. For instance, Greek philosophy was a cause which has ramified into many results. Largely because of it, and of the development which it caused, the present-day students write their books on science or philosophy, because of it there are laboratories, without which these books would have lacked much material, and printing presses, without which the volumes would never have reached their readers. That same early philosophy is the inheritance of the people and without it the modern book would not be understood. As another example, when the hot weather in spring impels birds to migrate northward it causes also those changes in the country further north which produce food and the proper conditions for raising the young. So we may add: *Positive regulation occurs when a process in the manifold which is the cause of some potentially favorable condition results independently in an adaptive change by which the organism takes advantage of it.*

Both positive and negative regulation may take place as the result of a change merely in the physiological state of the organism and not be due to any variation in the media. Negative regulation is seen under such conditions in the reactions of the over-fed sea-anemone away from food, or in the behavior of a dog that after a time moves further away from a fire the heat of which had at first attracted him. Positive regulation takes place under like conditions when respiration is increased due to exercise, or when the hungry animal goes out to search for food to which previously it had been indifferent. Judgment and reason in the higher animals furnish the best examples under these conditions for positive regulation. Positive regulation usually results in an increased margin of stability which is insurance against future dangers and permits the organism some rest from the activities of negative regulation. The two forms of regulation are combined in the food reaction of most animals. Hunger results in migratory search after food as well as in its capture. Many animals, however, capture food for future use when the conditions of negative regulation are not present. The two forms of regulation are, for instance, combined when a man rises in the morning partly because he is no longer comfortable in bed and partly because he hears the water running into his tub.

The direct interaction between the conditions existing at any given time as well as the resulting adaptations in the manifold may be described as follows:

In negative regulation unfavorable media (present or at a distance) may cause a change in the organism that makes it either resist such media, or avoid or migrate from such media, or analyze or

synthesize such media into innocuous or favorable media. Or some unfavorable part or process in the organism may cause its own elimination or discontinuance, either by interaction with the media, or by action within the organism, or by both of these.

In positive regulation favorable media (present or at a distance) may cause a change in the organism that makes it either interact with such media or enter into or migrate to such media. Or innocuous media (present or at a distance) may cause a change in the organism that makes it analyze or synthesize such media into favorable media. Or some favorable part or process in the organism may cause its own maintenance or continuance, either by interaction with the media or by action within the organism or by both of these.

STEVENSON SMITH.

UNIVERSITY OF WASHINGTON.

THE ANCIENT SPIRIT AND PROFESSOR BABBITT

SOME time ago I had the pleasure of reviewing Professor Babbitt's "Masters of Modern French Criticism" in this JOURNAL;[1] and in a recent issue[2] he has published a courteous reply under the title of "The Modern Spirit and Dr. Spingarn."

Professor Babbitt is much disturbed by my statement that his book lacks "unified and consistent thought" and represents merely "personal bias." I am not certain whether his reply is intended to confirm or refute this statement, since the ideas which he now expresses are exactly those on which I based my original contention. He restates briefly what he had already said in the preface of his book, and I must therefore assume that we are to accept all this as proof of "consistent thought." But consistent thought about what? If he will turn again to my review, he will find this assertion: "The fact is that Professor Babbitt has no esthetic theory. . . . To the questions—What is art? What is literature? What is criticism?—he offers no answers." In his recent reply he does not touch these questions at any point. He explains that literary criticism has much the same problems to face as modern philosophy, that it, too, must deal with the antitheses of intellectualism and intuitionalism, of discipline and anarchy, and so on; and he implies that ideas of this kind vindicate the consistency of his thought in the field of criticism.

I confess, however, that if these utterances are intended as answers to the questions—What is Art? What is criticism?—they are not unlike the answer which my five-year-old son recently gave to

[1] Vol. X., page 693.

[2] Vol. XI., page 215.

the question—What is arithmetic? "It is when you say one and one make two, two and two make four, three and three make six." My son has obviously identified arithmetic and stated some of its problems; he has explained it exactly as we explain anything which we have to face and concerning which we have no "unified and consistent thought." Professor Babbitt, however, has hardly gone so far as to identify criticism in any way that indicates its essential purposes or processes; he has simply stated some of the problems that confront it at this period of time. He is under an illusion when he thinks that his "principles" seem negligible to me merely because they are "too different" from my own to make comprehension possible. I do not disagree with his principles, if by this is meant principles of criticism; I merely find none with which to agree or disagree. I agree with his statement of some of the *problems* of modern criticism, just as I disagree with his statement of others; but I have looked in vain for any indication that he has ever asked himself what art really is, what literature really is, or what criticism really is. It seems to me fair to say of such a book that it lacks unified and consistent thought in the field of literary criticism.

Professor Babbitt does, however, criticize the esthetic theory of others; and I think that here, too, he has shown his confusion of "personal bias" with "consistent thought." He assumes, for example, that the theory of Benedetto Croce, that expression is art, implies of necessity a lack of that intellectual discipline which he regards as the chief need of the culture of our time. If we assume that all expression is art, he argues, there is no place for training, for discipline, for tradition, for ideals, for culture; there is nothing left but anarchy. Nothing could be farther from the truth. Disciplined art and undisciplined art are both art; or perhaps we should rather say that disciplined minds as well as undisciplined ones may express themselves in art. The mistake into which he has fallen is obvious; he is framing his definition, not from the thing itself, but from what he believes to be the best form of it. But bad English is English as much as good English; the art of a child is art quite as much as that of Michelangelo. It may be important to distinguish between the two and to encourage the latter at the expense of the former; but the writer on esthetics should at least understand what they have in common as well as what they differ in; and what they have in common is that both are expression and therefore art. A disciplined mind will express itself differently from an undisciplined one; but until the artist expresses himself he can not create art, and when he expresses himself he has created it. Professor Babbitt imagines that this conception of art must necessarily indicate a preference for the undisciplined form; but it is after all merely an attempt to under-

stand what art really is, and nothing else. It is not an attempt to give practical advice to the men and women of our own time.

Professor Babbitt complains, with more apparent justification, that I have done him an injustice in saying that in his essay on Scherer there is not "a single allusion to literature or art, to the life of the imagination in any of its forms." He insists that in this essay he has discussed Scherer's attitude toward Molière, Sainte-Beuve, Zola, Baudelaire, Goethe, and others. I turn to the passage on Molière, and I find that the author of *Tartuffe* is mentioned in order to justify a quotation from Scherer in regard to—the deficiencies of the French language in the later nineteenth century. I turn to the passage on Zola, and I find that an excerpt from Scherer's essay on Zola is quoted in regard to—the vulgarizing influence of democracy on culture. Is it unfair to say that these are not allusions to "literature or art, to the life of the imagination in any of its forms"? Is it unfair to say that Professor Babbitt is not concerned, in any of these passages, with the way in which criticism interprets creation, but that he is wholly obsessed with the problems of modern culture on their practical side?

This is what Professor Babbitt is interested in, and this alone. He does not care what art or criticism is, but he does care that young men and women should have discipline, training, tradition, ideals. His mind is still in the period of Græco-Roman culture, when literature was simply regarded as a preparation for the more important activities of life; and as Quintilian in writing a book on the Orator really wrote a treatise on the education of Roman youth, so Professor Babbitt in writing about modern French critics has really written a treatise on our system of academic or literary education. His book is a contribution to American culture; it is, as I have said, a dignified and valuable work; but it adds little to our knowledge of the history or theory of criticism. If Professor Babbitt is inclined to take this statement too seriously, I can only remind him that Burton's "Anatomy of Melancholy," while adding little to our knowledge of neurology, and "Gulliver's Travels," while adding nothing to our knowledge of geography, lose little if any of their interest on this account.

J. E. SPINGARN.

NEW YORK.

REPLY TO DR. SPINGARN

THE answer of my book to the question, What is criticism? is that criticism is primarily judgment and selection and only secondarily comprehension and sympathy. By discarding the traditional basis of judgment and failing to put anything in its place criticism

has, I affirm, fallen into anarchy and impressionism. Does Dr. Spingarn hope to persuade any one that a discussion of this all-important problem of standards and judgment and its relation to the work of the chief French critics of the nineteenth century is without bearing on either the theory or history of criticism? The basis on which I rest my own critical standards is, as I tried to show in my reply to his review, positive and immediate; it involves no return to the past; Dr. Spingarn's treatment of me as a Græco-Roman survival is therefore irrelevant; it strikes me, if I may be allowed the phrase, as an attempt to draw a red herring across the trail.

In accusing Croce and his American disciple of readiness to sacrifice the true form and symmetry of life to mere expression, I did not have in mind the assertion that art is only expression, but a far more radical assertion—namely, that beauty itself is only expression.[1] However, the statement that the art of a child is as much art as that of Michelangelo is a sufficiently flagrant example of the primitivism against which I protest; of the attempt to define art solely in terms of the lower spontaneity—in terms, that is, of the instinctive, the unconscious, the irrational. A complete definition of art would not eliminate the higher or human spontaneity, by which I mean the power to curb or control the passion for expression and impose upon it form and symmetry with reference to some adequate end. For over a century naturalism in both its intellectual and emotional forms has, instead of looking forward to ends, been groping its way back to origins. A fruitful reaction against our present confusions will surely put prime emphasis on the truth contained in the Aristotelian dictum: "The end is the chief thing of all."

Any one who wishes to form an opinion as to the justice of Dr. Spingarn's comment on the "Scherer" has only to compare this comment with the essay itself. I have no fear as to the verdict.

IRVING BABBITT.

HARVARD UNIVERSITY.

REVIEWS AND ABSTRACTS OF LITERATURE

Social Environment and Moral Progress. ALFRED RUSSELL WALLACE. London, New York, etc.: Cassell and Company. 1913. Pp. 158.

The purpose of this short, but most interesting and popularly written volume, which may come to be considered the crowning point, if not the *magnum opus,* of its author's long-continued work, is "to bring together the evidence in support of this view [that actual morality is largely a product of the social environment], to distinguish what is permanent and inherited and what is superficial and not inherited, and to trace out some of the consequences as regards what we term 'morality'" (p. 3). The

[1] Croce, "Estetica," page 81.

first part of the book, which is termed "historical," first, defining character as "the aggregate of mental faculties and emotions which constitute personal or rational individuality" (p. 4), attempts to show by historical and literary evidence that as a basis for morality it has shown no essential advance during the historic period; and secondly, with some statistical references, sketches with vigorous pen the injustice, the horrors, the moral degradation of the nineteenth-century environment. In so far as education and the superficial inducements of conventional morality have no hereditary effects, while true moral character, though hereditary, is not cumulative, "it follows that no definite advance in morals can occur unless there is some selective or segregating agency at work" (p. 37). The natural moral character of the race is good—hospitality, for instance, is a universal virtue (p. 101); it is the social environment which is evil and which ruthlessly prevents the attainment of full moral stature corresponding to the probable finality of the human form. Man, therefore, as that animal which alone molds his environment, may proceed to better his condition by its readjustment in a manner and for a purpose to be suggested in Part II.

So far there is probably nothing new or disputable for readers who assume the "dynamic" standpoint in sociology, though the view resembles that which H. G. Wells, referring to Compte and Frederick Harrison, has recently described as the belief "that there was once a stable condition of society with humanity, so to speak, sitting down in an orderly and respectable manner; that humanity has been stirred up and is on the move, and that finally it will sit down again on a higher plane, and for good and all, cultured and happy, in the reorganized positivist state." Again, it might be objected, perhaps, that the products of genius available for educational purposes, while not hereditary when acquired nor cumulative when innate, can yet be cumulatively transmitted by education. There is a social as well as an individual heredity. Moral progress might, therefore, be in a degree possible without positing any inheritance of the qualities of genius or any artificially liberated (though intrinsically natural) selective potentiality. As, however, Wallace heartily favors equality of educational opportunity as part of his remedial philosophy, this point need not be pressed. The indictment of existing conditions reminds us of the querulous tone of Mr. Spencer's "Facts and Comments," and is drawn in striking contrast to the author's fundamental faith in the essence of human nature. Here we may remember that the author of "The Wonderful Century" found much therein to praise as well as to deplore.

Part II. is entitled "Theoretical." After a brief presentation of the facts of natural selection, among animals (Ch. XIII.), and as modified by mind (Ch. XIV.), and of the laws of heredity and environment, the last two chapters are concerned with the author's idea of initiating through a new form of selection (Ch. XVI.) an era of moral progress (Ch. XVII.). The non-heredity of acquired moral characteristics is here defended as not merely true, but fortunate. How glad we may be that the dreary education in brutality and superstition afforded by the Middle Ages could have no hereditary influence. And yet here we may ask how Mr. Wal-

lace was so confident that the many tokens of moral inferiority which history furnishes were but superficial, in no way contaminating the fundamental goodness of our nature. If we judge not mankind's nature by its fruits how, then, shall we estimate its value? And if you answer that those fruits were largely the product of a compromise with the hostile environment, may we not ask again, if man is the modifier of his environment why do we credit him only with his will, not with his deeds? Can social environment and that human nature which is in and of it be considered separately? Not, I think, without some such speculative doctrine as that of the "Divine Influx," to which in the last resort Mr. Wallace feels impelled.

The substance of this second part is that by the diminution of economic pressure there will be a possibility of selection on the part of the female who, under existing conditions, is for the most part driven to marriage by economic stress rather than by choice. From the standpoint of the female the argument is persuasive, but from the standpoint of the male does not the opposite hold good? Under a system of economic pressure, such as to-day obtains, it is the least able worker who is least able to support a wife (omitting from consideration the injustices of transmitted wealth) while, under the humanitarian conditions which Wallace would fain have seen prevail, the feeblest male will have less difficulty in finding himself a mate. That there will be no females so tasteless as to select the less desirable males can hardly be maintained, even granting the belief that they would *prefer* the more desirable, for that the preponderance of males, brought about by shifting the incidence of accidental death, will "give to women the power of rejecting all the lower types of character among their suitors" (p. 148) is at least a speculative interpretation of the slight excess of male births. This excess being usually traced to a provision of nature accommodating the population to that greater incidence, the two may be expected to disappear together. From the male's point of view, therefore, the true selective agency, if also the cause of widespread misery and social unrest, would appear to be the old malthusian law with its implication of an inevitable struggle for existence within the economic field. It is true Wallace has been at pains to discredit this law because "when poverty is abolished and neither economic nor social advantages will be gained by early marriage there can be no doubt it will be generally deferred to a later date" (p. 143), and hence, on Galton's showing, fertility will decrease. But supposing the government manage "to organize the labor of the whole community for the equal good of all" (p. 155)—Wallace's final solution of the whole matter—is the inference to the postponement of marriage at all a reasonable one? Is it not precisely economic pressure which leads to its frequent postponement by young men, and therefore perforce by women, to-day, and when there is nothing to prevent marriage at an early date, why should we not suppose it will occur earlier rather than be still further delayed? Apparently Wallace relies on educational persuasion, which seems a none too reliable motive. It is true that marriage to-day occurs later among the better off, in a degree roughly proportional to their position in the social scale,

but as this is due to greater economic obligations at least as much as to causes of culture or perhaps to a mixture of the two, it can not from this be inferred that there would be a further postponement among all classes either with the advent of better conditions in general, or with the attainment of a higher average of general culture. On the contrary, an earlier average of marriage has been taken as a reliable standard of realized or immediately anticipated prosperity in a given territory. "Statistics of marriage during and after so-called economic crises," says Parsons, "are plain on this point." Thus the desirability of free selection on the female's part seems to be decidedly modified, if not rendered wholly doubtful, by the necessarily concomitant elimination of existing selective agencies operating in economic terms upon and through the male. The social argument would thus point rather to an increasing inheritance tax and greater equality of educational advantages than to conceding "full political and social rights" (p. 148) to women.

Perhaps, however, there is something to be said on either side, and it is at least cheering to have before us so clear an argument for the solution of questions widely vexing us to-day, wherein the quasi-medical aspect is specifically discounted (pp. 127 ff.), and the procedure is strictly pragmatic, in place of insisting upon the indefinable "natural rights" of a political philosophy now outgrown. Thus are eliminated two features of the controversy of which many of us are becoming increasingly weary. We are wisely reminded that social amelioration may more fitly become an object of legislation than bungling attempts to tamper with the private functions of the individual, and Wallace well asks how we can entrust governments with the technical removal of minute effects, that have shown themselves so largely incompetent to deal with the underlying cause. "Let them devote all their energies to purifying this whitened sepulcher of destitution and ignorance, and the beneficent laws of nature will themselves bring about the physical, intellectual, and moral advancement of our race."

REGINALD B. COOKE.

UNIVERSITY OF WISCONSIN.

The Making of Character: Some Educational Aspects of Ethics. JOHN MACCUNN. New York: The Macmillan Company. 1913. Pp. 226.

Perhaps the making of the English character is really so simple a process as this little book would indicate. It may well be that the charges of hypocrisy and pious smugness leveled by irritated geniuses against the English people are quite unjust, and that the simple moral face and the indomitable moral optimism which they present to the world really represent a perfect uncomplicatedness of spiritual process within. But as they appear to a foreigner, the psychologico-ethical theories of the English writers from Bentham down to Arnold Bennett can only be described as exceedingly weird. This particular book, from the note of liberality which runs through it, is evidently intended by the author to be rather advanced, but his unanalytic treatment of heredity and the instincts, his complacent review of the influence of bodily health, the influence of nature, family,

school friendship, livelihood, citizenship, church, moral ideals, etc., is all quite uncomplicatedly English. He speaks always as if these concepts represented so many parcels of spiritual food which the young, growing, moral individual, purely *quâ* individual, assimilates as he would bodily food. The function of the ethical teacher than becomes simply to lay before the individual youth the proper fare, and the healthy appetite can be depended upon to do the rest.

All that sociological view of the moral process which sees the growth of the individual soul as the gradual coming of the raw human animal with its powerful instincts under a complex system of social constraints,—being gradually assimilated into a tenacious fabric of group-ideas and folkways,—is ignored in a book like this. There is constant confusion made between the moral, as the individual taking of the social imprint, and as the conscious critical selection and rejection of folkways and ideas in accordance with some imagined ideal, or rather some imagined social group with which one feels identified and sympathetic. The author speaks one moment as if taking the faithful impress of existing institutions of church, law, family, and state, constituted the making of moral character, and, in the next discusses the forming of moral judgment which, if it means anything, means the ruthless slaughtering of many of those same faithful folkways of the orthodox codes. These conflicts, which would seem to the sociologist the very heart of the ethical problem, are treated with scant attention in this book. And the enormous rôle of the sexual life, with its fantasies and appeals, as well as the rôle of the affective life in general in the formation of "character"—the very word is highly ambiguous until we know whether it is to mean the smooth, unimpeachable, uncriticized running of the individual cog in the social mechanism, or the independent critical attitude which constructs its own "morality" out of the various group-codes—are ignored in the characteristic English way. Of course one hardly likes to say that these things may not all be congenitally absent from the English consciousness and experience. But if so, their thinking on ethical matters can scarcely be of universal application and validity.

Originally written and published in 1900, this book could not be expected to quote the newer ethical and psychological schools such as those of Dewey, Montessori, and Freud, for instance; our author's authorities are rather Plato, Aristotle, Kant, Wordsworth, Burke. One might, however, have asked that these worthies be supplemented by a little personal introspection, or sociological observation. The chief value of such a book is, I suppose, to bring a warm glow or vague illumination to the pious heart of some non-conformist parent. But it is a little difficult to see why it should have demanded four reprintings in the United States of America.

RANDOLPH S. BOURNE.

BLOOMFIELD, N. J.

The Foundations of Science. H. POINCARÉ, tr. by G. B. Halsted. New York: The Science Press. 1913. Pp. 553.

Under the above title are reprinted Professor Halsted's translations of

"Science et L'hypothèse,"[1] and "La Valeur de la Science,"[2] together with a translation of "Science et Méthode,"[3] which here appears in English for the first time. Professor Royce's introduction to "Science and Hypothesis" is retained, together with the translator's prefaces to the first two volumes, but the author's prefatory essay to the English edition of "The Value of Science," appears as the introductory chapter to "Science and Method," as in the French editions. The whole is provided with a suitable index, and a brief, somewhat ill-balanced, biographic sketch by the translator prefaces the volume.

It is unfortunate that the three volumes are bound as one, for not only is the result awkward by its bulk, but also the necessity of duplicating their possessions is imposed upon owners of the first two works who are desirous of possessing the third; and, moreover, there has recently appeared a fourth volume,[4] quite coordinate with the other three, which, if Poincaré's philosophical writings are to be brought within one cover, should certainly be incorporated with them.

The succession of Poincaré's books indicates a constantly growing grasp of the problems with which he deals. Beginning with a study of the forms of scientific reasoning in "Science and Hypothesis," he passes, in the "Value of Science," to the problem of their contact with fact, and arrives at an interesting Pythagorean definition of the objective as nothing but mathematical relations.. In "Science and Method" there is presented an admirable study of creative imagination showing its peculiarly intimate connection with esthetic processes. This is followed by a review of the methods of mathematics, mechanics, and astronomy which includes a highly illuminating estimate of the significance of that disruption of our most cherished physical concepts which has been instigated in contemporary science by such discoveries as that of radioactivity.[5]

HAROLD CHAPMAN BROWN.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

MIND. January, 1914. *Aristotle's Refutation of "Aristotelian" Logic* (pp. 1–18): F. C. S. SCHILLER. – It is misleading to confine (as is the present custom at Oxford) the study of Aristotle's Logic to the *Posterior Analytics,* the treatise displaying Aristotle's formal logic with its doctrine of Contradictory Opposition. Illustrations are adduced to show that in Aristotle's subsequent scientific discussions the law of contradiction plays no part. Formal logic may be descriptive of the abstractly universal, but not of the concrete and practical. *The Meaning of Reality* (pp. 19–40): J. S. MACKENZIE. – Briefly sketches the various senses in which the term

[1] French, 1902; English, 1905.

[2] French, 1905; English, 1907.

[3] French, 1907.

[4] "Dernières Pensèes," 1913.

[5] The "Value of Science" was reviewed in this JOURNAL, Vol. II., page 630, and a general summary of Poincaré's whole position appeared in Vol. XI., page 225.

reality is used, concluding with the strictly metaphysical meaning "of that which is substantial or independent." On the basis of this meaning there follows an elaborate enumeration and classification of metaphysical theories. *Some Preliminary Considerations on Self-Identity* (pp. 41–59): HAROLD H. JOACHIM. – Self-identity can not be construed as descriptive of our bodies viewed either as atoms or as an aggregate of atoms or as chemical or biological processes; neither is self-identity to be found in the immediacy of self-feeling. We are to view "our spiritual selves as the individuations of the universal spirit—as that or nothing." *A Criticism of Dr. Mackenzie's Philosophy of Order* (pp. 60–83): L. P. SAUNDERS. "I shall try to show that Dr. Mackenzie has really not contributed anything in the paper under discussion to the solution of philosophic problems. He has mainly, I think, changed their names, and when he has not done this he has, I believe, confused issues." *Discussions: Aristotle's Theory of Tragic Emotion* (pp. 84–90): A. W. BENN. *Idealism and the Reality of Time* (pp. 91–95): BERNARD BOSANQUET. *Is Inversion a Valid Inference? A Rejoinder* (pp. 96–98): L. E. HICKS. *Truth and Working* (pp. 99–101): ALFRED SIDGWICK. *The Analysis of Categorical Propositions* (pp. 102–103): BERNARD BOSANQUET. *Critical Notes:* B. Bosanquet, *Logic, or the Morphology of Knowledge:* R. LATTA. F. Aveling, *The Consciousness of the Universal; a Contribution to the Phenomenology of the Thought Processes:* C. W. VALENTINE. C. A. Mercier, *Conduct and Its Disorders, Biologically Considered:* W. L. MACKENZIE. A. Müller, *Wahrheit und Wirklichkeit: Untersuchungen zum realistischen Wahrheitsproblem:* C. D. BROAD. *New Books. Philosophical Periodicals. Note.*

ARCHIVES DE NEUROLOGIE. January, 1914. *Contribution à l'Étude de le Cécité Psychique des Mots et des Choses* (pp. 1–10): PROFESSOR BERNHEIM. – In visual amnesia, or psychic blindness, the patient sees, but can not recognize the object seen. He ignores its name and its meaning. *Sur les Aliénations Mentales d'Origine Syphilitique* (pp. 11–32): A. MARIE. – In the presence of a parasyphilide, one must proceed to the examination of the blood and of the cerebrospinal fluid. If the blood is positive, a general antisyphilitic treatment is indicated. If the cerebrospinal reaction alone is found, or is predominant, the central nervous system must be treated directly. *Le Traitement des Buveurs* (pp. 33–42): DR. LEGRAIN. – There are two stages in the scientific treatment of alcoholics: (1) disintoxication; (2) reeducation, or psychotherapy. *Revues des Congrès et des Sociétés. Analyses Bibliographiques.*

Boutroux, Emile. Natural Law in Science and Philosophy. New York: The Macmillan Company. 1914. Pp. 218. $1.75.

Branford, Victor. Interpretations and Forecasts: A Study of Survivals and Tendencies in Contemporary Society. New York: Mitchell Kennerly. 1914. Pp. 424. $2.50.

Day, Henry C. Catholic Democracy: Individualism and Socialism. New York: Longmanns, Green, and Company. 1914. Pp. viii + 296. $1.80.

Dowd, Jerome. The Negro Races. Vol. II. New York: The Neale Publishing Company. 1914. Pp. 310. $2.50.

Haldane, J. S. Mechanism, Life and Personality. New York: E. P. Dutton and Company. 1914. Pp. vii + 139. $1.00.

Holt, Edwin B. The Concept of Consciousness. New York: The Macmillan Company. 1914. Pp. xvi + 343. $3.25.

Juvalta, E. Il Vecchio e il Nuovo Problema della Morale. Bologna: Nichola Zanichelli. 1914. Pp. xii + 137.

NOTES AND NEWS

THE publishing house of Quelle and Meyer, of Leipzig, has launched a weekly periodical, *Die Geisteswissenschaften,* whose scope is to be unusually broad, including philosophy, psychology, mathematics, science of religion, science of history, philology, history of art, science of law, political science, economic and social sciences, and pedagogy. The editors, Messrs. Otto Buek and Paul Herre, hope to make of it a clearing house where scholars may exchange opinions and lose, in fruitful intercourse with one another, the narrowness of their specialties. They hope also to give an exact idea of the present state of the scientific disciplines and promote timely discussions of new problems and their proposed solutions. The enterprise undoubtedly responds to a vital need of the present day and ought to militate most beneficially against excessive scientific specialization.

On the occasion of the seventieth anniversary of the birth of Friedrich Nietzsche, on October 15, it is proposed to raise a monument to his memory on the hill near Weimar, in the neighborhood of the Nietzsche Archiv. A considerable fund has already been collected for the purpose, and any surplus that may accrue will be used for the support of the Archiv, which is under the guidance of Nietzsche's sister. Contributions should be forwarded to Dr. Richard Oehler, the Librarian of Bonn University, 70 Konigstrasse, Bonn, or the Nietzsche Monument Fund, care of London County and Westminster Bank, 109–111, New Oxford Street, London.

AT Columbia University the following changes are announced: Dr. Harry L. Hollingworth has been promoted to an assistant professorship of psychology at Barnard College; Henry Slonimsky (Ph.D., University of Marburg), has been appointed to a lectureship in philosophy made vacant by the leave of absence of Dr. William F. Cooley, who goes to Vassar College for a year; and Mr. Roberts B. Owen, assistant in philosophy at Cornell University, has been appointed lecturer in philosophy.

DR. JAMES WARD, professor of mental philosophy and logic, at Cambridge University, has been nominated to represent the University on the occasion of the celebration at Oxford on June 10 of the seventh centenary of the birth of Roger Bacon; and Dr. Sorley, Knightbridge professor of moral philosophy, to represent the University at the fifth International Congress of Philosophy to be held in London next year.

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SOCIETIES

THE FOURTEENTH ANNUAL MEETING OF THE WESTERN PHILOSOPHICAL ASSOCIATION

THE fourteenth annual meeting of the Western Philosophical Association met, in conjunction with the Conference on Legal and Social Philosophy, in Chicago, April 9 and 10. This well-attended meeting probably marks the beginning of certain new things in the philosophical work of the Middle West. The discussion centered chiefly around three topics, the realistic doctrine of relations, the new conception of natural rights, and the relation of rule to discretion in the administration of law. Professor Cohen, the secretary of the conference, contributed much to the discussion of relations, while both he and Profesor Thilly, representing the eastern part of the country, helped in the joint sessions. Many appreciations of the meetings were to be heard, and especially of the part played in them by the legal fraternity of the Middle West.

The meetings opened Thursday morning, in the law building of the university, with Professor B. H. Bode presiding. The first paper, "The Reality of Religion," by Professor G. J. Kirn, of Northwestern College, maintained that the object of religious worship is determined by certain fundamental instincts. The cognitive instinct demands that that object shall comprehend whatever is necessary to render experience a consistent whole; the affective instinct, that it shall be worthy of love and loyalty; and the volitional instinct, that it shall contribute to greater efficiency in life. Religion thus grows out of reality and effects adjustment to reality and hence is itself real. God is a mental construct, an hypothesis if you will, the basis of our experiment with reality. Professor G. D. Walcott, of Hamline University, asked whether this conception of religion does not imply that God is a creation of man. Are not the gods of savages as real as ours? To which Professor Kirn replied that the latter are relatively real, and so also is God as conceived by ourselves,—real so far

as found real in experience. Only so can God appeal to man as a constant object of aspiration and faith.

The second paper, "The Pragmatism of Pascal," was by Professor Norman Wilde, of Minnesota University. Pascal was not a pragmatist, but neither was he technically anything else. Meanwhile, such terms as nature, instinct, the heart, feeling, etc., occur with great frequency in his philosophical writings. Cousin criticizes him as a skeptic, but that is shallow. Pascal's thunderings against reason are really directed against the demonstrability of all truth. One must be a Pyrrhonist, a geometrician, and a Christian. As to the nature of knowledge he is a Cartesian: its bases are indemonstrable. Nature and instinct compel belief,—and also doubt. The determining factor in truth is not logical, but practical. He doubts facts as much as theories, and never wearies of pointing out our ignorance as to the causes and connections of things. He is a thorough empiricist and, as to conception, a voluntarist. "The will is one of the chief factors in belief," not because it creates belief, but because truth is relative to our viewpoint. Custom furnishes the hardest proofs. His famous wager is typical of his doctrine of belief. If we subdue the passions and act as if we believed, the belief will come. To know we must first love: the heart has reasons which the mind knows not of. This is Augustinism and Paulinism, but not pragmatism. In his anthropocentric tendencies, however, one feels the modernness of Pascal.

Professor H. B. Alexander next read a paper, on "The Definition of Number," which can be summarized as follows. "The logistic conception of number, starting with the assumption of *class* as the essential numerical idea, proceeds in two directions. (*a*) Outwardly, it posits a limit within which must fall all the elements which make the class a class, capable of structure. And that this outward limitation is made in good faith, as essential to the idea, is sufficiently evidenced by the recognized possibility of a class including classes, of a class of classes, and finally of the class of all possible classes,—a veritable hierarchy of types of limitation. (*b*) Inwardly, there are posited two types of structural relation, which may be described as the principles of internal limitation. These are the relation of part-to-part and part-to-whole. From the first is derived that freedom to make comparisons which makes possible,—or, *is* the possibility of,—the transcendental independence that distinguishes pure number. From the second flows the whole concept of order, and especially the notion of series or progression without which the idea of quantity (*i. e.*, greater-less) could not be. Three concepts seem to predominate in this construction, namely, *class, element, relation.* But the two first, class and element, are surely no other than the two mean-

ings which we commonly ascribe to unity, while relation is quite as clearly *the* function (and therefore the meaning) of plurality.'' The one and the many are thus the fundamentals of number, and we seem to have returned to the Hellenic categories. Has the wheel of time completed its circuit, or is logistic but an exercise of the lovers of Uranian reason?

Professor M. C. Otto read a paper on ''The Utility of the Syllogism.'' The objections here urged against the syllogism are three: (1) The syllogism is a useless device in the face of genuine difficulty. The ''fallacies'' emphasized, illicit major, undistributed middle, etc., are manufactured and spurious difficulties. (2) This inadequacy of the syllogism is concealed by over-simplification of the field in which tests are applied. That is, the face of the syllogism is saved by treating as non-existent the only kind of arguments which perplex any one, namely, complex ones. It is an inherent defect of the syllogism to be of use where there is no difficulty and to be misleading where there is. (3) The doctrine of the syllogism is based upon an untenable conception of truth. The syllogism assumes the existence of a changeless, eternal truth, which we may approximate by relating specific conclusions to universal propositions *via* the syllogism. When these so-called universals are examined, they turn out to be true only in a setting; universal with a reservation. There is always a question, therefore, whether the ''universal'' is true in the sense it is taken to be true, and this can not be determined without reference to the particular investigation in which the universal plays the title rôle. But this is to admit the relativity of truth, with which the syllogism can have no dealings. It is time to break completely with a device which, interesting as it is historically, is as unreliable in genuine perplexity as it is imperious in its claims and demands, and which stands in the way of a logic in harmony with the needs of human experience.

Professor Boodin urged that the syllogism none the less deals with a certain type of implication and has a genuine place in logic. Professor Swenson pointed out that we are apt to misunderstand the purpose and idea of the syllogism. It exposes the structure of reasoning, whatever the subject-matter may be. A general theory for the avoidance of error does not exist, and hence the psychology of actual thinking can not be formulated in syllogistic terms, and yet the psychology of actual thinking will have implicit syllogisms in it. President Bode was invited to defend his chapter on ''The Value of the Syllogism,'' and responded that the syllogism has nothing to do with the structure of our actual thinking. Professor Tufts pointed out that the paper does not say whether by syllogism is meant the process of mediate judgment, as a whole, or merely one step in that

process. Dr. Kallen thought that formal logic has some educational value as a discipline, but that it does not teach people how to think. Material fallacies can not be determined by logical forms alone. Professor Walcott felt that the syllogism with its rules has a value similar to that of grammatical rules in locating errors, and Professor Bode pointed out that in real thinking, which is usually a process of reconstructing universals, the syllogism does not help us.

Professor J. E. Boodin, in his paper entitled, "Knowledge and Social Interpretation," maintained that knowledge is nothing but social interpretation. There are, however, several types of such interpretation, and any independence of the cognitive, or other, type must be due to some social pressure. The perceptual, affective, and conceptual forms of knowledge all bear upon them the marks of social use and value. Affective knowledge or interpretation involves the massing of vast fields of meaning that are essentially social in origin. The unity of the cognitive process as pointed out by the pragmatists is a truer account of knowledge than the triadic view of Royce, Peirce, and others. Royce maintains that the interpreting community makes nature, but we do not agree to this. The community does no more than reconstruct nature. Professor Longwell asked as to the unity of the cognitive process in view of the three types of interpretation mentioned above. In answer Professor Boodin said that the latter are determined by emphasis which in turn is due to interest, temperament, and other factors. Dr. Schaub pointed out that thinking does not absolutely require language as indispensable and that Royce only means that the social renders knowledge objective.

In his "The Philosophy of Roger Bacon," Professor A. H. Lloyd mentioned the fact that this year is in a way the seven-hundredth anniversary of the great scholastic's birth. He was a forerunner of our era, but in many ways its master and teacher. Whether Lord Bacon wrote Shakespeare or not, it would be easy for a person uninformed as to the times in which they lived to believe that he wrote many passages in Roger Bacon's works. In his metaphysics he taught that "substance" can no more be mere matter than mere form. Substance can not be any one self-identical thing. Consequently, Bacon subordinated the one to the many, the universal to the particular, and so displayed a sense for method that was prophetic of our own day. He was a Franciscan and an Englishman and in both respects predisposed to anticipations of Protestantism. His appreciation of induction and experiment were products of the medieval system and organization of society. So also was his appreciation of mathematics. In formulating the details of what he saw and foresaw, he was less powerful than as a seer and prophet. The blind

and extravagant often mingle with the perspicuous and temperate in his methods. His moral philosophy was a branch of theology based on a synthesis of Mosaic law, Christian revelation, Pagan philosophy, and natural science.

Professor Moore remarked that Bacon's strength would have been considered a weakness in his day. He would have been a mere methodologist. There is no methodology at large, method is always relative to specific problems and materials. After some further comment the association passed to the next paper.

In his paper on "Consciousness in Haeckel," Professor Ray Sigsbee, of Carleton College, pointed out that Haeckel recognizes three fundamental elements or aspects of reality, (1) the physical, (2) the chemical, (3) the consciously sensational (*die Empfindung*). These are not three distinct things, but three ways of viewing one thing. The quantity of matter, energy, and consciousness remains always the same,—the monal materialistic law. There is no energy without matter, no matter without energy, and no consciousness without energy and matter. Chemical reaction exhibits consciousness at its lowest level, and consciousness evolves from motion through chemical reaction to impulse and volition. Consciousness does not accompany all sensations, and the fibers which connect and relate different sensory centers in the cortex mark the point at which the purely physiological becomes consciousness. Consciousness is a form of energy which matter possesses. Aside from his dogmatism Haeckel's system is as dualistic as any other.

The papers read Thursday afternoon all had reference to the neorealistic doctrine of relations, the programme beginning with "Externalism and Transcendentalism," by G. A. Tawney, of Cincinnati. This paper compared the definition of externalism given by Mr. Bertrand Russell with this author's theory of knowledge as stated especially in his book "The Problems of Philosophy," and came to the conclusion that the doctrine of externalism when interpreted in the light of this theory of knowledge appears to be the principle of transcendentalism reasserted. All the fundamentals of Mr. Russell's theory of knowledge are characteristic of some one or another of the transcendental philosophies. He denies that relations are the work of the mind, and this may at first seem to be a point of essential difference; but many transcendentalists deny that relations (or universals) are the work of the mind. It seems questionable whether Mr. Russell's externalism really advances the problem of relations beyond the point at which Locke and Kant left it.

In a paper entitled "Externalism as Arrested Development," by W. G. Gore, of Chicago, it was pointed out that all knowing involves inhibition, and the doctrine of externalism simply generalizes the

stage of inhibition and makes it the essence of all knowing. At this stage of the knowledge process, the old has not been given up and the new has not yet come into being, and at this stage the neo-realist finds all that he regards as esential to knowledge. It is important to have the fact of externality pointed out, both as a protection of hard-won values and as a criticism of the individual who would take liberties with these values. The increasing accessibility of the products of industry, art, and science and the increasing inaccessibility of productive participation in the corresponding processes in modern industry amount to an artificial and largely unsuspected barrier between native capacities and their normal exercise. The most deadly sort of externalism is unconscious, complacent, and idealistic. The realistic doctrine may be said to be a reflection of this very real sort of externalism, and it is remedial in bringing externalism to consciousness and correcting its illusions.

Dr. H. M. Kallen's paper, entitled "Bergson, Platonist," maintained that something more than mere movement is necessary to the Platonic idea, namely, non-being, which degrades the idea to multiplicity, externalism, and geometry. In Plato's philosophy this struggle with a foreign matter is characteristic of the knowing process. The flute-player understands a flute best. The player's idea of the flute is, consequently, not a concept or static form. It is what the mind knows when particulars are arrested. Here is the *élan vital.* The *élan* is dynamic and transcends individuals, but belongs to all. The function of the eye is freest in the vertebrate eye rather than in the pigment spot. The eye, which was originally a photograph, has turned into a photographic apparatus. This functional conception of the "idea" as an operation involving arrest and inhibition is as characteristic of Plato as it is of Bergson.

Professor E. H. Hollands read a paper on the "Externality of Relations," taking Russell's definition of the doctrine as typical. (1) Relatedness does not imply any corresponding complexity in the relata; (2) any given entity is a constituent of many different complexes. Three proofs are offered by the neo-realists (1) that from asymmetrical relation, (2) that from the nature of analysis, (3) that from the relations of simple terms.

As to the argument from asymmetrical relations the article by Mr. Schweitzer in a recent number of this JOURNAL[1] was referred to in which it is maintained, (1) that asymmetrical relations are no more ultimate in mathematics than symmetrical, (2) that asymmetrical mathematical relations are explicable on an internal basis. The second argument, that from the nature of analysis, is based on the knowledge relation. If knowledge modifies its object, the object can never

[1] Vol. XL., page 169.

be known; or again, since all thinking implies the validity of the analytic method, the validity of analysis can not be denied without self-contradiction. The first statement is gravely ambiguous. The one sense in which we can all accept the statement, "knowledge modifies its object," is that of the truism, "all known objects are knowable," or that of the postulate, "all reality is intelligible." Nothing new in the postulate, certainly; and how trivial the truism! Nevertheless, if we accept either, this particular argument for the externality of relations, in the sense in which Mr. Russell defines it, breaks down. Either the truism or the postulate implies a complexity in the thing known corresponding to the knowledge of it. In fact, if the realists are to maintain the second of Mr. Russell's principles—"any given entity is a constituent of many different complexes"— in regard to the knowing complexes, then they must give up the first—"relatedness does not imply any corresponding complexity in the relata." In reply to Spaulding's "Defense of Analysis," external relations are not the only alternative to exhaustively constitutive relations. Relations sometimes constitute terms of discourse, or entities of definition; they never constitute existences. Mr. Spaulding says, "the adequacy, the validity of analysis can be demonstrated if both the terms and organizing relations, to whose discovery analysis always leads, are considered." But the trouble is that on the theory of external relations, the relations must be, for analysis, terms of the complex. Mr. Russell recognizes this.[2] Propositions bear to one another relations of contradiction, implication, and so on; they are in their turn terms of a higher order. But it would be obviously absurd to say that these relations imply no corresponding complexity in their relata, that they are not grounded in their terms.

The third argument was quoted from Russell's paper in this JOURNAL.[3] The first reply is, that there must be a constituent of A corresponding to the relation (or of B, as the case may be) or else a relation of the relation to A will be necessary, and so on, *ad infinitum*. This formal rebuttal makes us aware that we need to examine the presuppositions of the argument. These underlie the theory of external relations when it is strictly defined and kept clear of extraneous questions. They seem to be two; (1) there are absolutely simple terms, and (2) the only alternative to ultimate simplicity is infinite complexity. In the case of existent entities the first proposition must be denied. As to subsistences, they are either defined or indefinable: if defined, they are obviously not simple; if indefinable, then they are constituted by their relations as stated in the fundamental axioms in the sciences in which they appear. The other presupposition is an

[2] *Cf.* "Principles of Mathematics," page 140.

[3] Vol. VIII., page 159.

instance of neglect of the systematic background of thought; relations do not require to be entirely grounded in the terms; sometimes the complexity involved is almost wholly in the system in which the terms occur. If this criticism of the three proofs is correct, the first principle in Russell's statement of the doctrine of externality must be denied, while the second one is valid, at least in many cases; for none of the objections to the proofs applies to it. While every related term has a complexity in it corresponding to its relation, it is formally possible that the same term may be a member of an indefinite number of complexes; and this Professor Hollands proposed as the valid theory of relations.

Professor Moore presented the old problem of "qualities and relations" and asked, if qualities change, what changes them if not their relations? What is meant by terms when we assert the externality of relations? What is the meaning of "us" in Mr. Russell's book, where the knowledge-relation is concerned? Professor Boodin thought that the dynamic situation is more important than the elements of the problem, which are usually isolated and set at variance with one another in such discussions as the present one. He spoke of neo-realism as consciously dogmatic and of its postulates as being consequently not very close to reality. Professor M. R. Cohen contributed to the discussion by asking whether things are external to one another. He thought that the realistic doctrine has been misunderstood. Some things make no difference to one another, and what the neo-realist means is just that. Certain qualities are internal and certain others are relations and external. In some ways the whole issue is the same as that between Plato and Aristotle, the issue between a functional and a static conception of substance. Dr. Kallen pointed out that the usual presupposition of such discussions as the present is either monadism or monism, it is that all relations are either external or internal. He then pointed out that in causation the external and internal are both present as if in a crucial case, and we should avoid hypostatizing either. Professor H. B. Alexander spoke of economies of thought represented in such realities of faith as conservation, the law of parsimony, the universality of relations, etc. These constitute the systematic background of all thought, and may be said to be valid in the sense of medieval realism. Professor Cohen then remarked that the usual assumption is that when two things appear to be external to each other, we are simply ignorant of their connection, but the neo-realist holds that externality and ignorance have nothing in common. Professor Swenson remarked that the relation of the mind to its object should be distinguished from the relation of knowledge to its object. Dr. Schweitzer stated that in symbolic logic it seems to make no difference whether we assert externalism or inter-

nalism. In ordinary logic internality of relations seems to be the truth. The disparity between the two types of logic suggests that there is need of definition and differentiation. Dr. Hartman raised the question whether either externalism or internalism is equally true of physical, chemical, biological, and psychological relations, making the point that relations which might be said to be external to their relata in a mechanical world become internal when transferred to the biological and human spheres. Professor Tawney asked whether, if the doctrine of the externality of relations means simply the externality of things, it asserts anything more than James's radical empiricism.

The President's address on "The Psychological Doctrine of Focus and Margin" will appear in the July number of the *Philosophical Review,* and no attempt will be made to review it here. It was a cogent appeal for a definition of the subject-matter and the aim of psychology in terms of behavior. From this standpoint consciousness means a specific type of control on the part of objects over bodily adaptations. The focus is the stimulus considered in relation to further stimuli; the margin is the stimulus as concerned in the guidance of bodily behavior.

On Friday morning, in the law building of the university, Professor Warner Fite opened the day's proceedings with a paper, "In Defense of Natural Rights." The older theory meant non-interference, the appeal from external control to private judgment. At present the tendency is to say that the individual is a product or function of society, so that he has duties to it, while it has none to him. The truth is we are products of our conditions only so far as we do not know what is going on in us. All values are created by consciousness. If a watch knew itself, it would have value for itself, and would have claims against its owner. The obligation of others to respect my rights is relative to my consciousness of my rights,—this, because the power to realize an end lies in the consciousness of it. What we are internally is what we produce self-consciously; all our authority as individuals is relative to this, and this is the new doctrine of natural rights. It asserts the superior rights of the more intelligent, for might does, in this sense, make right. The fundamental moral problem is that of fair competition; the moral struggle is a struggle of personal rights against vested privilege.

Professor Tufts mentioned the presuppositions of the doctrine of natural rights, as taught by Locke, namely, (1) that God commissions the individual and so gives him his natural rights, and (2) that there is always plenty of land and other values left for everybody else. These have been stripped from the doctrine, and it is asserted *in abstracto.* Are we under obligation to build a better house for a man

who is not conscious of his need of it? Ought we not build the better house and, if necessary, force him to learn to appreciate it? Professor Sharp pointed out that even such natural rights as Professor Fite has in mind are relative to the social welfare. Thus one's right to the fruits of his toil are based on his right to his own person; but a court compelled a woman to pay her share of the cost of a ditch, although she did not want the ditch dug and received no proportionate benefit from it. Locke and John Adams would have denied her obligation in this case. Professor Wright contrasted the self as particular with the self as universal, and pointed out that the latter demands sacrifice of the former. Professor Fite's system has no place for sacrifice, and this must be regarded as a weakness. Professor Moore said that Mr. Fite eliminates social meanings from the term "nature" and then brings them in again under the head of intelligence or consciousness. Surely we are about to do with the opposition of self and society what we have already done with the opposition of mind and body. The same self-consciousness that created institutions also creates the opposition of the self-conscious individual to them. The opposition is therefore only a stage in a process. Professor Fite replied, that the individual can be compelled to cooperate has been settled by the march of events. But upon what basis are we to cooperate? The answer of the natural rights theory is that this basis is the distributive principle of individual good,—each according to his intelligent share, and not each according to his ability to take and keep. For example, in state universities we often hear that education should be democratic, and this usually means that standards should be easy. But the truth is that in a tax-supported institution more should be done to keep standards up than in a privately-supported institution. Finally, the theory of natural rights holds that, however far ahead we may look, we should remember to conserve our own enjoyment as individuals.

The second paper, "Jus Naturale Redivivum," by M. R. Cohen, pointed out that the doctrine is now in process of revival among the jurists of many European countries. It has been argued that human beings never did exist in the assumed state of nature, and hence it is meaningless to speak of natural law; but the fact is that Hobbes, Rousseau, *et al.*, refer to something in the present. Again, the old argument assumed a self-sufficient individual who, with lordly freedom, made what contracts he pleased, while modern psychologists have shown that no such individual exists. However, contractualism is not essential to the doctrine of natural law. Again, it is said that since law is always the will of a sovereign, or an established rule, questions of natural right do not concern the jurist; natural law must be a matter of ethics, not a matter of law. However, judges are

compelled to rely upon a sense of justice, and the principles of justice are sought by systematic scientific investigation. In constitutional law, bills of rights are made up of popular, vague, moral maxims. Questions of right and wrong in external and enforceable relations involve social ethics just as much as questions of personal morality do. If it is possible to speak of a law that *ought* to be enforced and obeyed, this is certain. Professor Cohen opposed Fite's doctrine of natural right, because it identifies right with might, it eliminates the ought from the moral imperative. Once more, it is said that all things are relative and nothing is eternal; but the unity of the race and its history is as fundamental in modern history and social science as it ever was. Non-Euclidean geometries and other modern mathematics lead us to distrust the self-evidence and certainty of first principles and axioms. Evidence, clearness, and consistency are demanded. Just so, rights must be justified by experience or evidence, and they must be clear and coherent. For example, equality means indifference to differences, but modern law tends toward the individualization of punishments and the recognition of actual classes. The right to life and the right to the products of toil conflict in the case of an invalid who produces nothing. The arts of civilization all involve the same difficulty, namely, the imposition by the intelligent upon the ignorant of that which is better than the latter can know; and in this process neither the court, which represents the established order, nor philosophy, which represents the ideal good, can by itself alone mediate development. To that end the two must cooperate, and hence this conference on legal and social philosophy.

Dr. Kallen held that the rule of might comes in wherever the will of the wise is imposed upon the unwise. Socially, all rights are natural, but none are inalienable. The assumption that the will to live is more natural than the will to die underlies punishment for attempted suicide, and the doctrine of natural right recognizes this. The seat of value is always the individual, the content of value is always social, and society changes to meet the need of the individual. Might always constitutes right, whether it be that of majorities or individuals. The enforcement of law is always the expression of something that arises and maintains itself naturally. Boodin remarked that each stands at a point of intersection in a network of relations, while the unity and completeness of the whole demands many abstractions such as philosophers, lawyers, shoe-makers, etc. The underlying wisdom is the wisdom of the bee, the cosmic life that makes us feel important as individuals. Kallen replied that all reform begins with the individual. Cohen said that might and right can not be identified because might means success. We should either

stop talking about might *and* right, or else keep the two distinct. Right is a matter of values to which might and success are only incidentally relevant. Alexander spoke to similar effect. Kallen asked whether individualism is the basis of harmony in the state, while social control is a different non-individualistic basis. Alexander replied that the individual is always a citizen, a social individual. Kallen remarked that in Plato's Republic it is the social implications of individuality, conceived as natural, that underlie the state. Alexander rejoined that Dr. Kallen forgets that Plato banishes the poets and artists from the state. Kallen replied that they are outside the harmony of the state. Professor Cohen remarked that what is is not absolutely distinct from what ought to be; and Boodin, that Dr. Kallen begs the question in ignoring the fact that the individual is always the epitome of a vast system of social values. To which Kallen replied that social relations are not as internal as Dr. Boodin implies.

Dean John W. Wigmore next read a paper on "Law as a Science." He proposed the term *Nomology* for the science as a whole, and suggested four main divisions of it, which the following terms may perhaps sufficiently indicate. Nomology includes (1) Nomoscopy, = (*a*) Nomophysics, (*b*) Nomostatics, (*c*) Nomogenetics; (2) Nomosophy, = (*a*) Nomocritics, (*b*) Nomothetics, (*c*) Nomopolitics; (3) Nomodidactics; (4) Nomopractics, = (*a*) Nomopoetics, (*b*) Nomodicastics, (*c*) Nomodrastics. Nomoscopy is the description, history, and explanation of law; Nomosophy, the science of law as it ought to be, the attempt to harmonize one legal notion with another by subsuming both under a third. This is simply logical analysis, but the application of ethical principles gives Nomothetics. Nomocritics and Nomothetics are not separated by any plain line, any more than logic and ethics are. Nomopractics means the science of law as enforced or enforceable and comprehends methods of making law (nomopoetics), the methods by which judges apply law (nomodicastics), and the methods of pushing the law home by its application to the people (nomodrastics). Dean Wigmore spoke of the fact that all principles of law, and of the science of law, now seem to be undergoing criticism. Within the last five years, the fellow-servant principle has come to be questioned. Everything is liable to be questioned and required to give a reason for itself. Hence the real help the philosophers may render the lawyers in the development of a genuine science of law.

Professor Sharp remarked that branches 2 (*a*) and 2 (*b*) above are really the same and deal with the end of law and its administration, while 2 (*c*) is concerned with the means of achieving that end.

At the opening of the Friday afternoon session, Professor Albert

Kocourek read on "The Formal Relation of Rule and Discretion" and maintained that discretion is a permanent characteristic of the law and a lever of legal evolution. It may be said to add to, modify, and even substitute for the law. The courts are thought to apply the law, but specific and direct applications are rare. Even where they occur, controversy and difference of opinion are not eliminated. In the legal syllogism, the law gives only the major premise, while the minor has to be discovered in the great laboratory of litigation. English and American law is inductive, while continental or Roman law is deductive. The English judge has poorer tools to work with, but greater skill, than the continental judge. Our system tends to a great variety of rules. Sociological jurisprudence would override all rules and abandon concepts. Relative, changing, and living realities are the subject-matter of juristic science. Its method is the method of purpose and teleology. It must consider, not only the quantity and quality, but also the modality of juristic facts.

Professor Meacham spoke against the idea of government by discretion. "The rules we make in our sober hours to restrain our passionate moments are absolutely necessary." Dean Wigmore spoke of the need of a definition of discretion. It does not consist in the fact that decisions are final. It must mean, in case there were but one judge, that his decision is personal. It always means that the precise case is subsequent to the making of the rule of law by the legislature. The judge has power to introduce variations into the law, so that two judges may decide differently on the same state of facts. Any system based solely on rule will soon clog up: so will a discretionary system: the pendulum of history swings from one to the other, and the truth seems to lie in the transitions. Professor Freund spoke of the so-called English *Richterkoenigstum,* maintaining that there is greater freedom in German courts than either here or in England. Professor Cohen added that this is a Continental trait, and yet the English judge occupies the more regal position. Our common law is made by the courts, while in Europe the common law is the expression of legislative judgment. As a matter of fact there *is* discretion: no formula can estop progress. The sociological school simply insists on the wisdom of deciding cases on the basis of social science rather than on the basis of *a priori* rules or fictions. The reason for creating commissions to administer law in place of the courts is simply the fact that a commission can check up its results, whereas courts can not. Our constitutional law is a system of discretions. Discretion is the growing point of rule. The real question is whether we shall treat rules of law as fixed and changeless or as hypotheses like those of science. Dean James P. Hall pointed out that in some injunctions there is no question of

discretion, the only questions relate to facts. In other cases rules of law sometimes conflict. "Discretion is the growing point of rule," as Mr. Cohen said. Commissions exercise delegated legislative power rather than discretion. They are supposed to use scientific methods to a greater extent than courts do. Professor Freund added that judicial discretion rests on hearing the law and reasoning, whereas executive discretion does not.

David F. Swenson next read a paper on "The Epistemological Basis of General Rules," pointing out that there must be an objective and self-identical body of juristic relations. Plato's eternal and unchanging ideas are here reasserted. Meanings remain even when they change, and they admit of comparison. Logic discriminates alternative meanings and banishes lack of clearness. Custom, association, and the natural history of meanings can not be substituted for clearness and distinctness. Individual psychology alone does not account for perfect meanings. When the contents of juristic knowledge appear, they are objective and independent. But what are the actual conditions under which rules are to be applied? Can their application be said to describe a syllogism? Professor Swenson answers, No. No fact of juristic significance comes so labeled as to make its subsumption a mechanical process. That involves creative imagination based on a knowledge of the code and an understanding of the facts of the case. Only the trivial elements of the process are controlled by the abstract laws of logic. The judge's social philosophy, ethics, and knowledge of human nature enter into the process, as also do his human sympathies. Two reasons are offered for the statement that the application of law is an act of creative imagination. First, no *completely* elaborated code is possible. Any actual system of rules is full of gaps and inadequate adjustments. Secondly, it is never possible completely to express our intentions in rules of law. Hence rules of interpretation are necessary, and just rules of interpretation do not make the law, any more than gravitation makes the stone break the window. The limitations of human reason make these rules of interpretation necessary. Deciding cases on their merits is a confession of difficulty in subsuming the case under the proper rule.

F. C. Sharp then read on "The Moral Criterion in Some Recent Supreme Court Decisions," maintaining that a utilitarian theory of imperatives underlies court decisions to-day, and also the decisions of the plain man on moral and legal issues. Certain problems are dealt with by both law and ethics. We prefer the nearer good, that is to say, the good of those who are nearer to us in blood, race, occupation, etc. Again we follow the maxim, So use your own as not to injure others, but sacrifice for others is not obligatory. Again, we are

influenced by meritorious qualities in the persons concerned, very much as the boy who thinks it mean to hit a dog, but hits a cat every time. Again, we choose the greater good. This is not hedonism, but utilitarianism, the pursuit of usefulness or the good. The police power of the state includes all those unclassified residuary powers reserved to the government by the constitution. It is the power of the state to conserve the good of the state. In application this means that you must actively cooperate with others for the good of all even when you have no assurance of recompense. Underlying this is the principle of the nearer good. The courts have nothing to do with the principle of equality. Laws may operate differently on different classes provided the classification rests on a reasonable basis. No factitious equality wrought out by ignoring real differences is respected. Progress consists in eliminating certain classes of errors. What is right for one is right for others, but many judgments violate this rule. Agan, the law aims at becoming a consistent system. Inconsistencies are eliminated, and these are of all degrees of subtlety. The final principle, the goal of both law and morality, is the good; and the question, What are the moral rights of the case, is as fundamental for law as for ethics.

Professor Howard Smith, of the University of Wisconsin, maintained, on the contrary, that law has nothing to do with questions of morality.

The last paper of the afternoon was on "The Nature of Social Rules" by Professor Albion W. Small. Sociology holds that we have passed the boundary between an earlier and a later period in the evolution of rules, the periods of custom and reflection. The two great questions of sociology are, Of what sort have rules been, and, Of what sort are they to be in the future? Customary rules were the will of the stronger exercised over the weaker. But rules were tempered by consideration of difficulty in enforcing them. The balance of power between many conflicting interests determined the rules of this era of evolution. To-day a new force is at work, a conception of the human lot which is likely to work a Copernican revolution in social controls. The human lot is a concurrence of reciprocal interests, recognized as a categorical imperative of objectivity. Rules are formulations of the indicated function of each interest in the economy of the whole or human lot. A social consciousness that judges each interest in reference to the rest is in process of development. An impartial spectator is an impossibility. The method is to take the judgments of experts and test them by appeal to fact, that is to say, by appeal to the part that the interest concerned plays in promoting the whole social process, whatever the latter may turn out to be. "There are no rights except rights of way in performing

social functions.'' The evolving ideal is that of a community of reciprocating functions.

Thursday evening the association dined at the Quadrangle Club, decided such matters of business as usually come up at business meetings, attended upon the delivery of the presidential address by Professor Bode, in the Harper Library Building, and enjoyed a smoker at the Quadrangle Club. The officers elected for the coming year are as follows: President, James H. Tufts; Vice-President, G. T. W. Patrick; Secretary-Treasurer, H. W. Wright; Executive Committee, A. K. Rogers, G. A. Tawney, H. C. Longwell, E. S. Ames. The following were elected to membership, Ray Sigsbee, E. Jordan, H. G. Townsend, M. C. Otto, H. M. Sheffer, Queen Lois Shepherd, C. H. Judd. It was decided to meet next December in conjunction with the American Philosophical Association at the University of Chicago. The treasurer reported a balance of $115.19.

G. A. TAWNEY.

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MONTAGUE'S CLASSIFICATION OF VALUES

THE most recent classification of values is that which was presented by Professor Montague at the New Haven meeting of the American Philosophical Association, in elaboration of an earlier one.[1] The earlier treatment claimed to represent a pragmatic view of values, the later one a neo-realistic view, but the ontological implications are not very clear in either case. Fortunately, this does not affect the worth of the result.

In my former article[2] I reviewed Dr. Montague's first classification and with modifications adopted it in my own discussion of the factual values. Dr. Montague asserts, in brief, that adjustment of the judgments of the individual to the facts of his environment yields ''the cognitive value of truth'' (a realistic, perhaps, but hardly a pragmatic, view of truth); adjustment of the facts of the environment to the desires of the individual, ''the conative value of good;'' and ''the spontaneous and unenforced adaptation of individual needs and environing facts to one another,'' ''the affective value of beauty.'' So far as goodness and beauty are concerned, at least, this classification is open to serious objections. The goodness which merely fulfils the desires of the individual is hardly more than economic, certainly not moral, goodness; and the value yielded by spontaneous mutual adjustment between organism and environment is hardly more than the

[1] See this JOURNAL, Vol. VI., page 233.

[2] This JOURNAL, Vol. VII., pages 281–291.

psychological feeling of agreeableness. Accordingly, in my own treatment, though accepting Montague's principle of classification, I have named the resultant values truth, utility, and agreeableness, respectively.

In his recent return to the subject of value, Dr. Montague has partially corrected these defects by cross-dividing the three groups of cognitive, affective, and conative values into two sub-classes—empirical and rational types of value—corresponding in many respects to my own factual-ideal division. The true, the beautiful, and the good are now termed rational values, and parallel to them we have as empirical values the apparent or sensible, the pleasant or hedonic, and the desirable or egoistic. To make clearer the comparison between Dr. Montague's classification and my own I have drawn up the following table:

Montague.	Moore.
Empirical Values.	*Factual Values.*
Cognitive—Sensible—Apparent.	Logical—True.
Affective—Hedonic—Pleasant.	Affective—Pleasant.
Conative—Egoistic—Desirable.	Economic—Useful.
Rational Values.	*Ideal Values.*
Cognitive—Logical—True.	Religious—True.
Affective—Esthetic—Beautiful.	Esthetic—Beautiful.
Conative—Ethical—Good.	Ethical—Good.

The most conspicuous difference between the two lists, and the only point for which I can claim originality, is that as I look at it the "truth" which it is customary to group with beauty and goodness is religious rather than logical truth, the latter being a quite different kind of value and better grouped with utility and agreeableness. This point I have already brought out elsewhere[3] in an article which insists on the alignment of ethics and esthetics with philosophy of religion, rather than with logic, as is usually done. Logical or scientific truth is that derived by reasoning, and involves a "dualistic" attitude of the mind toward its object, the latter being regarded as possessing a reality more or less independent of the former, and offering itself to scientific analysis and explanation: religious truth, on the contrary, is that which the religious man claims to reach immediately, by insight rather than inference, and involves a "monistic" attitude of absorption of the mind in its object similar to that characteristic of the esthetic experience, and of the most intimate experiences of the social life. Logical truth, then, *is* a purely cognitive value, as pleasure is purely affective and utility conative, and all

[3] *Western Reserve Bulletin*, Vol. XII., No. 3, May, 1909.

alike have to do entirely with the facts of every-day life: religion, art, and morality, on the other hand, whatever the special psychological emphasis of each may be, appeal to all sides of man's nature, and claim to bring man into relations with an ideal world which quite transcends that of the merely actual.

I should prefer, therefore, not to use the traditional grouping of mental processes as a basis for the classification of the ideal values. The "sensible" or "apparent," furthermore, so far as it is distinguishable from the logically "true," would seem to me to be *lacking* in value by virtue of this very fact.

In addition to this classification of the values themselves, both Dr. Montague and I give some consideration to the psychological process of evaluation. Dr. Montague defines value as that which satisfies an interest, and attempts to determine the various forms of interest and of satisfaction associated with the different types. Similarly, in my former article, I made the statement that "evaluation of *facts* involves interest as its general psychological condition, interest being definable as a feeling of the importance of the object for the individual; and the satisfaction of this interest yields pleasure as its psychological result." But in the evaluation of *ideals* pleasure becomes transformed into happiness, and love takes the place of mere interest. Pleasure I described as "an inner harmony . . . produced by some adaptation between the individual and his environment": happiness as "an inner harmony . . . produced by an outer one—by some harmony in the environment, and between the environment and the individual." So if interest is a feeling of adaptation between the organism and some environing fact, love is "a feeling of harmony between the contemplating subject and any ideal object." Whereas Dr. Montague, then, adopts "interest" as the generic term for the psychological condition of evaluation in every field, I prefer to restrict it to evaluation in the factual realm, using the stronger term "love" in connection with the evaluation of ideals. The reason for this may be gathered from the definitions which I have formulated of the two classes of values concerned, and of the terms "interest" and "love."

I shall not here offer any lengthy criticism of Dr. Montague's subdivision of interest and satisfaction—the former into curiosity as the condition of cognitive evaluation, liking of affective, and desire of conative evaluation; and the latter into belief, enjoyment, and approval, correspondingly. In my own paper I did not attempt any subdivision: pleasure and happiness are not there defined as varieties of satisfaction, but as the psychological results of satisfaction. Interest may be said quite properly, I think, to express itself in the three ways Dr. Montague names, and with one exception the same

thing may be said of the *satisfaction* of interest. With regard to the latter, however, the term "approval" seems to be out of place. We "approve" that which is good in the moral sphere, but the satisfaction of desire consists rather in the *use* of the desirable object, just as the satisfaction of curiosity consists in belief in what is true, and the satisfaction of liking in the enjoyment of what is pleasant.

No part of Dr. Montague's paper is concerned with evaluation in the ideal realm, nor shall I attempt an analysis myself any further than has already been done in my former article. I am here not so much interested, indeed, either in the criticism of Dr. Montague's presentation, or even in the presentation of a constructive scheme myself, as in pointing out the specific agreements and differences between us.

JARED S. MOORE.

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CONCEPTS AND EXISTENCE

THE interesting discussion between Professor Bush and Professor Pitkin that has been carried on in this JOURNAL[1] seems to suffer from an overlooked ambiguity in the fundamental idea in question—that of the straight line. The term straight line is actually used in three meanings which might be described as physical, mechanical, and geometrical, and the problem of the relation of concept and existence might be stated with respect to any or all of these meanings. There is also the further problem of the identity of the three things conceived by virtue of which they are all straight lines. Professor Pitkin is primarily interested in the physical line and its concept, which he identifies with the geometrical line; Professor Bush (p. 690) uses the mechanical conception, the railway curve as the plan of an engineer, but has shifted from the geometrical conception by which "the line *is* the definition" (p. 688). Undoubtedly these three conceptions and the entities relative to them have been differentiated "after many years of highly expert use" (p. 690) of concepts and things and are really different, although they have a fundamental identity. It is important, then, that they be kept apart.

Professor Hilbert begins his "Grundlagen der Geometrie" with an assumption of three different systems of things (*Dinge*) (p. 5). It makes no difference what the things are provided they conform to

[1] (1) "The Empirical Status of Geometrical Entities," W. B. Pitkin, this JOURNAL, Vol. X., pages 393–402; (2) "Concepts and Existence," W. T. Bush, Vol. X., pages 686–690; (3) "Concepts and Existence," W. B. Pitkin, Vol. XI., pages 131–133.

certain postulated demands. The line is simply a particular class of things in the first system. The postulates defining it do not even demand concrete relations between them, but only types of relation, asymmetrical and transitive, conforming to certain ordinal requirements. They could just as well be exemplified by a collection of debtors and creditors properly restricted as to financial arrangements, or by a collection of numbers, as by points. Their straightness, even, is merely a requirement as to relations within the systems. The line that is straight in an Euclidean system is a curve in such a system as Riemann's, and *vice versa*. The limitation to relational types, however, is important, for thereby the applicability of the system is extended to arithmetic and other branches of mathematics wherein the types are exemplified and which consequently stand to it as objects through which its results may be tested and their consistency established.[2] Here is one instance of a line concept and an object conceived.

The great peculiarity of mathematics, not of geometry alone, is that it has no further use for entities of any sort than as terms to connect by types of relations. Its objects are merely focal points in a system of relational types and are irrelevant to mathematics in so far as they are thought of as anything more than occupying a place in such a system. In the physical universe things determine, if they do not constitute, their relations; in pure mathematics, on the other hand, entities are constituted by their relations, in so far as they enter its domain. It is this fact that justifies Professor Bush in asserting (p. 688) that "the line *is* the definition," and Professor Pitkin's criticism (p. 133) "how can the definition be identical with that which it is to bring into existence?" is only justified by playing back from the geometrical line to the mechanical or physical line.

The peculiar value of mathematics lies in the fact that the asymmetrical and transitive relational types and ordinal properties studied by it are so profusely illustrated in the physical universe, and on this account it has been developed. The mechanical and the physical line retain these geometrical characteristics and hence arises their diagrammatic and practical utility. They *are* the geometrical line, but they are each also something more. It is not quite true that "the definition, in so far as it is a pragmatic entity, is related to the straight line precisely as the recipe of a cake is related to the cake" (p. 133) *if* the definition is geometrical, and the line understood in the mechanical or physical sense, for the cake recipe prescribes not only the proportions, but also the ingredients themselves, whereas the geometer's definition only lays down the relations of the ingredients. The engineer's plan, however, is a true recipe for the railway, for in it are

[2] *Cf.* Hilbert, *loc. cit.*, Kap. II.

specified both the ingredients and their relations, but the geometer's definition is hardly a true recipe for a geometrically linear entity.

Why Professor Pitkin feels that from the fact that the cake is not the recipe, it must follow "that the relation between formula and thing to be made has nothing to do with the relation between universal and particular" (p. 133) I do not quite understand. The universal, if it has any meaning at all, is surely primarily an instrument for handling a situation. The most refined form of mathematics is nothing but the result of isolating significant aspects of things because of the fruitfulness of those aspects in handling some class of facts, and this selection is from what is given for the sake of what can be done with it. Professor Pitkin's realism should have taught him that the recipe *is* the cake, only the cake is much more than the recipe, just as the geometrical line is the experienced line, only the experienced line is much more that the geometrical line. The latter fact he fully recognizes in criticizing Pearson. Recipe, formula, and universal express limitations under which a thing exists and the distinction, if it is to be made at all, must be based merely on the degree of adequacy with which those limitations are formulated, but not even the most careful recipe approaches the complexity of concrete actuality, as every amateur cook can testify.

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REVIEWS AND ABSTRACTS OF LITERATURE

La Psychologie Objective. W. BECHTEREW. (Translated from the Russian by N. KOSTYLEFF.) Paris: Alcan. 1913. Pp. 478.

The growing tendency to explain mental life in motor, rather than in sensory, terms is fully embodied in the present work. The definition of psychology as "a description and explanation of states of consciousness" is rejected at the outset. Instead of studying sensations, images, or ideas Professor Bechterew would have us study processes of stimulation and response, neural traces and the association of these traces with new experience, and the determination of the nature of reactions in consequence of the attendant circumstances. Instead of states of consciousness the term "neuro-psychic process" is suggested in the hope of doing away with the contrast between the physical and the psychical. Every neuro-psychic act is reduced to the scheme of the reflex. Under the name "reflexology" objective psychology is said to be a branch of biology. Wherever a reaction is modified by individual experience, we have a psycho-reflex or a neuro-psychic phenomenon in the proper sense of the term. From the above it is clear that although Professor Bechterew regards himself as a behaviorist, he would not limit himself to the study of

organic behavior. Moreover, "the schema of the neuro-psychic process does not exclude a certain parallelism of objective study and introspection." He has already discovered an agreement between introspection and external observation as to the threshold of certain reflexes and the threshold of the corresponding perception. But this is a problem, he adds, that belongs to the future.

The physiological explanation of reflexes and of cerebral traces is in general accord with that set forth in McDougall's primer and similar works. Professor Bechterew is evidently unfamiliar with the more detailed study of reflex mechanisms by Professor Sherrington. That abstraction called the simple reflex is discussed as the fundamental reality, and all the later chapters are built upon this concept. Automatisms are classified as simple reflexes, instinct as an extension of simple reflexes, and all the higher mental processes as combinations of simple reflexes modified by cerebral traces. Attention is studied under the name of the reflexes of nervous concentration; discrimination and volition, under the name of the personal reflexes or the reflexes of the personality. Only in the case of these last reflexes is the nervous system supposed to function as a whole.

The explanation of the concept "personality" is limited in this book to a few sentences. In an earlier monograph on the personality, to which he refers us, Professor Bechterew attacks the view of the self as set forth in James and suggests instead a description of the personality similar to that given by Kraepelin. In that monograph Bechterew writes: "According to my view the personality embraces besides the principle of uniformity a directing principle which guides a man's thinking, acting, or refraining from action, and also determines the relation of the individual to his fellow men." The importance of this concept both for psychology and sociology is emphasized in this monograph. In the present work the treatment of this concept is restricted to the following points. In infancy organic impressions determine the child's relations with external impressions. These organic impressions are the basis of individual differentiation, a differentiation which reaches its culminating point in man under the name of personality. Discrimination and volition are reflexes of the personality. "The self of the individual has no anatomic substratum and appears only as a totality of reflexes, the paths of which are traced in the nervous system of the brain." According to this definition with which the present work closes, the personality is not the social self of his earlier monograph nor the psycho-physical organism as in current biological usage, but seems to be identified with what Professor Loeb calls "the associative memory." In a chapter on symbolic reflexes Professor Bechterew shows that he has clearly in mind a distinction, the absence of which sometimes befogs discussion—namely, between the concepts personality and the consciousness of personality. Consciousness of personality he regards as identical with the general estimation of neuro-psychic phenomena. This process of estimation he treats wholly subjectively (pp. 414–415).

From a survey of the book, as a whole, it would appear that Professor Bechterew had set himself the task of writing a new system of psychology in which the biogenetic development of the individual would be studied by the expressive method. But in reality the work embodies under new titles the systems of classification and modes of procedure which many dynamic psychologists are finding inadequate. Psychiatrists, teachers, and other students of the individual are calling for a system of psychology that will throw new light on the underlying complexes in personality, of the normal as well as of the abnormal individual. The present work reveals no acquaintance with the recent studies of individual types and the studies of volitional attitudes, both of which are pointing in the desired direction. The book, however, presents in an attractive style many of the recent ideas that are worked out in greater detail in the writings of Professors Baldwin, Woodworth, and others. Many of the fundamental ideas of the book, such as the conception of an objective psychology, can be traced back to Herbert Spencer, but in urging us to study the behavior of personality as a whole, Professor Bechterew is encouraging a forward movement in psychology. This movement is paralleling the evolution of biological study which began with the study of isolated elements, but to-day emphasizes the study of the whole personality—that is, the psycho-physical individual. The detailed accounts of experiments conducted in the St. Petersburg laboratory under the author's supervision constitute an interesting feature of the book.

NORBERT JOHN MELVILLE.

PRINCETON UNIVERSITY.

The Principle of Relativity in the Light of the Philosophy of Science. PAUL CARUS. Chicago: Open Court Publishing Co. 1913. Pp. 105.

This venture of a broad scholar into a field for the detail of which he has only a general interest is perhaps no less pretentious than the augmented title of his discourse. Certainly the light of the philosophy of science is rather feeble if it can shed no better illumination on this important problem of physical science, some phases of which must be still obscured in Dr. Carus's mind, for we read: "We will here at once and dogmatically state that the relativity physicists are perfectly right; what they claim is really and truly a matter of course, and if they only would present their proposition without dressing up their theory in paradoxical statements, nobody would in the least hesitate to accept the new view" (p. 3).

However, we also find: "The new conception, sailing under the flag of the principle of relativity which has been so noisily advanced to replace the old notions, does not prove quite satisfactory and presents too many difficulties to be acceptable to the average mind. . . . The names of Einstein, Lorentz, Minkowski, are the stars of first magnitude among the founders of the new world-conception. Their arguments, mathematically excogitated and worked out with subtle exactness, seem to carry everything before them, and we are not prepared to say that their contentions

are wrong. Their propositions decidedly contain truths of great importance, referring mainly to calculations of minute precision in complicated phenomena. Yet common sense rebels against them and would not be convinced. *Prima facie* the new doctrine seems *ingeniosius quam verius;* it is ingeniously contrived, but there is a hitch in it" (p. 77).

To the physicist there is a hitch in the author's *a priori* reasoning which accepts the principle of relativity as offering nothing new in science except paradoxes, and would solve those paradoxes by means of the "philosophy of science" rather than by a clearer understanding of the subject.

The founders of relativity, the cogency of whose arguments Dr. Carus admits, claim nothing new for that part of the theory which is based on the first postulate, the relativity of classical mechanics. A better understanding of the second postulate—which Dr. Carus admits presents great difficulties, yet which he is inclined to pass over lightly as belonging to the field of physics and not philosophy—would clear away the mystifying shadows which give rise to as many paradoxical statements in Dr. Carus's own article as he finds in the contentions of the relativists.

The second postulate, that the velocity of light is constant in a field where the gravitational potential is constant, is the basis of Einstein's definition of simultaneity; and it is upon the two postulates of the theory that the so-called variations in time and space lengths, mass, etc., as viewed by an observer from varying viewpoints, are based. These variations can be measured or at least illustrated by models in the laboratory, and to the reviewer offer nothing for common sense to rebel against.[1] Dr. Carus's difficulties seem to be due to the fact that he does not appreciate the difference between a Galilean and a Lorentz transformation, much less realize the necessity that forces the latter upon us.

As "the details of the physical problems and their solution have only a slight interest for philosophy" (p. 82) Dr. Carus willingly leaves them to the physicist and formulates for himself a philosophy of science which "is simpler than the world-conception of the relativity physicists, . . . rests on a more solid foundation and is absolutely free from paradoxes" (p. 61), a philosophy which, if properly understood, would have enabled leaders of thought not only in relatavism, but also in pragmatism, Bergsonianism, and other modern tendencies to avoid at least some of their aberrations (p. 84).

This philosophy is not overaccurate in the use of scientific terms; for instance, the terms activity (power), energy, and force seem synonymous in the author's thinking. But the booklet is readable and will doubtless be very useful in opening up the subject of relativity to a larger circle of readers. Before considering it seriously one should master Einstein's first paper[2] which, by the way, is too historic to have been omitted without reference.

The reprinting of Bradley's original memoir as an appendix is as appropriate as it is thoughtful, especially in view of the fact that a number

[1] R. A. Wetzel, *Science,* 38: 466 (1913).

[2] *Annalen der Physik,* 17: 905 (1905).

of text-book writers have followed the example of Schuster's "Optics" and refrain from mentioning such a misfit as the aberration of light.

It is not surprising that a philosopher should experience difficulties in grasping the ideas of thinkers in another field; the difficulties of the theory of relativity are not insurmountable, however, as Dr. Carus and his readers will find if they give the subject further attention.

REINHARD A. WETZEL.

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Outline of a Study of the Self. ROBERT M. YERKES and DANIEL W. LARUE. Harvard University Press: 1913.

The authors of this Outline Study have found that a study of ancestry, development, and present constitution is an extremely profitable task for most students, and they present this guide as an aid to systematic and thorough study of this kind. The purpose of such study is threefold: (1) To help the student understand himself or herself; (2) To help the student understand and sympathize with others; (3) To arouse interest in the study of heredity, environmental influence, eugenics, and euthenics. Many of the questions propounded, it is stated, can not be answered fully, but are given by way of suggestion.

The book is put together on the loose-leaf system, with blank pages for records and replies. Under the heading "Ancestral History of the Self" are given the "Record of Family Traits" of the Eugenics Record Office, and many supplementary questions concerning physical, mental, moral, and social traits of near relatives, with suggestions as to their classification and evaluation. Under "Development or Growth of the Self" and "The Self of To-day" the periods prenatal, infancy, childhood, adolescence, and the present time are each provided with questions concerning characteristics, influences, growth, temperament and inclination, habits, capacities, and social relations. Under "The Significance of the Characteristics of the Self" are given questions concerning vocational demands, equipment, and ambitions; marital propensities and fitness; responsibilities and preparation for parenthood; and the "Index to the Germ Plasm" of the Eugenics Record Office. A final section invites reflection on "The Duties of the Self as a Member of Social Groups" in the light of physical and mental constitution, moral and religious tendencies, vocational abilities, and marital and parental relations and duties.

This attempt to present a suggestive outline for intensive study of the individual should be recognized as both commendable and timely. That it is but a step in the right direction its authors will no doubt cheerfully agree. The Outline raises many questions which neither "the self" nor anybody else can answer,—as "Has heredity anything to do with your vocational leaning?" "Are you an improvement on the family type?" "What is your chief desire in life?" "Should you marry a 'similar' or a 'dissimilar' individual?" "Do you inspire confidence?" "Make clear your philosophy of life," etc. Observant students can hardly fail to note the suggestive humor of such memoranda as "Habits of Father (alcohol, tobacco, coffee, drugs). Habits of Mother (work, rest, recreation)." It

should be said, however, that these questions are not at all representative of the Outline as a whole.

If the student takes the matter seriously he will probably conclude that the answers to most of the questions are immaterial, since nobody can show that one state of affairs is either more or less desirable than another. As to the actual profit derived by the student from the very laborious task of completing the Outline, the reviewer can not express himself until he has had more experience with the Outline. He is temperamentally inclined to believe that such a student will hardly be happier or more successful than the one who forgets his grandparents and uncles and forges ahead as opportunities present themselves. It would be indeed unfortunate if the painstaking student should be led to believe that, having delivered opinions on these various questions, he has really and thereby acquired any new information about himself, or should be frightened by the formidable aspects of the Family Tree, the Index to the Germ Plasm, or the paragraphs on prenatal influences. Additional good might be achieved if the student were requested to record his observations of others on the basis of the Outline. Indeed it is quite probable that a careful study of some other individual would be even more profitable than the analysis of the self.

It is to be hoped that the time will soon come when the student can be provided with norms, correlations, and other facts and generalizations which may enable him really to interpret his autobiographical details. Meanwhile Yerkes and LaRue have done us genuine preliminary service in formulating this Outline. It should result in giving greater definiteness and direction to the development of individual psychology and the analysis of personality,—the study of the active self,—which is, after all, the only real psychology.

H. L. Hollingworth.

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. January, 1914. *Les Nouveaux Courants d'Idées dans la Sociologie Contemporaine* (pp. 1–31): E. de Roberty. A review of the "new conceptions which have been formed in contemporary sociology under the direct action of neo-positivistic theories," with particular reference to the school of Durkheim, in France, to the work of Simmel and Ostwald, in Germany, and to the work of Baldwin, in the United States. *L'Attention Indirecte* (pp. 32–54): Dr. Revault D'Allonnes. – "Attention, in its superior forms and perhaps even in all its forms, is a *perspective act:* that is, it implies one or several intercalations, physiological, mental, unconscious or conscious, through which the datum is envisaged; to attend is to perceive, to apperceive, or to conceive a thing indirectly, through one or several mechanisms or interposed auxiliary objects." *La Science et le Surnatural* (pp. 55–72): Alphonse Chide. – An examination of the scientific value of the adduced evidence for the genuineness of the alleged miracles of Lourdes. *Le Premier Congrès*

d'Esthétique (pp. 72–88): CHARLES LALO.—Report of the activities of the first Congress of Esthetics held at the University of Berlin, Oct. 6–9, 1913. *Notes et Documents. Commémoration de Roger Bacon:* FRANCOIS PICAVET. *Analyses et Comptes rendus.* Félix le Dantec, *La Science de la Vie:* CH. PIEDALLU PHILOCHE. Ph. Chaslin, *Éléments de Sémiologie et Clinique Mentales:* EUGÈNE BERNARD LEROY. Fr. Paulhan, *L'Esthétique du Paysage:* L. ARRÉAT. Leslie Morton Turner, *Le Conflit Tragique chez les Grecs et dans Shakspear:* L. ARRÉAT. K. Jungmann, *René Descartes:* A. PENJON. *Revue des Périodiques.*

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NOTES AND NEWS

AT the meeting of the Aristotelian Society on May 15, Miss F. Rosamond Shield read a paper on "The Notion of a Common Good." That the good is common is an analytic proposition accepted by those who hold that there are fundamental ethical concepts of an irreducible nature; the objectivity of the good involves this common character and transcendence of private opinion. Two reasons why this truism sometimes fails to find acceptance are: (1) Belief that the good of different individuals is conflicting; (2) Confusion of two distinct positions: (*a*) the good is common; (*b*) whatever is, is right. The source of the first error seems to lie in confusion between "good" and "interest" on the part of the individual, and in unwillingness to admit that anything may be good which offers little or no hedonistic advantage. Again, conflict of claims between individual and society does not necessarily destroy the validity of common good; neither claim may be fully justified. Nor is it affected by the fact that all good has to be realized under conditions which impose limitations, as well as afford opportunities. The principle of the common good is not necessarily equivalent to optimism, nor to belief in the value of any particular *status*

quo; its chief use is as a criterion; if any apparent good can not show itself to be common, its value must be challenged. Nor does it lead to the Tolstoyan extreme of non-resistance and passivity; content of the good varies with circumstances. According to one view the common good is the goal, rather than the presupposition of ethical endeavor, with consequent denial of its *a priori* character; but what is, from a chronological standpoint, conceived as goal, may be, logically, a necessary implication throughout. The common good is based not simply on the fact of the essential sociality of men, but on the gradual incorporation of facts by reflection into an ideal. The common good demands impartial acceptance of vicariousness. Dr. Dawes Hicks, in opening the discussion, remarked that we were dealing with a problem as old as Plato, and as much alive to-day as in his time: the issue as to whether what we call "the good" is something objective, something actual to be apprehended, and to influence the individual consciousness, or whether it is subjective in the sense that it arises in individual consciousnes itself. The term "common" seems to introduce a difficulty, for though it may be easy to contrast the conception of general good with individual interest, when we come to apply it to communities themselves, it becomes impossible, if not meaningless. If the statement of T. H. Green, "God is all that the human spirit can ever hope to become," is the meaning of the term "good," it makes the notion of the development of humanity unreal, for all that is aimed at exists already. Dr. Percy Nunn defended the notion of a purely objective good in the realist sense given to it in the works of Mr. Russell and Mr. Moore. The term "common" added to "good" appears difficult to reconcile with this notion. If we recognize the relationship of anybody to a good, it is difficult to hold the doctrine of its independent objectivity. Dr. Wildon Carr contended that the difficulty arose from the implication that what was good when viewed as an individual whole must retain its character in all the parts into which it could be broken up in analysis. The good might be such that to divide it is to destroy it, and in this sense there was philosophical truth in the saying "There is none good save God." Mr. Delisle Burns called attention to the metaphysical as distinct from the ethical aspect of the question. What is the essential oneness to which you are pointing by the term "common"? If this oneness is between two persons, their continued individuality destroys the definition. The essential oneness is not between myself and the good, but between my neighbor and myself, and if the plurality is gone, there is no meaning left for the term "common."—*Athenaeum.*

Professor E. C. Wilm, Ph.D., LL.D., of Wells College, has been appointed lecturer in philosophy and acting head of the department at Bryn Mawr College for the year 1914–15.

Dr. William Ernest Hocking, professor of philosophy in Yale University, has accepted a chair of philosophy in Harvard University.

Dr. R. F. A. Hoernle, of Durham University, has been appointed assistant professor of philosophy at Harvard University.

Dr. Edward Gleason Spaulding has been promoted to a full professorship in philosophy at Princeton University.

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A DEFINITION OF CAUSATION. IV

We have in the preceding paper passed in review all the kinds of causal process found under the heading "Properties of Matter"; the second principal group of cases marked out at the beginning of our investigation. Before going to the third group, that of electrical phenomena, it may be well very briefly to summarize the results so far.

From the point of view of one who looks for new light on the nature of causation the results of the second group were decidedly disappointing. Under the first group, Mechanics, we found two types clearly emerging: a certain serial type called a self-repeater, and one of composition. Under the "Properties of Matter" we obtained some cases which were believed to reduce to the mechanical types, but more which gave no result at all. Perhaps the science of the near future will either reduce these to mechanical or electrical cases, or prove them *sui generis*. But at present the scientific analysis gives no further data. This is, of course, one of the imperfections inherent in empirical method; yet there seems no dodging it, if we wish to remain in touch with what is assuredly known of the existent world.

Meanwhile an objection arises, accusing us of a certain arbitrariness. It may be asked, why do we not accept elasticity, density, etc., as ultimate causes, connected with their effects, motion, acceleration, etc., and needing no further analysis? We were willing, under Dynamics and Statics, to accept motion, mass, position, etc., as ultimate causes, leading to motion, etc., as effects. We did not then accuse science of having not analyzed sufficiently. Does it not, therefore, seem that we are biased in favor of a mechanical type, and so long as causes have not been reduced to such a type, arbitrarily consider them not yet analyzed? Certainly such a bias has no just place in an empirical investigation. This objection, however, misunderstands the situation. There is a definite ignorance with regard to elasticity, density, friction, such as is not the case in motion causing motion. With the dynamical phenomena, both cause and

effect are distinguishable and verifiable by sense-observation. With elasticity, only the effect, the recovery of normal size and shape, is identifiable. There is no verifiable preceding or accompanying phenomenon in the body which can be distinguished from this recovery and assigned as its cause. It is believed that there is such a phenomenon, and that it is of the nature of a system of intramolecular stresses; but these stresses are not definitely described. Elasticity, then, is at present a name for an effect to which science has not yet correlated a cause. The only requirement for our investigation is that we are provided with a definite, identifiable cause, and a definite, identifiable effect distinguished from that cause. *Then* we can undertake, by analysis, to bring to light the relations that hold between them; and upon the application of this method to all known types of causation, to base a general definition of the causal relation. But this we can not do until *both* the cause and the effect are furnished. It is not that the mechanical has any inherent advantage over any other causal explanation; in the field of electricity, indeed, we shall find a different type, which is quite as clear and good. And what has been said of elasticity holds as well, *mutatis mutandis,* of resistance, density, crystallization, etc.

We pass now to the third group of causal events. The recent advances in this field are summed up in what is known as the electron-theory. Our task is then to expound the fundamental laws of that theory, which are believed to account for electrical phenomena so far as they are at present explained.

III. Causation in the Field of Electricity

The electron-theory explains a great many of the phenomena of light, heat, electricity, magnetism, chemistry, which, so far, mechanical theories have been unable to explain. It does not supersede or account for the laws of mechanics, but rather invokes them in its applications. The causal sequences that obtain among electrons are not then to be regarded as more fundamental than those of mechanics. "The corpuscular [electron] theory of matter with its assumptions of electrical charges and the forces between them is not nearly so fundamental as the vortex-atom theory of matter, in which all that is postulated is an incompressible frictionless fluid possessing inertia and capable of transmitting pressure."[1] We have here simply a type of events as yet unreduced to any other type. It is not however based simply upon hypothesis. "We have direct experimental proof of the existence of these corpuscles."[2] Yet, while certain of the laws governing electrons are established, there is, it appears, by

[1] J. J. Thomson, "Corpuscular Theory of Matter," page 2.

[2] *Op. cit.*, page 2.

no means a fixed body of doctrine throughout this region. The best we can do is to state some of the typical views, indicating where they are hypothetical rather than generally accepted. The type of causation in each view will serve to illustrate scientific procedure in this field, so far as that can be done at present. We begin with the more generally accepted properties of electrons.

1. Each electron at rest repels every other electron at rest. "The fundamental property of the electron which distinguishes it from ordinary matter is that it repels another electron, instead of attracting it, as two pieces of matter would do."[3] "Every electron placed at a distance of 1 cm. from another electron repels it with a force of 1.16×10^{-19} dynes" (p. 29). Each electron has thus a definite and constant negative charge, whose action consists in just this force of repulsion; and the electric current consists in the motion of such electrons. When, however, they move at a very high velocity, the mass increases, "just as if the ether in that space were set in motion by the passage through it of the lines of force proceeding from the charged body, and . . . the increase in the mass of the charged body arose from the mass of the ether set in motion by the lines of electric force."[4] This apparent increase of mass does not hold of the electron itself; that remains constant. Furthermore, this repulsion decreases with the square of the distance,[5] which means (analogously to what we saw in the case of gravitation) that the repulsion from a given electron runs outward uniformly in a straight line.

The cause of this repulsion is not assigned. "We shall not attempt to go behind these forces and discuss the mechanism by which they might be produced."[6] The most that can at present be done is to see the way in which this repulsion acts. The above account makes it comparable with gravitation, or any pressure or tension acting uniformly in a straight line. Whether considered as holding between electrons at rest or as between them when moving, it clearly has the same logical structure as was found above in Statics and Dynamics, in the serial type.

2. The same laws hold between the positive atoms at rest, *i. e.*, those which have been deprived, each of the same number of electrons.

3. "Every electron attracts every neutral atom from which one electron is removed, when placed at a distance of 1 cm. from it, with the same force—*viz.*, 1.16×10^{-19} dynes, or if two, three, etc., electrons have been removed, with a force two, three, etc., times that amount."[7] This attraction varies also inversely as the square of the

[3] E. Fournier d'Albe, "The Electron Theory," page 23.

[4] "Corpuscular Theory," page 29.

[5] *Ibid.*, page 1.

[6] "Corpuscular Theory," page 1.

[7] *El. Th.*, page 29.

distance. When this attraction is combined with the original motion of the electron, the resultant is an orbital motion of the electron. "These electrons are usually associated with atoms of ordinary matter, round which they describe circular or elliptical orbits, with periods approaching those of visible light-waves."[8] (This statement, however, seems to embody no more than a hypothesis). Such orbits are conceived analogous to those of our solar system; they are resultants of attraction and some original motion, and as such are believed to obey the laws of Kepler and Newton.[9] The cause of this attraction is not assigned, but the way in which it behaves is, once more, that of a force acting uniformly in a straight line, as in the case of the repulsions between like charges.

4. ". . . electrons moving side by side through the ether attract each other with a force proportional to their speed, and inversely proportional to the square of their distance apart."[10]

We now come to a distinctly hypothetical part of the theory. The attraction between electrons in motion, it is supposed, "balances their electrostatic repulsion as soon as they travel with the velocity of light" (p. 147). Also, "when an electron and a positive atom travel side by side through the ether, their original attraction is balanced by mutual repulsion, so that, again, when they travel with the velocity of light, they exert no mutual force" (*ibid.*). As the forces described in 1, 2, and 3, above were electrostatic forces holding between electrons at rest, so these are electrodynamic, between electrons in motion. They are claimed to be the fundamental events, in terms of which magnetism, radiant energy, etc., are described. According to the view here set forth, it follows that the way in which one electron influences another moving beside it is to retard its motion; if that other is stationary, to impart to it a motion in the opposite direction.[11] "A change of momentum of an electron produces a change of momentum in every other electron in the opposite direction" (p. 281). This mode of behavior is alleged to be exemplified in the electromagnetic wave, which is constituted by the swinging of one electron giving rise to that of another, and so on; each one swinging in a plane perpendicular to the direction of the propagation, and the propagation taking place with the velocity of light. As these waves produce radiant heat or light according to their length, it seems fair to say that the typical causal events (on this view) in the whole field of radiant energy and electricity are

[8] *Op. cit.*, page 280.

[9] *Cf.* the calculations, *op. cit.*, page 32, made on that assumption.

[10] *Op. cit.*, pages 280–281.

[11] *Op. cit.*, pages 176–79.

believed to be the motion of an electron and the imparting of motion from one electron to another.

The analogy between these types of causation and the mechanical ones is striking. "It is as if the electric momentum—the momentum of electric charges—destroyed in one body reappeared in another, just as in a collision there is a transfer of momentum" (pp. 237–238). Each electron imparts a momentum equal to its own, in a reversed and parallel direction, to the next; this imparts in the same way to the next, and so on. It is not, apparently, done by contact. Nevertheless the electron's influence is conceived as permeating all the adjacent continuous space, just as gravitation does; for it acts upon other electrons at any given distance from itself. It is supposed to be continuously active as we go out from it in space. We are reminded of the case of the bar balanced on a fulcrum, where the downward pressure is communicated from one end to the other. The causal process in the present case seems to lend itself to just such a serial description as in that one.

Much of this is tentative (if I understand the matter correctly). The law of inverse squares is, however, I believe, generally admitted, and the uniform action which that implies may be reduced, as in the case of gravitation, to the same serial type as uniform motion. We are concerned only to show that the kind of explanation that is offered in the hypothetical portion of the doctrine is of the same general logical structure.

A quite different mode of conceiving the fundamental electron-event is that of F. Bohr.[12] This dispenses with the notion of an ether-wave entirely, replacing it by that of the projection of a uniformly rotating electron; the rotation accounting for the periodicity of light. This is clearly a dynamical type,—though its source is, I believe, not explained as yet. On the whole, then, it seems safe to say that there are at present no causal explanations offered in this field which can not be reduced to a type analogous to that found in mechanics.

Before proceeding to analyze the results obtained for the cause-effect-situation, in general, we must notice an already mentioned definition, apparently grounded on an exhaustive empirical survey, by Professor Ostwald. According to him, whenever we have causation, we have an uncompensated difference between two adjacent intensive or potential quantities of the same kind. Now this is indeed empirically grounded, but—in accord with the standpoint of energetics—it neglects analysis. The "*Stärken*" or potential factors are not analyzed, nor is the way in which the effect follows, or even the effect itself, subjected to scrutiny. The definition, though not as

[12] *Philos. Mag.*, July, 1913.

abstract as those of Russell or Natorp, remains less than concrete. Had Professor Ostwald attempted to perform analysis, he would, I venture to think, have found that this formula is largely tautological. For intensive quantities, as he uses them, are those factors of energy which contain a time-factor in their definition. The capacity-factors—mass, specific heat, etc.,—do not change; the *"Stärken"*—velocity, temperature, etc.,—do change. If there is change then, *i. e.,* an event, it must occur in the intensive factors; they are defined as those which alone can change, in a given system. Why it is that there must be a difference between the two is equally obvious. For otherwise there would be no opportunity for change. If all bodies moved with the same velocity relatively to one another, there would be no relative motion, and no mechanical events. If all bodies, and empty space as well, were at the same temperature, there would be no heat-events. In fact, we have already found that an uncompensated potential factor *meant* loss of equilibrium—whence is obvious the tautological character.

Nevertheless there is a sense in which Ostwald's formula is not tautological. It is a generalization from the second law of thermodynamics, which is by no means a tautology. That law has a positive meaning which Ostwald's formula has in its generalized form lost. It tells us that the event which happens is in *one certain direction* rather than its opposite. Heat in available form decreases rather than increases. The tendency is always toward lower rather than higher levels. Professor Bergson regards this as so fundamental a trait of all material processes as to warrant us in defining the very nature of matter thereby. Whether that may turn out true or not, it is a universal empirical character for which, so far as I know, no explanation has been given by science. As to the mode in which it acts, it is believed to be that of a uniform process; whether it takes the form of pressure, motion, radiation, or electric potential. The reason why this empirical property holds, then, not being yet assigned, we have here no data for analysis; but the mode in which the change from higher to lower levels occurs has already been examined in the fields of mechanics and electricity.

The final task is to define more precisely the invariant structure which we have found in all the cases which yielded results. Two types were discovered: that of composition, and that of a series which was called a self-repeater. Are these distinct, or reducible to one type? Let us first briefly recall them, and then proceed to analysis.

The invariant *composition* was found in Statics and Dynamics, and afterward seen to be universally present, since every phenomenon is a complex one. Its nature was extremely simple: two forces,

motions, accelerations, pressures, combine to produce a third in which they are preserved intact. That is all we need now recall of that type. The invariant *series* was found, in Statics, in the principle of transmissibility and in the moment of a force about an axis; in Dynamics, in uniform motion, rest, collision of bodies; in the law of inverse squares holding for so many phenomena outside Mechanics, as gravitation, attraction, and repulsion of electrons, and in fact throughout the field of electron-theory. Its structure was temporarily defined as determined by a first term x, which was followed or accompanied by a second term x', essentially similar to x in all respects save one or more definitely named differences (position, magnitude). It was suggested, but not proved, that this would suffice to generate an endless number of following cases, x'', x''', etc. We have now to study these two invariants more closely.

Each starts from a duality. By this is meant that in each the cause is *two terms* with a certain relation between them. This is self-evident in the case of composition, where the two factors plus the relation of *combination* determine unambiguously the resultant. In the case of the series, as was already suggested, two terms with a relation of sameness—and also of difference—between them determine unambiguously the remainder. Let us now see by some further analysis that this is really the case. The terms are conceived different in ordinal position—if that phrase may properly be used of less than three. If not, we must find some other phrase such as temporal position or spatial direction. The first is more fundamental than the second *only* in the sense that the second is defined by reference to the first, but not conversely. It is not meant that the first gives rise to, or necessitates, or in any way accounts for, the second. *E. g.*, the first term x of the series is a body in a certain spatial position at a certain time; the second term is a body in another spatial position at another time. The latter body is defined as *the same as* the first (*whatever* that may mean), and its spatial and temporal positions are defined as *later than or beyond* those of the first. Of course this definition is theoretically reversible, and we might define the first by means of the second; this would indeed be *a priori* possible, but would not be an adequate account of the particular types we have been studying. Here is where our procedure once more definitely diverges from the method of *a priori* logic, which finds asymmetry reducible to symmetry.[13] The reason why we must diverge from this interpretation is that we are dealing with existences. In the existential world, things do not conform to this

[13] J. Royce, following C. L. Franklin and A. B. Kempe, in *Trans. Am. Math. Soc.*, Vol. 6, pages 353–415, and in *this* problem, B. Russell, *Proc. Arist. Soc.*, 1912–13, pages 10–11, 15, 21.

ideal symmetrical arrangement; the relation of earlier to later is existentially irreversible. We accept this irreversibility as fact, recognizing that the relations between these two members are not symmetrically describable except by abstraction from this irreversibility. Science regards the first as existing without the other, but not conversely; x exists before x', when x' does not as yet exist; but it is not true that x' exists when x has no existence; for the past has a certain title to existence which the future has not. This is a fundamental attribute of time, which *a priori* methods generally neglect. Stated in terms of time, then, our point is that the past has a certain existential rank higher than that of the future. Accordingly the second member of the series must be defined by reference to the first but not conversely; otherwise our definition of the series would be abstract and would neglect this empirical character of precedence. But the first member does not, of course, suffice to define any series; it does not determine that there *is* a second term which is defined in terms of it. It *needs* the second term in order to constitute the series, as truly as that term needs it. And in all this we claim to be stating the structure of the empirical process. It is that character of the inquiry alone which precludes the symmetry and consequently renders ultimate the difference between the two terms.

The first two members give rise to the series in the following manner: x is followed by x' where x' is defined by its sameness with x, and also has a certain additional difference whereby it is made a distinct case whose existence is independent of x. We now concentrate our attention on the sameness, for it is this relation that will bear the burden of what follows. It is a given fact that the relation "followed by x'" is associated with x; or as science and ordinary thought put it, x has the particular property of being followed by x'. Now this simply means that this property is predicated of x, or is in the last analysis in part to be identified with x, as a thing is identified with its properties.[14] That is, it has the relation of sameness with x. So we have, in addition to the above relation, x' is the same as x, this further relation, x is the same as this particular property of being followed by x'. We have, then, two relations, which may be symbolized thus: $x'Rx$, and xSy, when y is this property in question. The inference is inevitable and uniquely determined, $x'RSy$; x' has the relation to y which is the "relative product" of the relations R and S. Now in this case R and S are both the relation "the same

[14] The externality of relations would seem to forbid this, but the matter may be stated consistently with that view. x has the relation "followed by x'" and x' is the same with, or defined by x, hence x' has the relation "followed by itself."

as,'' which happens to be a transitive relation. Hence the result must read, $x'Ry$; the ''relative product'' is equivalent to the original relation. Translating this, we have: x' has the property of being followed by itself, *i. e.,* it implies another case of itself.

If x' implies *another case* of itself, this latter will be defined just as x' was defined, consistently of course with its distinctness from x'. Its relation to x' will be seen to be exactly analogous to the relation of x' to x. It is, in fact, the third member of the series, which we called x''. Being exactly analogous to x', it in turn will be subject to the same reasoning, and will imply one more case of itself, which is the fourth member of the series, x'''. It is clear that the series must continue indefinitely.

Thus, it is claimed, the first two terms, related as we found them to be, determine the rest of the series. Inasmuch as more seems to come out of the premises than was put into them, we may profitably make some comments before going further, and meet some obvious objections.

Notice, first, that every term and relation here found is strictly particular—or individual if that is a less universalized term. x and x' clearly are so. The ''property of being followed by'' sounds general, but is not here used as general; we dealt only with this particular case of it. We *found* by inspection of the situation that it must *become* so; but that is not determined either by the statement ''x' is the same as x,'' or by the statement, ''x is the same as the property.'' Nor is it tacitly presupposing a universal when we call x'' ''another case'' of x'; for two cases only are meant, and it is not yet known that there could be more. Two cases of course do not constitute a universal—nor do any finite number of cases.

Notice, second, that the result is in no way tacitly taken for granted at the outset. When we say x' is the same as x, it is a very natural criticism to reply that we really mean ''x' is the same as x in respect to the property of being followed by x'.'' If this were true, we should have already begged the result; we should not have defined the series by the two terms and their relation alone, but by two terms so defined as directly to include an endless series of terms. But it is not true. To define x' to be the same as x is not, *so far,* to define it as the same as this property of x. For x can and does exist without this property: in the case of a body at rest it is not followed by the x' which follows it in the case of motion. The being followed by x' is not a necessary consequence of x; we saw this above, when we showed that x' is not dependent for its existence upon x. But even if the property of being followed *were* a necessary consequence of the existence of x, we should not have tacitly assumed it; for in general it does not follow, if $x'Rx$ and xSy, that $x'Ry$—as we saw

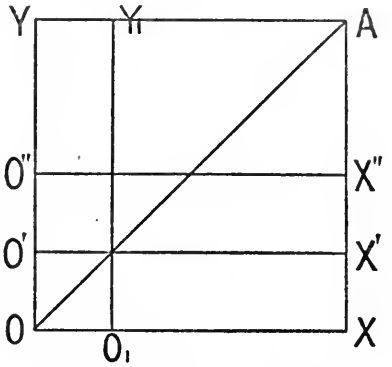
just now. It *does* follow in the case of a transitive relation such as sameness; and the fact is so familiar that we know instantly it *will* follow and so we seem to have assumed it at the beginning. Indeed, if this criticism were not very probable, we could have phrased the whole matter much more simply thus: x is followed by x' which resembles x and therefore must be followed by a particular case resembling itself, x''.

A second natural criticism is an accusation of self-contradiction. If this, and the answer to it, are pushed very far, we shall land in a dialectic. This I believe to be no sound objection to the criticism; but it has been expressly barred from this investigation. We desire only to show that the above description of the series uses nothing which is contradictory to the ordinary scientific usage. That two terms can be the same while different does not seem contradictory to common reflection; for we speak, and the scientist speaks, of the *same* (and not merely an equal) mass in different positions, the *same* (and not merely an equal) momentum in different bodies, etc. That a term can be "followed by itself" does sound paradoxical; but when the phrase: "by another case of itself" is substituted, it does not sound paradoxical at all. For that is a property we ascribe to any universal. One case of it is (in part) just like another and may follow or precede it. We claim, then, merely that our definition is no more contradictory than the practise and speech of science. If that is philosophically condemned, let it be so; but if not, neither should our view be condemned. It may be remembered that *one* reason for considering science as not ultimate has already seemed to disappear, *viz.*, a generalization we made from the principle of composition. But of course others remain.

Two related factors, then, seem necessary and sufficient to every cause of the serial type, and these two determine what follows, *i. e.*, the effect. One alone would, it appears, never produce anything. It would be a potentiality only. A mere potentiality would never produce an actual event: the series would not start but for the second member being added to the first. Thus all causes of the serial type may be considered as *Auslösungen:* a potentiality *plus* a motion or change. The case of spark and gunpowder is not at all unique. But this is only one side of the matter. The two main types, the series and the composition, are alike in more than the duality of the causal member.

The principle of composition may be stated in serial form. Every force acts in a certain line, and is defined by the acceleration it imparts along that line, represented by a certain length. The resultant line is uniquely determined by the component lines, in length and direction. How happens this determination? Let us take

a simple case. Imagine the components to be OX and OY, the resultant OA. How then is the certainty secured, that OA and



nothing else is the resultant? This situation may be put in serial form in many ways, one of which is as follows. The length OX from O takes us just as far in a fixed direction from OY as the length $O'X'$. The length $O'X'$ takes us just as far in the same direction from OY as the length $O''X''$. And so on; the length YA being one of the members of this series. The series is quite analogous to the self-repeater above. We do the same thing for the lengths OY, O_1Y_1, etc., and thus arrive at XA. Now it is being a member of such a series that determines A to be the required terminus of the resultant. Not OA, but some other line OB would be the resultant, if the series were not a valid one, truly describing the nature of space. The point A is determined to be where it is by virtue of being in both of these series at once. Thus viewed, the composition of forces is not a mysterious union of two entities to produce by some magic a third, but the meeting-point of two repeating series.

The necessary and sufficient condition of the series was found to be two terms in a certain relation. That is, given that much, the rest *of necessity and by pure deduction* follows. Hence the series contains *necessary connection.* Had Hume examined specific cases of causation, or had he even told us what necessary connection meant, the present almost universal philosophical skepticism in regard to its existence might not have come into being. One great obstacle, too, to his search, was that he treated a cause as *one* instead of *two.* At any rate, the denial of real necessity has usually been made without a fair examination of the evidence. If the evidence here offered is sound, and the analysis of it correct, we seem to have obtained an answer to Hume of a very different character from the usual one: an answer which finds necessity in the empirical contents of experience, rather than in the form imposed on it by mind. We have examined those contents by themselves, as science alleges that they occur in the material world. No hypothesis of the presence of mind as law-maker was needed to account for necessary connection between cause and effect, nor any assertion of the independent "subsistence" of

universals. In fact we have, if no mistake has been made, been able to derive the concept of the universal, *i. e.,* that which may have *any* number of instances, from a system of two particular terms and a particular relation. Of course this result has not yet been subjected to criticism, such as the different schools of philosophy might make. One suggestion may perhaps without impropriety be offered. If the method here pursued gives us a result (the objective existence of necessary connection) which philosophers have been in the past unable to reach, and in default of which they were driven to various modern "schools" to account for the persistent human error of believing in it—if it gives us this, does there not seem to be less reason to fear criticism? For if we are correct, we have something, the lack of which has occasioned a number of modern philosophic systems. And if such a view *could* survive their criticism the practical belief of every one that events are necessitated by their causes is justified. Nature, in fact, on our view, deduces itself from its past—so far as there is causation.

The meaning of causation which applies to the external world appears then to be: two facts or events such that one precedes the other, temporally or logically, and the second is defined by the first, *i. e.,* the same as the first; a second case of it with added differences. This constitutes the cause. The definition would repay further analysis, I think, but let this now suffice. The effect is the logical deduction from this, the necessary consequence; a never finished series. In practise we generally single out the member, or members, of this series, that for the purpose in hand interests us, and consider it or them the cause with reference to what follows, or the effect with reference to what precedes. We may now see why the momentum of a body *must* be conserved, why the law of inertia *must* hold; in short, why anything that is caused *must* be what it is. That does not, of course, enable us to say that causation is everywhere present. There may very well be indeterminate beginnings; that there are, I have elsewhere tried to show. If there are, then the universe would seem to be a growing one: for since no causal series is ever finished, new beginnings would simply add to the content of the universe, and the series started by them—if any—would never be destroyed. But aside from this interesting speculation, the main results of this investigation are, that there is necessity in the existent world, and that it is not an absolute *a priori* necessity, but one *derived from* the existence of a dyadic relation. No necessity, probably, could be derived from *one term alone,* where Hume and his successors always looked for it, but only from two. Whether or not this result is valid for ultimate reality, is another question.

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EXTERNALITY AND INHIBITION[1]

THAT the object known is not affected or altered by the act of knowing it, seems to be one of the cardinal doctrines of the neo-realistic position; and conversely that the existence of an idea in consciousness does not necessarily imply a corresponding objective reality, nor a subsistential, much less a substantial, form of existence on the part of the idea itself. "'A cat may look at a king,' but that makes no difference to the king who is looked at," a neo-realist remarks, "though it may be a significant moment to the cat who looks. And if the cat instead of looking at a real king dreams of a king that is unreal, why here again the only difference is to the cat. When Puss abandons these royal pageants and goes on her way, she does not . . . take with her either the veridical or the hallucinatory king. She takes with her not the object remembered, but only the memory of the object. And while these kingly memories may be precious and profitable to her, they are without the slightest consequence for their majesties."[2]

To take another illustration from the realm of animal psychology. The pike, or the perch, is taught to inhibit its normal instinct to prey upon minnows by means of a transparent glass plate placed between it and the smaller fry. After many a vain dash against the invisible barrier, it surrenders its usual type of response to the stimulus afforded by the propinquity of the minnows, and on the removal of the glass plate it can be trusted to molest them no longer. If the pike still continues to regard the minnows from time to time, and there is some evidence that it does, it may be said to have fairly started on the way toward a realistic position. It is beginning to know minnows. Before, in the naturalistic state of existence, the minnow was, we may suppose, merely a darting gleam and a satisfied appetite. But now it is not inconceivable that the sadder but wiser pike is dimly conscious of "their silver bellies on the pebbly sand," rather than of its own.

The doctrine that the act of knowing does not affect or alter the object is limited, so I understand, to the knowledge process. It does not apply to non-cognitive relations between organism and environment. Thus, one organism may act on another organism or on an object in such a way as to produce a profound alteration in its appearance, character, or behavior. So far, I have found nothing in the neo-realistic doctrine that rules out as illusory the alterations in things produced by this, that, or the other agency. You may build up or you may destroy, you may be worn by time or you may be rejuvenated

[1] Read at a meeting of the Western Philosophical Association, April 9, 1914.

[2] W. P. Montague, "Unreal Subsistence and Consciousness," *The Philosophical Review*, Vol. XXIII. (Jan., 1914), page 51.

by life in the open, as freely under realistic auspices as under any other (although from the standpoint of realistic epistemology this freedom may be indistinguishable from negative and abstract freedom, like freedom to starve, or like the freedom of the infinite limbo circumjacent to the Euler circles). But be it remembered that when and as you come to *know* an object or a relation, you do not in and through knowing it affect or alter it. With a candle you may set fire to your house and be the means of changing it to a heap of ruins. But as a knower of that house your knowledge of it is, to borrow an illustration from a realistic writer, like the candle which illuminates the objects in a room without altering them. And the illustration of the illuminating candle would fail us if there chanced to be exposed to its rays a sensitive photographic plate.

To know is to refrain. To perceive is to let be. To understand is to stand aloof. *Noscere est inhibere.* In Thoreau's phrase, "A man is wise in proportion to the number of things he can afford to let alone."

The realistic psychology is sound, I submit, as far as it goes. Inhibition is an essential factor in knowledge.[3] Responses, instincts, habits, that ordinarily in their functioning produce changes in the objects furnishing the accustomed stimuli, are held up. Other responses are stimulated which leave the object, for the time being at least, unmolested. The direct response is inhibited and becomes the stimulus to an indirect response. We learn to observe, to reconnoiter. We learn to become objective, to suspend action, pending investigation of possibilities. We withdraw more and more from any attempt to influence the object in terms of personal control or manipulation. We come to desire rather the more indirect control which results from a deeper and more sympathetic understanding of the nature of the object itself. In his quarrel with the subjective idealist, the realist appears to have seized upon and generalized a significant phase of the cognitive process, that of inhibition, a phase essential to the transformation of action from direct alteration of objects, in food-getting, constructive, and other forms of manipulation, to more indirect and possibly more effective modes of alteration, and a phase which a subjective positivism naturally disregards. With justice the realist may be said to criticize an idealistic, humanistic, panpsychic, pragmatic, radically empiric interpretation, or any other interpretation of the cognitive process, if it seems to offer the easy way of immediacy, the short-cut of intuition, the direct response of manipulation, for the more self-denying, more patient, and more discrimi-

[3] I am indebted to Professor A. H. Lloyd's earlier teaching on the subject of inhibition, especially as regards the rôle of inhibition in perception.

nating envisagement of a stubborn world of objective conditions, yes, of external things and relations.

But the doctrine of the essential externality of cognitive relations suggests that the realist has remained behind in one stage of the cognitive process, that he resembles the pike, or the perch, in the experiment, in that he goes on believing that there is a barrier between himself and the world of things and relations after the barrier has been removed. (Or is it always an irremovable barrier?) His belief may be an artefact, the product of an artificial condition, the artificiality of which he does not suspect, even after the externality becomes as an existence purely illusory. Possibly a subjective idealist has in him the best material for a neo-realist. Naïve consciousness of complete adequacy, fondly cherished by an idealist, when broken against the impenetrable barrier of some brute fact may give rise to a sense of subjective limitation and of externality not easy to shake off.

What I would suggest by way of criticism of the realistic doctrine in question is that the inhibitory stage of development, to which the externality answers, may become an arrested stage of development, that it may be singled out and loaded until it becomes dominant, that it may be saturated until it tends to precipitate in fixed forms, that it may be fed until it becomes hypertropied.

It is not so much that realism may be charged with confusing the arrest of a stage of development with the facts regarding the normal function of the stage, as it is that realism may be interpreted (logically, if not historically) as reflecting conditions of the present time which tend to produce the arrest. It has become a matter of common experience that the multiplication of labor-saving devices, the application of science and invention to trade and industry, have made products increasingly accessible to many and processes increasingly remote. This applies not only to those products that are deemed the necessities of life, but also to the sciences and to the arts. Knowledge of the results of scientific inquiry and participation in the enjoyment of creations of art are increasingly available. The technique of both science and art has become correspondingly complex and difficult. Furthermore, the consumption of ready-made products and the excitations afforded by expertly elaborated forms of esthetic gratification may tend to arrest the development of productive capacity. The road forks. As the technique of production, industrial, scientific, or artistic, becomes increasingly difficult, and as the products become increasingly accessible, capacity for mastering technique is correspondingly undeveloped, and the individual as individual comes to count for less, except in a comparatively few cases of extraordinary

talent or opportunity. And even in these cases, the gap between the amateur and the expert becomes more and more noticeable.

In the development of a fairly complex form of skill, there is likely to be a point at which the old, relatively direct and immediate form of control is relinquished, and the new form of control of a more efficient type has not yet been worked out. The process of reconstruction does not always go on smoothly and without interruption. There is a halting stage. At this stage externality as a perception comes home to the learner with convincing force,—the alien quality of his instrument, as yet unmastered, of his medium, as yet refractory, of his technique, as yet insecure. The halting stage may stretch out in a long plateau, and there is the temptation to give over the pursuit of the skill and to appropriate instead the results of the more persistent or of the more fortunate. On this plateau is pitched the camp of the doctrine of external relations, a sort of half-way house. Normally this stage, having served a purpose, is transcended. Externalism gives way to a fuller and freer participation. But we are concerned here with the norm only as it may serve to throw the subnormal, the arrested development, into relief. A completely externalized world, a world between which and ourselves the screen had become more and more opaque until no hint of what was behind it ever passed through, would not be known, of course, even as external, except for reminiscence. The sense of externality arises out of a situation in which our commerce with some object is disturbed, prevented, inhibited, and yet in a measure persists. We are compelled to take a part for the whole.

It is important to have externality pointed out as a fact. One might go almost as far as to say that the sense of externality, the awareness of externality, the sense which realizes the resistance offered by things and relations to the ready responses of manipulation, or to the facile play of thought and feeling, is a sense of value akin to, if not derived from, the sense which holds certain things and relations sacred, inviolate, taboo. It is important to have externality pointed out as a fact, not only as a protection of hard-won values, but also as a criticism of the individual who confuses his experience of partial and facile participation in some of these hard-won values with the fuller and freer participation that comes only with discipline.

The individual has fared ill at the hands of the realist. His puny mental states have been rather mercilessly contrasted with the enduring realities of science, history, and nature. He is hardly more than "material" for the statistical button-molder to melt and flow into the external form of a probability curve. However unwarranted this sweeping disparagement of the individual may be, it may

well be heeded by the sort of individualism that, confusing the shadow with the substance, is blissfully unconscious of its externality to what it seems so intimately to possess. Partial participation in industrial processes through some narrowly specialized routine function, closely supervised, or through consumption of the mere skimmings of products; and similarly in the various forms of science, art, and institutional life,—this partial participation is prone to harbor the illusion of more or less complete participation. It is this illusion which the realistic doctrine may be interpreted as correcting by bringing it to consciousness, as if it were to say to this sort of individualism, "This property, which you claim to have produced; this art, which you seem to have expressed or appropriated; this science, which you, memorizing, have made so much your own that you are willing to believe that it was never anything but a part of your thought;—all these things are, in spite of the idealistic view of life that you may profess, external to yourself, and what you call these things are external to them. What you call wealth, whether you are a drudge or an idle annuitant, is an abstraction to the producer of values; what you call art, whether you are a philistine or an esthete, is alien to the cause of beauty which the artist serves; and the knowledge which you call science is the empirical information of the scientist. All of the real things referred to here are external to you. You have not participated in them. Your ideas about them, your illusions of them, 'are without the slightest consequence for their majesties.'" Accessibility of absorption and inaccessibility of productive participation have amounted to a barrier. "To my astonishment," said Thoreau, "I was informed, on leaving college, that I had studied navigation!—why, if I had taken one turn down the harbor I should have known more about it."

To sum up briefly:

1. The doctrine of the externality of relations, the doctrine that the objects of knowledge, things as well as relations, are not affected or altered by the act of knowing them, refers to the inhibitory aspect of the knowledge process.

2. A tendency to generalize this externality of relationships, however great the provocation to do so in the face of a subjective idealism, a tendency to regard that which exists for a phase of the knowledge process as existing independently, or absolutely, or as existing in any other sense than for a phase of reconstructive thought and action, marks an arrest of a stage of development.

3. Arrested development of this type is itself an existence or fact. The increasing accessibility of the products of industry, art, and science and the increasing inacessibility of productive participation in corresponding processes amount to an artificial and largely un-

suspected barrier between native capacities and their normal development. The most deadly sort of externalism is unconscious externalism, complacent, even idealistic externalism. The realistic doctrine of the externality of relations may be interpreted as a reflection of this very real sort of externalism; and as remedial in bringing it to consciousness and correcting its illusions.

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CONCEPTS AND EXISTENCE: A REPLY TO PROFESSOR PITKIN

WHEN I wrote down the reflections to which I had been stimulated by Professor Pitkin's article on "The Empirical Status of Geometrical Entities"[1] I knew that much that I said was obscure, and I am certainly to blame if Professor Pitkin believes that he differs from me when he states as his own opinion precisely the one that I sought to defend. There is, however, one point on which he may disagree with me, and of that presently; but even so, I doubt whether the difference is more than one of terminology or, at most, of emphasis. Meanwhile let me be as direct and as simple as I can.

A statement by the "New Realists," for which I have been very grateful, is the declaration in their book that logic (including, I suppose, mathematics) is a non-existential science. I asume that the geometrical entities under discussion are the lines, circles, ellipses, etc., that are the subject-matter of elementary geometry. But if logic (including mathematics) is a non-existential science, these geometrical entities must be a non-existential subject-matter. Now whatever an object of sense-perception may be, it is not non-existential. But if this is true, what we perceive when we see the straight edge of a building or the disk of the sun just above the horizon is not a geometrical entity. And I am not sure that Professor Pitkin holds that it is.

This is not, however, to deny, or in any way to compromise, the empirical status of geometrical concepts. It involves no insinuation that we know universals by a transcendental faculty of the intellect. But in order to escape from that superstition and establish the empirical status of universals, we are not obliged to forget that their nature is logical and not existential. And nothing that is perceived can, it seems to me, be that sort of thing.

Let us admit, however, that we do perceive genuine straight lines: We do not, as Professor Pitkin says, perceive them as definitions; we do not, *i. e.*, perceive them as logical entities. What, then, is the

[1] This JOURNAL, Vol. X., page 393.

relation between the logical entity and the empirical individual which, as Plato said, partakes of it? And when may we be said to "see" a genuine straight line? On this point, I have already said, in my previous discussion,[2] all that it occurs to me to say.

Professor Pitkin feels that I part company from him when I say that "the line is the definition"; I can not, he rightly holds, expect him to follow me in any assumption that results in identifying a cake with its recipe, or any material product with the formula for its manufacture. I certainly do not propose any such identification. It is not in the region of perceivable existences that the line is the definition, but in the region of *logical* entities, the region of if—then relations; and on page 132 I am accurately quoted: "In geometry, the line *is* the definition, although in architecture [*i. e.*, in buildings] it is a straight edge of structural matter."

Professor Pitkin's assertion that "The definition, in so far as it is a pragmatic entity, is related to the straight line precisely as the recipe of a cake is related to the cake," and his invitation to some pragmatists to be candid and say so, are well put. I do no object to this manner of statement. *In the cook book* the cake *is* the recipe. That is the only kind of cake that can possibly be there; it is an if—then cake. *In geometry* the line is the definition; it is an if—then entity. But the cake in the cook-book is not the cake on the table, nor is the line in geometry the straight edge of something in particular. The recipe for a cake is one way of answering the question, What is a cake? It is not the way that interests the hungry small boy, nor, perhaps, the family physician, but it is the kind of answer likely to be preferred by those who are interested in cake technically.

Whether Professor Pitkin and I are apart in anything more than terminology depends, I fancy, on whether he holds that the "perceived" straight line is a logical entity or an empirical individual that conforms to a set of specifications. I admit that my discussion of the matter is entirely dialectical, but the discussion is about dialectical entities and I do not see how a dialectical control is to be avoided. If I am wrong I think that what calls for elucidation is the statement that logic is not an existential science.

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REJOINDER TO PROFESSOR BUSH

I AM exceedingly grateful to Professor Bush for having put so clearly and decisively the fundamental issue our discussion leads back to. He brings before me an aspect of the whole matter

[2] "Concepts and Existence." This JOURNAL, Vol. X., page 686.

which, I must confess, has hitherto quite escaped me. I mean, of course, the bearing of my own views about perception upon the neo-realistic theory that logic is a non-existential science. Before passing to a consideration of the problem, I should like to call the reader's attention, partly in anticipatory self-defense and partly in innocent pride, to the fact that Professor Bush has convicted me clearly of *not* having deduced my theory of perception from a *credo* of the neo-realistic "school." Indeed, he has put me in the difficult position of having to reconcile two outwardly hostile opinions—or else of having to cast off the less empirical of the two. I do not hesitate to say that, *if* I had to choose between my opinion that we perceive geometrical entities and Russell's demonstration that logic is a non-existential science, I should reject the latter; and I should do so on the very crude ground that *I* can see straight lines, but I can not ever be absolutely sure about the presuppositions behind Mr. Russell's deductions. I say this, not in derogation of Mr. Russell, but only by way of confessing that my own reasoning powers are much weaker than my eyes.

Now, as for the difficulty Professor Bush raises. How can I reconcile the fact that I perceive a straight line with the neo-realistic opinion (which I have long held) that the objects of logic and geometry are non-existential? Are the two opinions contradictory? I think not. There are two ways of harmonizing them.

In the first place, we must say that the perceived straight line is only an element of a real complex. Its status is similar to that of the color of the sky against which the straight ridge pole of a house makes a straight line. It is, to use the language of Stumpf, a "dependent phase." Now, of such a phase, two propositions hold: (1) The straightness is logically independent of the other elements of the complex; *i. e.*, the character is not a function of any of them, as variables; and (2) the straightness has properties which are not elements of the complex; *i. e.*, the complex is just the percept, nothing more, nothing less, but the properties of rectilinearity are by no means all included in the percept.

Now the object of geometry, as I understand it, is (with respect to our chosen illustration) the conditions which "generate" and "follow from" rectilinearity. Obviously all these never have been and never will be given in a perceived line. But this is a very insufficient reason for denying that we perceive the genuine straightness of a line. You might as well say that we never perceive a tree because we only see the outside of a few of its leaves and part of its bark. In the strict metaphysical sense, we always perceive parts of real complexes and we never perceive more than parts of them. Our very sense organs, being selective receptors, make this inevitable.

I may now state my point in a mildly paradoxical form. Let me say that, in strictest metaphysical language, the geometer's line is *much more than straight;* and human eyes see only the straightness of it. As the physicist's light is more than the glow we see when we look into the sun, so are the objects of logic and geometry more. Failing to see the number of ether vibrations that constitute red light, we do not declare that we can not see real red light; we say we see only the redness of it. So ought we to reason, I believe, in the matter of the straight line.

Let me sum up my answer to Professor Bush's question about the relation between the logical entity and the empirical individual. Real complexes contain elements which do not *exist* apart from at least certain other elements, but which are independent *variables.* The conditions of their *subsistence* are found in other complexes which are, in many instances, subsistential only. Thus it happens that there may subsist an element which is a part of a real whole and also a part of a subsistent whole. It stands in two relational systems without prejudice to its identity. The natural sciences investigate the real complexes as such. Logic investigates certain subsistential complexes whose elements, although present in real complexes, are here considered in their other than existential relations.

In closing, let me venture the guess that some of the difficulty into which the critics of neo-realism have fallen is due to differences in the usage of the term "existence."

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REVIEWS AND ABSTRACTS OF LITERATURE

Pragmatism and Idealism. WILLIAM CALDWELL. London: Adam and Charles Black. 1913. Pp. vii + 268.

It seems inevitable that every philosopher who attempts to express his insight creatively in the form of a system should sully the purity of his product with the taint of his own personality. Enthusiasm over particular issues, limitations of experience, "points of view," these all tend towards an over-emphasis of one aspect at the expense—or even neglect—of others equally significant. And what is true here of the individual is true similarly, though perhaps to a less degree, of a school. It is a natural consequence, therefore, that success in expression stimulates a critical reaction and re-expression; which again in its turn runs the gauntlet of criticism, so far as it, too, has suffered from the unintended impress of individuality.

This appears to be the situation at present as to the schools of pragmatism and idealism; and Professor Caldwell as announcer of their claims, referee of their contest, and reconciler of their differences, has given us an

interesting summary of the situation. As announcer he presents their respective claims for favor, their history, and their supporters; as referee he scorches both sides with genial impartiality in the fire of his criticism of their unfair attacks and unjustified accusations; as reconciler he strives to show how each needs the other as a supplement and support; so that in the end, although the high-flying rationalistic idealism may have its wings clipped, yet it can be put on a firmer footing; and intuitive, instinctive pragmatism may be made stronger and sturdier by the addition of an intellectualistic background and basis.

A summary of the theories of pragmatism and a short account of the forms in which it has appeared here and abroad pave the way for a statement of its fundamental characteristics; chief among which Professor Caldwell finds these: its claims (1) that all truth is made truth; (2) that belief is a fundamental principle of human life, "faith must underlie all reason"; (3) that it gives a deeper view of human nature than rationalism; and (4) its anti-intellectualism. But the true heart of the pragmatic issue, he says, lies in "the fact of human action (activity in general) and of its significance for philosophy." To cut off practise from theory, acting from knowing, volition from intellect, has been a great mistake; and in emphasizing the activity aspects of human life pragmatism is rendering philosophy a tremendous service; for this is a real rediscovery of a rationalistically neglected and overlooked field. It is definitely to its credit that it does not start where idealism begins, with "contents of consciousness" as the one indubitable beginning, but rather with the "living reality of the world that we *know* and that we *experience.*" But it fails to be more than merely utilitarian for lack of an adequate justification of the truth it has grasped. Here it sadly needs the support of idealism—which affords "the only rational basis for its constructive interpretation of reality"; and of the "normative view of ethical science"—which reveals the ultra-utilitarian value of moral ideas. Thus it has failed as yet to realize to the full its great capabilities.

Two chapters near the end of the book are given to critiques of the philosophies of Bosanquet and Bergson, respectively. In finding much that is admirable in Bergson, "the greatest of all the pragmatists," and errors that are principally those of omission, and only occasionally those of inconsistency, the French philosopher comes out of the ordeal much better off than the Englishman; for Professor Caldwell, in selecting Bosanquet's Gifford Lectures as the typical expression of idealism, evidently found in them just what a pragmatist would be looking for—a "highly instructive" presentation of tendencies to be criticized. For to him these lectures are subject not only to "general perversity" and "a broad pervading inconsistency" in their theory of reality, but also to numerous other weaknesses, even to "essential non-moralism" and "apparently anti-ethical character." The only positive values that survive his examination are three: (1) Bosanquet's defense of philosophical attainment, as expressed in his "belief that in the main the work of philosophy has been done"; (2) his insistence upon the importance of grasping the principle of "meaning"; and (3) his unconscious testimony through his own dynamic idealism of

the importance of humanism. Such a contrast in critiques inclines one to question the perfect impartiality of the critic; and to wonder whether Dr. Bosanquet was chosen as a type or a target.

It is too much to expect that a book of 268 pages—of which 57 are devoted to the history of pragmatism, 27 to an elicitation of the American characteristics it reveals (interesting enough, but of questionable relevancy to the main theme), and an unusually goodly share of the remainder to foot-notes—should be able to compass in conclusive fashion the wide field which its task suggests. And as is invariably the case with referees and peacemakers, Professor Caldwell will doubtless find himself unpopular with both parties to the controversy, when they discover some of their pet doctrines rather summarily handled. But his analyses are elaborate in detail, if not always expanded sufficiently to be completely satisfying; and his book is thus stimulating and suggestive, even though it appears more as an outline of work to be amplified and completed than as the presentation of an issue that is settled. It is a sign-post; not a milestone.

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Essais de Critique Générale. CH. RENOUVIER. Paris: Librairie Armand Colin. 1912. *Premier Essai: Traité de Logique Générale et de Logique Formelle,* 2 vol., pp. xvii + 397 and 386. *Deuxième Essai: Traité de Psychologie Rationelle d'après les Principes du Criticisme,* 2 vol., pp. 398, 386. *Troisième Essai: Les Principes de la Nature,* pp. lxv + 444.

Renouvier's "Essais de Critique Générale," published between 1854 and 1897, comprise five works, the three essays enumerated above, a fourth essay, in one volume, entitled "Introduction à la Philosophie Analytique de l'Histoire, and a fifth essay, in four volumes, entitled "Philosophie Analytique de l'Histoire. Les Idées, les Religions, les Systèmes." The fourth essay is still available in a second edition and the fifth essay in the first edition, both published during the life of the author. The first three essays are now republished, owing to the fact that earlier editions are exhausted. The first essay originally bore the title "Analyse Générale de la Connaissance.—Plus un Appendice sur les Principes Généraux de la Logique et des Mathematiques," and appeared in 1854. The second edition, from which the present edition is reprinted, appeared in 1875, bearing a new title and containing numerous revisions, additions, and omissions. This essay contains the foundations of the author's "Néo-criticisme." Parts I. and II. are devoted to the development of a phenomenalistic interpretation of Kant, a Kantianism with the *Ding an sich* left out. In Part III. the categories, relation, number, position, succession, quality, becoming, causality, finality, and personality, are set forth as the laws of phenomena. In Part IV. the author defines the limits of scientific knowledge, and makes room for contingency and faith. The second essay appeared originally in 1859 under the title "L'Homme. La Raison, la Passion, la Liberté, la Certitude, la Probabilité Morale." The present edition is reprinted from the second edition of 1875. This essay culminates in the discussion of "The Probabilities concerning the Moral Order of the

World," in which the author sets forth his libertarian and pluralistic philosophy of religion. The third essay is reprinted from the second edition published in 1892. It contains discussions of atomism, mechanism, life, and evolution.

It would appear that Renouvier has few if any disciples, but that his influence has been widely diffused, and may be said to have been incorporated into the most characteristic contemporary philosophical tendencies. Renouvier's influence upon James is well known; and curiously enough it is through James that his influence is most strongly felt to-day in French thought. There are two principal motives in Renouvier's philosophy, his methodological empiricism and his religious faith. The reconciliation of these motives, or the determination of their relative priority constitutes the chief problem for students of his philosophy. Those who wish to pursue the question will do well to consult Robert le Savoureux's article entitled "L'Entreprise Philosophique de Renouvier."[1] This writer finds Renouvier's "*thèses morales*" to be the original and prior motive, as well as the more permanent contribution of his system. His recognition of the place of sentiment in belief, his justification of faith through assigning limits to positive knowledge, his development of the principle of probability in defense of belief in God, Freedom, and Immortality, his finitistic and pluralistic version of religion,—these will all be recognized as peculiarly characteristic of present-day religious thought. But others will value Renouvier more for his empiricism, for his more or less consistent use of the "critical" method, and will find him peculiarly prophetic of the present-day revival of "phenomenology" by Husserl, Meinong, and Russell, as well as of the neo-Kantianism of the Marburg school. Undoubtedly that which is most impressive to any casual reader is Renouvier's unusual blend of dialectical refinement, cleanness of analysis, love of clear ideas, with enthusiasm and sympathy for human hopes. In this general balance or wholeness of philosophical genius, as well as in sundry special matters of doctrine, the close similarity of Renouvier and James is most striking.

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Spencer's Philosophy of Science. C. LLOYD MORGAN. Oxford: The Clarendon Press. 1913. Pp. 53.

The main survey of "Spencer's Philosophy of Science" is to be found in the "First Principles." There is, however, a growing consensus of opinion that the early essay, "Progress: Its Law and Cause," contains the germ of "all that is best in the teaching of Herbert Spencer." It is here that such cardinal principles of evolution as progression from the simple to the complex, differentiation, and the multiplication of effects are developed. The correlative concept of integration, however, receives no emphasis in the early essay.

By philosophy of science is meant, according to Spencer, "completely unified knowledge." In accordance with this meaning one of the basal conceptions of the philosophy of science is "the universality of connection

[1] *Revue de Métaphysique et de Morale,* for September, 1912.

between cause and effect." In Spencer's treatment of this problem much confusion arises because he employs the term "cause" in a variety of meanings. It is used to stand for source, condition, energy, force, and power. Now it is one of the main tasks of a philosophy of science to avoid just such ambiguities. To this end, and in the interest of clarity and consistency, the terms source, ground, and condition are suggested and explained.

It is further urged as a matter of regret that Spencer did not devote "his great powers of thought to a searching discussion of the different types of relatedness which are found in nature and to a fuller consideration of a synthetic scheme of their interrelatedness." For example, there are three main types of relationship, the physico-chemical, the vital, and the cognitive. The problem is, How on an evolutionary basis are these various types related to each other, or more simply, how are the higher types in any one system related to the lower ones? This, though one of the main problems of a philosophy of science, is given but scant consideration by Spencer. The words differentiation and integration are quite inadequate. "But what one asks, and asks of him in vain, is just how, within a connected scheme, the several relational fields in the domain of nature are themselves related, and how they were themselves differentiated." It is Spencer's firm conviction that all types of relation can ultimately be reduced to the mechanical type, that is, the higher forms of relation can be explained by the lower forms. But Spencer failed to note that, in the physico-chemical system, for example, compounds contain "new and distinct properties" which are more than the algebraic sum of the elements. New relationships and new properties appear in the course of evolution, that is, "in all true evolution there is more in the conclusion than is given in the premises." Though this fact had been recognized by both Mill and G. H. Lewes, Spencer hardly recognizes it at all, and that but very tardily. He continues to think that biology and psychology can be reduced to mechanical terms.

There follows a brief analysis of Spencer's treatment of the cognitive relation, concluding that "an adequate analysis of cognitive relatedness on scientific lines is not to be found in Spencer's works." The problem of cognition is just beginning to receive scientific treatment, and it is contended that science must treat this problem on "precisely the same lines as it deals with any other natural kind of relatedness." Such hypotheses as a psychic entity, some *élan vital,* psycho-physical parallelism must be totally eliminated. Cognition develops from and implies the vital and physico-chemical just as the vital develops from and implies the physico-chemical.

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JOURNALS AND NEW BOOKS

ARCHIV FUR GESCHICHTE DER PHILOSOPHIE. October, 1913. *Neue Beiträge zur Entwicklungsgeschichte des Geist-Begriffs* (pp. 1–16): H. SIEBECK. – To a brief review of his earlier articles describing the development of the conception of spirit in the material and abstract directions, the author adds newly discovered passages from the Orphic, Pythagorean, Aristotelian, Stoic, medieval, and modern writings, showing that there has run through these teachings a twofold conception of spirit found clearly for the first time in Aristotle; the one conception emphasizes the spirit as a sort of material bond between body and soul, and the other regards it as immaterial, rational, divine, merely resident in man. *The Logic of Antisthenes* (pp. 17–38); C. M. GILLESPIE. – The concluding part of a detailed and scholarly examination of the logic and wider philosophical teachings of Antisthenes. The teaching of Cratylus is considered to represent the beliefs of Antisthenes, and his logic is compared with that of Hobbes. *Die Weltanschauung eines Romantikers* (pp. 39–44): AURELIA HOROVITZ. – In this mechanical age it is well to return to Fredrich Schlegel as a type of the romantic spirit which does not take the world as something given, as do the classic spirits, but regards it as the existentializing of its own inner longings. Schlegel in his later period felt he could not be satisfied with a God dependent on man's longings, and liked to think of the individual losing himself in the already existent limitless. Schlegel longs for some law of universal progress in history to the goal of oneness with the infinite, but does not find it. Schlegel's relation to Spinoza is treated. *Despinoza in neuer Beleuchtung* (pp. 45–71): J. HALPERN. – A critical and detailed review of a new work by Stanislaus von Dunin-Borkowski, S. J., which covers the literary background of Spinoza's thought, and the course of his development to the year 1657. The author endeavors to reconstruct the probable indebtedness of Spinoza. He finds him influenced as to subject-matter by the Jewish Scholastics, and as to form by Descartes and other contemporaries. He does not consider Spinoza's expulsion from the Synagogue of great moment in the personal life of the philosopher. He dates the composition of the "Short Treatise" between 1652–1658. The reviewer's criticism strikes mainly at the religious bias of the author. He predicts that the new book in spite of its faults will be for a long time a standard work. *Ein deutscher Pädagog als Vorgänger Spencers in der Klassifikation der Wissenschaften* (pp. 72–78): JOHANN WALDAPFEL. – Karl Mager in 1847 published a classification of the sciences in part like that which Spencer worked out about ten years later. The usual attempts are made to find a source common to the two men and to trace a connection between them. A remarkable lack of historical insight is manifest. *The Philosophy of Krause* (pp. 79–88): JAMES LINDSAY. – A sketch of the opinions of the German romanticist Krause. His technical vocabulary is deplored, and his teaching of "Panentheism" is explained and criticized, as is his philosophy of history. He was primarily a religious philosopher, and

identified Deity with the first principle of science. *Die Bedeutung des Gottesbegriffs bei Descartes* (pp. 89–118): WILHELM BAUER. – Descartes's method of giving a sure foundation to all knowledge is peculiar to himself rather than to his material. For this method the idea of God is of great importance. He must exist as the necessary determiner of the true and the good, and the guarantee of the constancy of law and order in the universe. *Rezensionen. Die neuesten Erscheinungen auf der Gebiet der Geschichte der Philosophie. Zeitschriftschau.*

REVUE DE METAPHYSIQUE ET DE MORALE. January, 1914. *Religion et Raison* (pp. 1–16): E. BOUTROUX. – "To-day, as in ancient Greece, *à propos* of the relation of religion and reason, . . . the highest and most practical way of putting the problem appears to be the one indicated by the celebrated line 'how to act that all shall be one, and each thing be a whole?'" *Un Inédit de Fichte* (pp. 17–26): J.-M. CARRÉ. – A manuscript found amongst the papers of Henry Crabbe Robinson and concerned with the Wissenshaftslehre. *Le Socialisme de Fichte d'après l'État Commercial Fermé* (pp. 27–71): X. LÉON. – An exposition of the work in question and a discussion of its detachment from the *à priori* standpoint of its author's general philosophy. *La Répartition des Richesses Comprise comme Simple Introduction à l'Économie Sociale* (pp. 72–82): B. LAVERGNE. – A critical study starting out from Jean-Baptiste Say's search for a rational division of political economy. *Études Critiques. Les Problèmes de la Logique, selon F. Enriques:* E. DE MICHELIS. *Testes Inédits de Leibniz Publiés par M. Ivan Jagodinsky:* A. RIVAUD. *Questions Pratiques. La Morale Sexuelle (fin):* TH. RUYSSEN. *Supplément.*

Hegenwald, Hermann. Immanuel Kant: Ausgewahlte Kleine Schriften. Leipzig: Verlag von Felix Meiner. 1914. Pp. lvi + 125. 1.40 M.
A new edition for school and private use. Contains an extensive introduction to Kant's philosophy and to philosophy in general. This book forms Volume I. of Meiners Volksausgaben.

Richter, Raoul. David Hume: Eine Untersuchung über den menschlichen Verstand. Leipzig: Verlag von Felix Meiner. Pp. viii + 283. 1.40 M.
This is Volume III. of Meiner's Volksausgaben,—a new translation into German of Hume's "Inquiry Concerning Human Understanding."

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Varisco, Bernardino. The Great Problems. Tr. by R. C. Lodge. New York: The Macmillan Company. 1914. Pp. xi + 370. $2.75.

Whitney, George Tapley and Fogel, Philip Howard. An Introduction to Kant's Critical Philosophy. New York: The Macmillan Company. 1914. Pp. viii + 226. $1.00.

Windelband, W. Die Hypothese des Unbewussten. Heidelberg: Carl Winters Universitätsbuchhandlung. 1914. Pp. 22. .80 M.

NOTES AND NEWS

A CEREMONY in commemoration of the seven hundredth anniversary of the birth of Roger Bacon occurred at Oxford, on Wednesday, June 10. Proceedings began at noon with the unveiling, by Sir Archibald Geikie, of Mr. Hope-Pinker's statue of the great Franciscan, and its reception by Earl Curzon on behalf of the University. Addresses were presented by delegates, representing various bodies who had joined the movement, and the public orator, Mr. A. D. Godley, delivered a Latin oration. All this took place at the university museum. The delegates and some other visitors were entertained at lunch by the Warden and Fellows of Merton College, and other lunch parties were arranged. At three o'clock all visitors had the opportunity of attending the Romanes lecture. This was given in the Sheldonian Theater, the lecturer being Sir J. J. Thomson, of Cambridge, and his subject the atomic theory. From one to four o'clock various manuscripts and other objects of interest in connection with Roger Bacon and his successors were on view in the Bodleian Library, and from four to half-past six a garden party was held at Wadham College.

At the celebration the Vatican library was presented by Mgr. Ratti, the Institut de France by the Comte d'Haussonville, the University of Paris by Professor Picavet, the University of Cambridge by Professor James Ward, the Order of Friars Minor by Dr. P. Hickey, Provincial, and Professor Paschal Robinson, the Capuchian Order by Fr. Albert (vicar-provincial), and Fr. Cuthbert.

Subscribers of one guinea and upwards to the Roger Bacon commemoration fund were entitled to take part in the ceremonies at Oxford, and also to receive the memorial volume, which contains essays dealing with various aspects of Roger Bacon's work, written by specialists in the various subjects.

"THE *Zentralblatt für Psychologie und psychologische Pädagogik,* the first number of which has recently been received, is edited by Dr. Wilhelm Peters, University of Würzburg, and published by Curt Kabitzsch, Würzburg. It will contain no original investigations, but will confine itself strictly to abstracts and reviews. It aims to cover the whole field of psychology, both pure and applied, and will give especial attention to investigations in experimental education. There is undoubtedly a distinct need for a journal of this type. The periodicals in special fields of psychology are increasing so rapidly, and the books and monographs are pouring from the press in such quantities, that it is exceedingly difficult to keep abreast with all the literature. Most of the reviews in the journals conducted for that purpose are from one to three years behind the date of publication. The *Zentralblatt* will be issued 10 times a year, and proposes to give its readers a bird's-eye view of all the recent publications in any part of the psychological field. The first number contains 100 reviews, and the reader is impressed with their timeliness, their brevity and the thoroughness with which the field is covered. The subscription price is eight marks per year, which may be sent directly to the publisher, Curt Kabitzsch, Würzburg, Germany."—*Educational Review.*

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PSYCHOLOGY AND SCIENTIFIC METHODS

ISOLATED KNOWLEDGE

PERHAPS the most general form of objection which those who have been variously labeled "instrumentalists," "experimentalists," and even "pragmatists" have brought against other theories of knowledge—idealistic and realistic, monistic and pluralistic—is that their treatment of knowledge has over-isolated it. The history of epistemology, say these critics, is a long, sad tale of futile struggles with difficulties arising from the failure to treat the problem of knowledge as a part of the bigger problem of living, while recognizing at the same time that knowing as a *part* of living is also a part of *living*. They insist that this isolation makes the treatment of knowledge similar to an attempt to give an account of the action of the brain, of the sun, or of any other thing without connecting it with the action of anything else. In the course of such isolated treatment a point is reached sooner or later where these neglected activities have to be reckoned with. They then may be "externally" attached to the process of knowing—"realism"; or be declared to have been "implicitly involved" and recognized (if somewhat algebraically) all along,—"idealism." But a tardy, half-hearted, exotic recognition of these connections complicates rather than solves the difficulties which have forced it. The result is that these outstanding activities keep asserting themselves in the theories which have ignored them in the form of antinomies and of frequent forced appeals from each side to the other for assistance.

The general form which this isolation takes in all theories infected by it is, as Dewey has pointed out, the conception of knowing as an act of something whose nature it is just to perform this act.[1] In a scholastically abstract and formal way the difficulties begin to show at once. For if knowing is an act of a being whose sole or essential nature is to know, how can that being be and fail to know, or fail to know and be? And we can not dispose of this by an admission on

[1] *Cf.* Dewey's "Brief Studies in Realism," this JOURNAL, Vol. VIII., pages 393 ff., 496 ff.

the side, *e. g.*, as a psychologist or sociologist or as just a plain human being, that as a matter of fact this knowing being *has* some other characteristics, if in our theory of knowledge we attempt to ignore them or treat them as mere "accidents" of his character as a knowing being. I say "attempt," etc., for now as in the palmiest days of scholasticism these other characters force our recognition whenever we assume that the knower does not know everything or know all the time, or that he may fail to know and still be. For it is precisely these other characters, these "accidents" that give the knower his being when and in so far as he fails to know.

Nor, so far as this difficulty is concerned, does it make any difference whether this knowing being is called "a mind" or "a being with a nervous system," if, in our theory, we treat the knower as a being whose only or essential nature is to know—especially if we have defined knowing as an "external relation" in which this being stands to something else. In this event the being with a nervous system finds itself in the same embarrassments as a "mind." It is doubtless more difficult consistently to treat a red-blooded being with a nervous system as a mere knower than a "mind," but in so far as it is so treated, or mistreated, the difficulties are the same.[2]

One of the most valiant attempts to meet these difficulties without the recognition of isolation as their source is to be found in Mr. Bertrand Russell's "The Problems of Philosophy," most of which is devoted avowedly to the theory of knowledge. It is not to be supposed that because this volume appears in "The Home University Library" series and is written in a charmingly direct and simple style that it is not to be taken seriously by "technical" readers. If the constant use and careful definition of such terms as "sensation," "sense-data," "mind," "particular," "universal," "judgment," "truth," "error," etc., be "technical" the technical reader has little cause for complaint.

The book is also noteworthy as an exposition of the philosophical ideas of a renowned mathematician, which does not resort, at crucial points in the argument, to formulæ of the highly specialized discipline of mathematical logic. Mr. Russell has beautifully shown that it is not only possible, but easy for a mathematician to set forth his philosophical notions in simple, vivid, current English.

There are some who have high hopes that the present alliance

[2] Professor Perry, speaking for the "Platform" realists says: "The realist grants that 'one who is knower is in relation to objects something else than their knower.' "Neo-realism," page 135. And elsewhere he makes the knower a being with a nervous system. But the question is: how far in his theory of knowledge he makes a *connection* between the knower as knower, and the knower as something else.

between mathematics and philosophy is to introduce greater "logical rigor" into philosophical thinking. It is possible that this overlooks the consideration that the "precision" of mathematics is in proportion to the degree of its abstractness; and that unless the subject-matter of philosophy can be reduced to the same degree of abstractness as mathematics, the concepts and methods which secure precision in the latter may produce only confusion in the former. However, those who cherish this expectation will be the first to agree that if difficulties are encountered in an exposition which has the mathematical training of Mr. Russell behind it, they must be charged to the standpoint itself, not to mistake in its applications.[3]

Mr. Russell's account does not begin, as some might expect, with the general character of knowledge. It assumes that we understand what knowledge means and strikes at once into the distinction between knowledge which admits of no doubt and knowledge which has the possibility of error. The former is "immediate" knowledge or knowledge by "acquaintance"; the latter is mediate or "derived" knowledge and is in the form of judgments and inferences. As to the general character of immediate knowledge, "we shall say we have acquaintance with anything of which we are directly aware without the intermediary of any process of inference or knowledge of truths."[4] And "knowledge of truths" is defined as knowledge "in the sense which applies to our beliefs and convictions; that is, to what are called judgments."[5]

As for *what* is known—the "objects" of knowledge—in immediate knowledge there are: (1) the sense-data, "such things as colors, sounds, smells, hardnesses, etc.," which are produced by the action on "us" of "physical" objects existing in "physical" space;

[3] I hope that what follows is not over-captious. It is frankly an attempt to develop some of the antinomies, the "inner dialectic," if one pleases, of the conception of knowledge as an external relation between a "mind" and other things, with mind regarded as something whose "essential character" is just to be in this relation. And if part of the discussion is reminiscent of Green's criticism of Locke it should be said that the similarity between some of Mr. Russell's ideas and those of Locke calls for some of the sort of negative criticism Green leveled at Locke, even if one believes that much of Green's reconstruction is involved in the same difficulties.

[4] Page 173.

[5] In the formal classification there is a difficulty in completely identifying mediate and doubtful knowledge with judgments when, further on, we encounter "intuitive" and "perfectly self-evident" knowledge of "truths" after knowledge of truths has been defined (page 69) as knowledge "which applies to our beliefs and judgments," and after we have been told that it is precisely in beliefs and judgments that the possibility of error is found. This discrepancy is largely nullified, however, by so emasculating these perfectly certain judgments that they merely state "what is given in sense" (page 171) or the universals given in "acquaintance."

(2) memories, psychological processes, known by introspection, and "probably," not certainly, a knowledge of the self; (3) some universals and the content of intuitive judgments. Through mediate knowledge are known: (1) the "physical" or "real" objects corresponding to and "producing" the sense-data; and (2) "everything which can be deduced from self-evident truths by the use of self-evident principles of deduction."

Meanwhile throughout this attractive presentation of these kinds and objects of knowledge one is haunted by the question: What is meant by "knowing," mediate or immediate? Turning the pages again with this in mind, we find that the first statements about knowing in general identify it with such "acts" as seeing, hearing, touching, or believing[6]—acts which "we" perform on something or toward something called the "objects of the act."[7] If we begin at once to raise such questions as: What is the nature of this "act"? what is the "we," and what is the character of the "object,"—let it not be said that this betrays at the start a carping critic, until we see how far the argument turns on the ambiguities of these terms.

The first of anything like explicit responses to these queries appears in the criticism of Berkeley. Mr. Russell finds the weakness in Berkeley's position is revealed when we detect the equivocation in the term idea which is used to mean: (1) the "act" of knowing which Mr. Russell agrees is "undoubtedly mental" and "in" the mind; and (2) the "object" which is never "in," but only "before" the mind.[8] The "act" of knowing, then, is "mental"; and the "I" or "we" which knows is something called "a mind." Obviously we look at once for something more about this "mental act" and the nature of "mind." And on the next page[9] we find that "the main characteristic of a mind is the faculty of being acquainted with (*i. e.*, of immediately knowing) things other than itself"; and that "acquaintance with objects consists in a relation between the mind and something other than the mind; it is this that constitutes the mind's power of knowing things." Observe that in the last statement the mind's "act" of knowing has been reduced to a "relation between" the mind and something else. When we reach the treatment of judgment and the problem of truth and error,

[6] Pages 10 ff.

[7] Here the discussion could be given a very different direction by challenging at once the assumption that such acts as seeing, hearing, and touching are acts of *knowing*. They may easily *become* part of a process of knowing, but are they *per se* knowing? But this discussion is committed to the enterprise of following the lead of Mr. Russell's conceptions and theses.

[8] The application of this to the mind's knowledge of (or "relations to") itself is not discussed.

[9] Page 66.

we shall find this "relation" becoming an "act again."[10] But for the present let us accept this reduction and follow its lead. Our net result so far is: immediate knowing is a relation—and I suppose we must say "external"—between other things and a "mind" whose essential character is just to be in this relation. The questions here are: What more is to be said of this relation? And if it is the essential nature of a mind to be in this relation of immediate knowing with other things, why has it, confessedly, this relation with so very few things? And just what is meant by the "certainty" of this relation?

As for the nature of the relation, there is the name "acquaintance." But that does not carry us very far. However, one other thing may be said of it for whatever it is worth. The relation is such that the "other things" are *immediately* "before" the mind. Further than this, apparently, we can not go. "Correspondence," which is treated in the chapter on Truth and Falsehood, does not apply here. Correspondence is not a relation between the mind and the things immediately "before" the mind, but between those things immediately "before" the mind, sense-data and certain universals, and things not immediately "before the mind," such as "physical" objects and other minds.

But once more, if this immediate relation of the mind to the "other things" is thus taken as an indefinable, and if it is the essential character of a mind to be in this relation, then such questions as: Why is it in this relation with so few things, and why, therefore, is not a lack of this relation (*pace* the objection of negative definition) as essential a character as its possession, become at once relevant and important? And they get added force when we find that this limitation is not the merely negative one of capacity, but that the whole world of "physical" objects and other selves—truly a large area—are, by their nature, shut out beyond all "hope" from this relation.

Here, possibly, some one may suggest that if one were to say, "the essential nature of the eye is to see other things than itself, this would not imply that the eye must see everything or see all the time." To which the reply would be: The analogy breaks; for "seeing" is far from being an indefinable, not to say "external," relation "between" the eye and other things. We can at once show how and why the eye can see some things and not others. On the other hand, if we start by defining "seeing" as an external relation "between"

[10] I am aware of the doctrine of "motion" as a transitive asymmetrical relation, but—not presuming to question its value elsewhere—I doubt if even the most hardy mathematical realist would attempt to apply it in detail to the kind of action involved here.

other things and something called an eye, about which we can say nothing except that its essential nature is to be in the relation of seeing to these other things, then the question: "Why does it stand in this relation to some things and not to others," is in order. And it surely would be too palpably mendicant to suggest that we must simply accept the empirical "fact" of this limitation.

Moreover, as we pass to the account of the certainty of the knowledge of the sense-data this limitation is far from being taken as empirically given. Here there is plenty of explanation of this certainty. And if some of the explanation is difficult to reconcile with knowledge as an "external" and indefinable relation, other parts of it are equally difficult to square with the conception of the "act" of knowing as something "mental." Taking first the certainty of the sense-data, we have the following: "Although we are doubting the existence of the physical table, we are not doubting the existence of the sense-data which made us think there was a table. We are not doubting that while we look a certain color and shape appear to us, and while we press a certain sensation of hardness is experienced by us. *All this which is psychological* we are not calling in question."[11] Here not only the "we," but the sense-data and everything included in such processes as "looking" and pressing, are "all psychological." The term "psychological," to be sure, covers a multitude of things these days; but if there be any question of its "mental" connotation here, a few pages further on the whole case for immediate certainty is summed up in this way: "Thus it is our particular thoughts and feelings that have primitive certainty."

But these passages occur before the issue between realism and idealism is explicitly raised. Turning now to the explanation of the certainty of the sense-data given in the midst of the criticism of Berkeley"s idealism, Mr. Russell finds that while Berkeley was wrong in identifying the thing known (here the sense-data) with the "act" of knowing which "is undoubtedly in the mind," "he was right in treating the sense-data which constitute our perception of a tree as subjective in the sense that they depend on us as much as upon the tree."[12] Follow now the phrase "depends on us." With immediate knowing defined as an "act" of a "mind" or as "a relation between" a mind and other things there surely is ground to expect that "us" here means us as "minds." Doubtless this makes an odd-looking realism; and as we are here in the midst of an explicit defense of that doctrine we should not, perhaps, be so surprised to find that "depends on us" is at once made to mean "depends on our sense organs." "Our previous arguments concerning color did not

[11] Page 27, italics mine.

[12] Page 30.

prove it to be mental; they only proved that its existence depends *on the relation of our sense organs to the physical object.*"[13]

Aside from the striking difference between this and the other account of the sense-data where the "us" and the "looking" and "pressing" were "all psychological," are we not entitled to wonder how an interaction between "physical" bodies in "physical" space (for the sense organs are of course in "physical" space along with all other "physical" bodies) none of which is "immediately before" the mind, produces a third sort of thing, sense-data, which is "immediately before" the mind? And in the face of the admittedly hypothetical inferential character of "physical" space we could scarcely be asked to take this "empirically." Behold then our dilemma: To maintain realism "us," in the phase "depends on us," must mean " our sense organs": to save immediacy and certainty it is taken as "minds." But to take it "as sense organs" leaves the object still in the hypothetical region of "physical" space not "immediately before the mind"; to take it as "mind" makes a realism that is in anything but name difficult to distinguish from idealism.

Possibly some one may here propose that in taking "us" both as body and mind one is simply recognizing the given dual character of the self. The reply would be: first, that the self is not here so treated. It is not taken in each case as *both* "mental" and "physical"; but is first one then the other. If the distinction between the "physical" and the "psychical" were consistently taken as falling inside the self or selves we should get a different type of realism. Second, it is again difficult to see how the "physical" body which dwells in the outer darkness of "physical" space where it can never hope to be immediately "before," much less in "contact," with the mind, can be a very intimate part of the self. Verily Berkeley has his revenge; not that his difficulties are any the less; but that the embarrassments of both spring from the common conception of knowing as an external relation between other things and a mind whose essential nature is just to be in this relation. Berkeley's God, the Bradleyan absolute, and Mr. Russell's "physical" object are epistemologically in the same case.

On the side of *what* is known of the "objects," the discussion, so far, has dealt chiefly with the sense-data. But equally interesting problems arise in connection with the other contents of immediate knowledge. First, is it not paradoxical that immediate knowledge should be "absolutely certain" and yet it be uncertain whether there is this immediate and perfectly certain knowledge of the self? If it is possible and even "probable" that we have this imme-

[13] Page 65. Italics mine.

diate and certain knowledge of the self, may we then *have* it and still be uncertain that we have it?

In the account of the immediate knowledge of universals we observe first that these immediately known universals in no sense "depend on us" as do the sense-data. They are strictly non-mental. Like the "physical" object, they are in a different plane of being from that of the knower. Yet some[14] of them are "immediately before" the mind, while the "physical" object can never hope to be in this position. Why this is so is not clear. There is here no technique of the immediacy of the universals as there is for the sense-data. Doubtless this is much more congruous with the conception of immediacy; but it leaves the exclusion of the "physical" object from immediacy more of a mystery.

Although these universals are immediately before the mind, yet they have to be discovered, "derived" by a process of abstraction from particulars, and in some cases with great difficulty. Obviously this abstracting must be done by the mind itself. Does this mean that what is immediately given to the mind is only "given" after the mind works for it? Again, in this process of abstracting, which is often long and difficult, must there not be possibilities of error? And finally what is to test the completion of the abstraction?

A reconciliation of the immediacy of these universals with their "derivation" may be offered thus: "Certain preliminary and conditioning processes are presupposed in any sort of immediate knowledge. In order immediately to see anything the seer must first be awake and looking. If such preliminary activities are to destroy immediacy, where then is immediacy to be found?" To which the reply is: "*freilich*—nowhere." That is to say, nowhere is *such* an immediacy of the absolute and final sort to be found, where it is an outcome, an outgrowth of antecedent processes. The immediacy of seeing, hearing, which has been achieved in and is still in a process of development is not final; it is always open to disruption and therefore to the need of fresh mediation. How is it possible to admit that things and functions have *grown* and in the same breath make some of them intrinsically "immediate" and others "derived"? All of which is saying, not that there is no distinction between mediate and immediate, but that it is not one of fixed properties belonging each to different sorts of functions and contents. So long as seeing or bearing, or, perhaps better, their results can *be taken for granted* in any act or process they are immediate; the moment they themselves become a part of the problem they lose their immediacy. Again, the appeal to these preliminary activities in the case of

[14] It is admitted (page 171) that "among universals there seems to be no principle by which we can decide which can be known by acquaintance."

seeing presupposes that the "seer" is a being who has some other activities which constitute his being when he is not seeing. But the immediate seer of these universals and sense-data is a "mind" whose essential nature is to see these other things. Where then shall we locate these preliminary activities and how are they to be *connected* with the seeing?

Finally, should not a theory of knowledge which frankly accepts the platonic conception of universals as entities whose character is that they are "shared by" other entities called "particulars," make some disposition of the serious difficulties which the Greeks themselves recognized, and serenely bequeathed to later generations? Even Aristotle found the notion of "sharing" mysterious enough. But perhaps the most fundamental of these difficulties is the dilemma of simple and complex universals which was precipitated by the discovery that these universals "share in," "overlap" each other. The universal triangle "shares in" the universal "line," "angle," and "threeness" as much as does the particular triangle. On the basis of "sharing" what, then, is the difference between the "universal" and the "particular" triangle? When this question of the difference becomes acute, what usually happens is that the basis is suddenly shifted and the particular is distinguished from the universal as a temporal, terrestrial precipitation of the latter. But the universal, celestial, and the particular, terrestrial triangle are the same "complex" of universals in different planes of being. If, on the other hand, we seek escape by way of the "simple" universals, *i. e.*, of universals as ontologically simple entities, we have to face the queries: In what sense can anything absolutely "simple" be "shared by" anything else? And what then is a particular? And if the latter is a temporal complex of these simple universals, have we not, then, to face all the difficulties of atomism?

II

In the treatment of mediate knowledge—knowledge by way of judgment or belief—especially in dealing with the problem of truth and error, the conception of knowledge as an external relation between a mind and other things, and of a mind as something whose nature it is to be in this relation encounters its crucial test. In the account of immediate knowledge the pressure of the question, "how can such a mind be and fail in the relation" is partly relieved by the supposition that it does not fail. But in mediate knowledge we have to face, not merely negative limitation, but positive blunder and failure.

That the general conception of knowledge developed in the ac-

count of immediate knowing is to be carried over if possible into mediate knowing is clear from such general statements as this: "What is called belief or judgment is nothing but this relation of believing or judging which relates a mind to several other things than itself."[15] Formally, this of course agrees with the external-relation conception; materially, all depends on what this "relation of judging" turns out to be.

The first point in which the relation of judging differs from the relation of immediate knowledge is that it is a "plural" relation. That is, in judging, the mind must be related to more than one other thing. This is to pave the way for the possibility of error. If a "mind" called "Othello," should judge *falsely* that Desdemona loves Cassio, "this judgment can not consist in the mind's relation to a single object; for if there were such an object the belief would be true."[16] This means that since knowing so far consists in an undefined relation of the mind to something else if the mind *is* in this relation, it is *in* it, and there can be no error.

However, before considering the problem of truth and error, the distinction between the "single" object of immediate knowledge and the "plural" object of the judgment should be noticed. When we "see" (*i. e.*, immediately know) "a round red patch"—and we might add, "between two trees at the edge of the meadow"—the object is "single"; it is "complex" to be sure, but still "single." But when the mind "judges" that "there is a round red patch," etc., or that "the patch is round and red," the object is more than one. This at once raises the question: is the "singleness" or "plurality" there, in the object, in advance of and independent of the relation to the "mind"; or is it dependent on the relation? Is not "a round red patch between two trees, etc.," "single" because this content is "seen as" single? What can possibly be meant by calling it ontologically "single"? If the "singleness" does mean that it is "seen as" single, then are we to say that in immediate knowledge the mind is related to a "single object" whose "singleness" the mind first makes? On the other hand, if the "singleness" is a property of the object as independent of the relation, we are in trouble with plurality; for this class of judgments—"there is a red patch" or "the patch is red"—are (part of the time) purely "analytic;" "they merely state what is given in sense."[17] In this case are we to understand that the mind, again by a mere act of its own, first bestows upon the object the plurality which the object must have in order to be the

[15] Page 197.
[16] Page 194.
[17] Page 171.

object of the mind's act of judgment? And if so, is not the idealist ready to offer the hand of fellowship?

This problem of singleness and plurality is typical of the difficulties which have always beset a logic which starts by dividing *knowledge* into "immediate" and "mediate." Mill's logic is the classic instance. In general the problem is to make the transition from immediacy to mediacy, or the reverse. The result usually is the production of a third hybrid species of knowing which tries to be both and suffers all of the embarrassments of a dual life. The connecting form in Mr. Russell's system is this analytic judgment of the type—"the patch of red." The difficulty of its position is clearly reflected in the passages concerning it. On the one hand, these judgments are purely "analytic." They "merely state what is given in sense" and therefore have "absolute self-evidence" and "must be true." "In all cases where we know by acquaintance (*e. g.,* by "seeing") a complex fact consisting of certain terms in relation (*e. g.,* "a round red patch," "the shining sun, etc.) we say the truth that these terms are so related has the first or absolute kind of self-evidence, and in these cases the judgment that the terms are so related *must* be true."[18] On the other hand, all judgments in order to be judgments "must be different from the sense-data from which they are obtained"[19] and must be "liable to error."[20] Hence we find the above passages affirming the absolute self-evidence and truth of these judgments followed at once by the statement that nevertheless any given judgment, *e. g.,* "the sun is shining," "in passing from the perception (*i. e.,* from what is given in sense to the judgment) has to separate out the "sun" and the "shining" as constituents of the fact (*i. e.,* of the perception), and in this process it is possible to commit error."[21] But how does this error occur if the judgment is "merely stating what is given in the perception"? The answer is: "Even where a *fact* has the first or absolute kind of self-evidence, a judgment believed to correspond to the fact may not really correspond to the fact."[22] But we have just been assured that "in these cases," that is, where the judgment is "merely stating what is given in sense," it can not fail to correspond to the "fact." The discrepancy obviously turns on the ambiguity in the term "fact." Where the judgment has "absolute self-evidence" and "must be true," the "fact" corresponding to the judgment is simply the sense-data—"the round red patch." But where there is the

[18] Pages 213–14. The parentheses are mine; the italics are Mr. Russell's.
[19] Page 178.
[20] Page 212.
[21] Page 214. Parentheses mine.
[22] *Ibid.*

possibility of error, the "fact" is not the sense-data, but the "physical" object to which the sense-data are supposed to correspond. But where this latter is the object or "fact" with which the judgment means to correspond, obviously the judgment is not confining itself any longer to stating "what is given in sense." Once more the dilemma: to have perfect self-evidence the judgment of perception can only repeat what is already given in the sense-data: but to be a judgment with a judgment's possibility of error, it must go beyond the sense-data.

This brings us to the judgments which frankly profess to transcend the sense-data and to the account of error. We have already seen that the possibility of error is said to rest upon the fact that the mind is in relation to more than one object. But how does mere plurality of objects lead to error? Why should not more than one object be as "immediately before" the mind as one? And in fact it turns out that the mind's relation to a plurality of objects does not in itself contain the possibility of error. This plurality of objects simply prepares the way for the next step in which the real judgment with its liability to error occurs. Having before it a plurality of objects consisting in the simplest cases "of two terms and a relation" the mind can put these objects in an "order" and "direction" of relationship which may or may not correspond to an order and direction of the terms which exists (or subsists) outside the act of judging and may be accordingly true or false. "Thus in every act of judgment there is a mind which judges and there are terms concerning which it judges."[23] Thus the mind "Othello" may judge, *i. e.*, may arrange the terms Desdemona, Cassio, and the relation "loving" in the order and direction of relationship "Desdemona loves Cassio" or "Cassio loves Desdemona." And if the terms are united outside the judgment in the same order and direction of relationship as they have in it, the judgment is true; if not, it is false.[24]

How the conception of judging as a relation "between" the mind and other things is to emerge alive from this account is indeed an interesting question. But our main concern now is with the possibility of truth and error. First, we observe that this account makes the judgment an act of *relating* merely. It reads as if the "real" objects were directly before the mind and as if the only business of the judgment were to put them in the true "order" and "direction" of relationship. The close of the summing up reads: "If the two terms (Desdemona and Cassio) in that order (*i. e.*, the order in the judgment) *are* united by the relation (*i. e.*, *are* united *outside* the

[23] Page 197.

[24] Page 201.

judgment) the belief is true."[25] This reads as if the "terms" in the judgment are the same as those outside; as if the "real" Desdemona and Cassio are immediately known; the thing to be judged being the *relation*. But as soon as we recall the chapters on immediate knowledge we see that the "terms" which are directly before the mind in the judgment and which it is relating are not the "real" Desdemona and Cassio, whether taken as body or soul, but certain sense-data "caused by" the "real" objects. The word "terms" has here the same ambiguity noted above in the word "fact." It covers both the sense-data and the "real" objects.

But it may be said that this ambiguity is harmless since it has already been shown that on pain of subjectivism,[26] we must suppose that the sense-data are caused by and correspond to the "real" objects. But an appeal in the midst of the judgment to the principle of immediacy is perilous. Once admitted, it is difficult to get rid of before it has devoured the whole judgment. Thus at once it will be asked how it happens that the "real" objects in producing the sense-data which corresponds to themselves, produce no corresponding relations. The "real" objects surely do not act out of all relation to one another, nor can their action be unaffected by these relations. How then do the relations escape? And sure enough, when we turn to the statement of the nature of the immediate correspondence between the sense-data and the real objects we find that they do not escape. This correspondence is described as precisely a correspondence of *relations*. It is a correspondence between the relations of the sense-data and the relations of the "real" objects. The account of this correspondence is summed up thus: "We find that although the *relations* of physical objects have all sorts of knowable properties derived from their correspondence with the *relations* of the sense-data, the physical objects remain unknown in their intrinsic nature, so far at least as can be discovered by means of the senses."[27] Taken at its face, this surely says that the given relations between the sense-data already correspond to relations between the physical (*i. e.*, the "real") objects. And just this correspondence is all the judgment ever hopes to make. There is no correspondence of qualities. What, then, is there left for the judgment to do? All the correspondence possible seems given; the judgment is out of employment; and the possibility of error has vanished.

[25] *Ibid.* Parentheses and italics mine.

[26] Although subjectivism gets us into all kinds of practical absurdities, such as supposing that a patch of color is hungry, angry, etc., yet there is no "logical absurdity" in it (page 34). To many this will seem to constitute sufficient *reductio ad absurdum* of the meaning of "logical" in an isolated logic.

[27] Page 54. The first italics are the author's, the second mine.

But suppose we say that this and other passages similar must not be taken to mean that this correspondence between the relations of the sense-data and the relations of the real objects is complete; they mean only that there is a partial and general correspondence—enough to say that any shift in the relations of the sense-data means some sort of change in the relations of the real objects; but it remains for the judgment to further specify this correspondence. I do not know how mathematical logic handles the case of "partial" or of "general" correspondence of relations, but in terms of ordinary discourse such a statement as the above would mean that the relations between the sense-data, as they are immediately known, do, and do not, correspond to the relations between the real objects and the "do not" is as obvious and important a feature as the "do." But if absence of correspondence with the relations of the real objects is as patent a character of the relations of the sense-data as its presence, what has become of immediate knowledge? Thus it is the turn of mediacy and judgment to devour the whole of knowledge.[28]

Finally, supposing that the correspondence between the relations of the sense-data and those of the real objects is "partial" or "general," and that it is the judgment's work to further specify this correspondence, and that in our illustration the judgment declares that the relations between the sense-data mean that "Desdemona loves Cassio," how is this judgment to be verified? In view of what has preceded, we should not be surprised to find that the answer is that this judgment can be completely verified only in the mind of Desdemona herself.[29] That is to say, the only "mind" that has a strictly "logical"[30] right to the judgment is the one who has no need to make it,—the one to whom the content of the judgment is already given; while the one who needs to make it must claim his right to do so on some other than purely "logical" ground. But let not the idealist mock until he can show how a judgment, which aims to arrange or to "reconstruct" sense-data so that they will correspond with the absolute's system of ideas, can be verified in any mind but that of the absolute. That the mind is the absolute's instead of Desdemona's does not alter in principle the difficulty from the standpoint of Othello who must judge at the risk of both logical certainty and his wife.

[28] Nor would it be in order to appeal, at this point, from "dialectics" to the "fact" that there is immediacy and that there is judgment and inference. The matter in question is not this "fact," but the basis of the distinction and connection between immediacy and judgment.

[29] Page 213.

[30] "Logical," that is, from the standpoint of a purely representational logic.

How near idealism and this type of realism are to each other at this point also appears in the way each deals with this difficulty. From the impossibility of verification of this type of judgment by the finite mind, idealism turns for consolation to the conception of "Degrees of Truth and Reality" which is the epistemological form of the doctrine of "Emanations." In Mr. Russell's exposition, the section which finds that Desdemona's is the only mind which can verify the judgment concerning her passion for Cassio is immediately followed by the doctrine of "degrees of self-evidence,"[31] which, as it is expounded, means "degrees of evidence" or "degrees of verification." But how are these "degrees" to be judged? What is the standard? The answer reveals more common ground. For both, the "criterion" for these "degrees" is something different from the "nature" of truth itself. For idealism, of Professor Royce's type, it is the extent to which the judgment assists in fulfilling some specific finite enterprise, such as the attempt to "sing in tune," etc. For Mr. Russell, the only criterion mentioned for these judgments which deal with particulars is "coherence" which has been explicitly rejected as constituting the "meaning" of truth.[32] The first, and apparently chief reason for the rejection is that "coherence" is relative to difference in point of view resulting in different "systems of coherence," different hypotheses for the same facts."[33] Thus "it may be that with sufficient imagination a novelist might invent a past for the world that would perfectly fit on to what we know and yet be quite different from the real past."[34] But does not this disqualification of coherence for expressing the nature of truth also disqualify it as a criterion? If there may be any number of "inventions" all of which may "perfectly fit onto," *i. e.*, perfectly cohere with, "what we know"[35] and still be mere fictions of the imagination, how can coherence possibly serve as a criterion of truth, *i. e.*, of correspondence with the real facts? To say that while certain judgments may cohere and still be false the probabilities are that they are not, would seem to beg the point. If this means that though cohering judgments may not correspond to "the real facts," all judgments which do so correspond must cohere, some explanation is needed. If we may have perfect coherence without correspondence

[31] Page 218.

[32] Page 191.

[33] The other objection to coherence as expressing the nature of truth is that "it presupposes the laws of logic"—especially the law of contradiction. But doesn't "correspondence" also presuppose the law of contradiction, from Mr. Russell's standpoint?

[34] Page 191.

[35] This must mean with *all* that we know. Also it assumes that it is easy to tell where the perfectly cohering fiction ends and "what we know" begins.

how does correspondence guarantee coherence? Indeed would not the presumption be that where there is an "invention" in perfect coherence with everything we "know," but not corresponding with the facts, a judgment or set of judgments which did correspond would break up the coherence?

More could and should be said about the distinction, rather the lack of distinction, between correspondence of qualities and correspondence of relations and about the whole subject in general of the separation of the "criterion" and "nature" of a thing. But I am already over the limits of this paper. I am keenly aware of the highly "negative" character of this criticism and I realize that many of the questions here proposed could not have been treated in Mr. Russell's book. But if they represent genuine difficulties in the central doctrines of the volume they ought to be raised and discussed somewhere.

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SOCIETIES

NEW YORK BRANCH OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

THE New York Branch of the American Psychological Association met in conjunction with the Section of Anthropology and Psychology of the New York Academy of Sciences, on Monday, April 27, at the psychological laboratory of Columbia University. Afternoon and evening sessions were held, at which the following papers were presented.

Studies in Appetite: GARRY C. MYERS.

The writer continued a study of appetite which was begun by one of his pupils of Juniata College, Miss Margaret Baker. Her questionnaire which she applied to 75 students was extended by the writer to other subjects of college, normal school, and high school-grade, making a total of 483 subjects—258 boys and 225 girls. From the twenty foremost likes and the twenty leading dislikes secured by the questionnaire the names of forty things to eat were printed on slips of paper, shuffled, and presented to each of fifty men and fifty women who were asked to rank the forty things in the order in which they were liked, and to indicate, in case any were disliked, where the dislikes began. Three weeks after the first test the same subjects were surprised by the request to arrange again the items in the order in which they were liked after the manner of the first test.

With 25 of the items another random list was selected and with it 50 boys and 50 girls of the high school and the same number of boys and girls in the grammar schools of Tyrone, Pennsylvania, were tested. As with the college students, a second record after three weeks was obtained.

Only a part of the results of the college subjects were reported. It was found, on the whole, that the results of these tests followed the general order of preference indicated by the results of the questionnaire. Noticeable sex differences obtained in the order of preferences. For example, eggs, which stood first with the men was ranked by the women as sixth; milk stood fourth with the men and twenty-second with the women; salads, twenty-second with the men and fifth with the women; cucumbers, thirty-sixth (fourth from the last) with the men and nineteenth by the women.

The correlation between the median performance of the first and second tests was .96 (Spearman's footrule). The average P.E. of the first performance (average for all items) was 6.50; for the second 7.04.

The individual correlations or indices of consistency ranged from .96 to —.05 with a median at .84 (P.E. 8.00). The second lowest, however, was .39 and third .51. The subjects were most consistent in the arrangement of their foremost likes (first five). For the last five the arrangement was likewise more consistent than for the average, but not so consistent as for the first five.

The median number of items disliked by 50 men was for the first test 7.70 (P.E. 2.79) and for the second test 9.00 (P.E. 4.00). By the 50 girls the corresponding figures were 8.50 (P.E. 3.07) and 8.83 (P.E. 2.83).

Individual Differences in Judgment: LILLIAN S. WALTON.

The material for this experiment consisted of a series of fifteen possible reactions to a given stimulus. These were typewritten on strips of cardboard of approximately uniform size. The subjects were instructed to arrange the material in order of merit with regard to their rhythmical, ethical, practical, tactful, or artistic value.

The material for rhythmical judgment consisted of short stanzas, selected from various poets, ranging from Milton to Kipling: that for artistic judgment of small reprints from various celebrated artists. The practical judgments included a series of budgets prepared for the expenditure of a school-teacher's salary, and a list of punishments for the trivial offenses of a small child.

From the arrangements made by the twenty-five subjects, we estimated the average order. Then we determined the degree of correlation between the average and the individual orders.

From these statistics, we found that, in the subjects studied, there is a greater agreement in ethical judgment than in any other kind. The judgment of art proved to be the poorest, the average correlation with the average judgment being +.68 and +.41, respectively. Next in order to the ethical judgment came the judgment of budgets with an average of +.63.

Arranged in numerical order, the averages for the various judgments were: ethical, .68, practical (budgets), .63, tact, .62, practical (punishments), .48, rhythmical, .42, artistic, .41.

This would seem to suggest that people, in general, judge most nearly alike on matters which are of general interest and differ most on matters which are purely personal.

The individuals in the group differed greatly among themselves. In the average for the various materials, they ranged from 36 per cent. correlation with the average to 16 per cent.

We found no sex differences among our subjects. Since there were only five men and twenty women, our results can only be suggestive, but, in this investigation, the women differed more among themselves than they did from the men. For example, a group of five women school-teachers differed more from a group of five women students than the whole group of women, or any separate group of them, differed from the men.

It was also interesting to note that the group of five women school-teachers had a very much higher correlation with the group, as a whole, on the subject of the practicability of the budgets prepared for a school-teacher's salary, than the rest of the group.

Another point suggested by this experiment is the fact that individuals whose average correlation differed within a very small range had a very much higher general average than those individuals who differed over a very wide range.

Another interesting fact was that those individuals who had the lowest correlation for the judgment of punishments were, in almost every case, people who had had no experience in punishing.

We also found that those individuals who had the highest average were, approximately, the oldest people in the group, whereas those who had the lowest average were about the youngest. These facts suggest that judgment is a matter of practise.

The facts, as here presented, seem to suggest a negative correlation between practical and artistic judgment.

Is There Such a Thing as General Judicial Capacity?: MARY GOLDSBOROUGH ROSS.

Judging in general is a thing about which we all speak with much assurance. In fact, we hardly ever pick up a paper without seeing

an advertisement for a person of "good judgment." However, if we should turn to psychology to see what the psychologists have said about a general capacity of judgment we should find practically nothing. James is the only one who has much to say on the subject and his words are little more than a suggestion for further investigation. It was to determine if there is any general judicial capacity and to find if there is any correlation between different kinds of judgments that this experiment was performed.

The material was of six kinds, involving judgments of art, rhythm, tact, punishments, expenditure of salary, and an ethical judgment. The results proved that we had a social group of subjects, as the highest ratio was 65 per cent., and the lowest 32 per cent., carrying out the two-to-one ratio which usually characterizes a social group.

The individual percentages were obtained by having the subjects arrange the material by the order of merit method. Then we obtained the average order of the group and used this as a standard. We correlated the arrangement of each individual with the standard arrangement, and the resulting per cent. shows the degree to which the individual correlated with the group.

When we had secured these results, we correlated the results of the different groups and found that there is no relation between them. The average of the correlations is —.09. That is, if a person, for instance, is a good judge of rhythm, we might expect him to be an equally good judge of tact, but the chances of this being true are negative. It is the same in any two things you choose; the correlation is practically zero.

Thus we may conclude that, whereas certain persons are endowed with better judgment than others, there is nothing that can be pigeonholed as general judicial capacity, and the fact that a person is good in different kinds of judgment is due to chance only, not to any intercausal relation. There is no correlation whatsoever between the different types of judgment. The highest per cent. obtained by any one in the judgment of ethics was 93 per cent., yet that same person was —.28 per cent. in artistic judgment, so we can safely say that there is no general judicial capacity, nor is there any correlation between the different kinds of judgment.

Equivalence of Repetitions for Recall and Recognition: EDITH F. MULHALL.

The present investigation was to study the equivalence of repetitions for recall and recognition for four materials, pictures of objects, geometrical forms, words, and nonsense syllables. Each subject was shown 15 words successively at intervals of two seconds

each and then required to reproduce those he remembered in three minutes. The subject was then given a set of 30, containing the original 15 words, from which he was to select 15 which he thought were previously presented. The first set of 15 words was shown again as before, and then the subject requested to recall those he could and select 15 from the 30 set. This was continued until he had recognized and recalled all of the 15 words correctly. The experiment was repeated for the three other materials (forms, syllables, and pictures).

The results show that the difference between recall and recognition is greatest for pictures, somewhat less for forms and words, and least for nonsense syllables. In examining the material one finds the pictures offer the greatest richness of associations. The forms, too, can be visualized and in several cases named; the words, which were all nouns, have some associations, but lack a form or picture element. The syllables, as their name implies, were nonsense, most, if not all, of which were devoid of any association.

The individual differences shown by the subjects are rather interesting. The ratio of the greatest number of repetitions to the least number increases as we pass from the pictures to the forms, words, and finally to the syllables for recognition and for recall with the exception of syllables.

From the experiment it may be concluded that the difference between recall and recognition varies with the material to be remembered. The greater the wealth of association offered by the material, the greater the difference between recall and recognition. It is suggestive, at least, that individual differences, especially in recognition, are least when the material is rich with associations and increase as the material has fewer associations.

One of the practical applications is in the selection of trade marks. To be successful a trade mark should be easily recalled and recognized. Arbitrary combinations of letters, like the nonsense syllable, must be presented many more times than pictures or forms, and yet we find the business firms are continually using nonsense material as trade marks.

Some Etiological Factors of Mental Deficiency: MAX G. SCHLAPP. (No abstract received.)

Studies in Recognition: W. S. MONROE. (No abstract presented.)

Sex Differences in the Solution of Mechanical Puzzles: HENRY A. RUGER.

A series of fifteen puzzles, fourteen of which formed a related series involving the same principle, but with increasing complexities, was given to 55 students (30 women and 25 men) in the mechanical drawing classes of Teachers College, and to 23 students (15

women and 8 men) taking an advanced course in mathematics. Thirty minutes were allowed for the test. On the present method of scoring, each puzzle was counted as having a value of 1. As a matter of fact the later numbers were more difficult than the earlier. Weighting the later members would probably enhance the differences to be stated. In the group of 55 students 6⅔ per cent. of the women reached the rank of the median man. In the case of the mathematics group 20 per cent. of the women reached the rank of the median man.

A single puzzle was tried with three other groups of students, chiefly in elementary and secondary education. In group *A*, 5 men and 21 women, 29 per cent. of the women reached or exceeded the position of the median man. In group *B*, 8 men and 22 women, 9 per cent. of the women reached the position of the median man. In Group *C*, 6 men and 25 women, 33 per cent. of the women reached the position of the median man. Group *A* learned the puzzle after being given the theory for it; group *B* unaided, and group *C* by imitation. What part of the actual difference is a true sex difference is not determined.

Apparatus for Demonstration of Monocular and Binocular Factors in the Perception of the Third Dimension of Space: HENRY A. RUGER and J. L. STENQUIST.

The apparatus consists of a box 22½ by 22½ by 36 inches. One end is a ground-glass plate. At the opposite end a monocular aperture is fitted with a photographic diaphragm and shutter for control of size of aperture and length of exposure. The shutter is mounted on a slide which permits the use of binocular vision if desired. The objects are circular discs of different sizes supported from the top of the box by strips of proportional size. These can be readily adjusted for any distance from the eye. Nothing is seen except the discs and strips, and the relative sizes of the retinal images can be varied at will. The entire box is mounted behind screens, with only the eyepiece projecting.

In place of the discs seen against the gray background of glass, electrically lighted boxes with apertures of different sizes can be substituted. The apertures are covered with translucent membranes. By means of rheostats connected with each light the relative brightness of the lights is controlled. These boxes are each adjustable for any distance from the eye.

By suitable adjustments the effect of interference of objects can be measured with either arrangement.

With the daylight form of the apparatus 40 subjects were tested with one setting of the discs. The per cent. of correct judgments was less than that by chance (⅙). There was no correlation with de-

grees of confidence and no sex differences. The judgments both as to size and distance varied within limits of the ratio of 40 to 1.

Is there such a Thing as General Ingenuity? ESTELLE DEYOUNG.

Various psychologists have attempted to prove the existence of definite relations between different mental abilities. The problem suggested itself; Is there such a thing as general ingenuity? Our definite purpose was to select tests having a common element, ingenuity; and to find whether in such a series ability to solve one problem necessarily means ability to solve another.

By ingenuity we mean the use of judgment, logical thought, selection from a mass of material suggested by the problem, and a skill and quickness in manipulating and forming new combinations of possible means for solution.

We presented nine problems to a group of 25 Barnard students. They were in order: (1) a mathematical problem; (2) a test for forming words from the letters in the word "psychiatry" for which five minutes were allowed; (3) a test, which for convenience we called the "limerick," adding two lines of poetry to complete two lines presented; (4) ten syllogisms to be marked either valid or invalid; (5) an original poem of from four to six lines; (6) the absurdity test, or the marking of the absurd sentences in a list; (7) directions; (8) mechanical puzzle, and (9) a puzzle for which thirty minutes was the time limit.

For each individual the score for mathematics consisted of two columns, the time and correctness or incorrectness of the solution; for test 2 the number of words formed; for tests 3 and 5, both the time and order of merit of the poetry; for the syllogisms, the time and the per cent. of correct judgments; for the absurdity and directions the time and number of errors; for the mechanical puzzle only the time, and for the ingenuity, either the time, or if not solved within thirty minutes, the failure.

In every single column the order of merit of the 25 subjects was determined. Where the test consisted of two columns, the order of merit of each individual was averaged so that every test had only one column determining the order of merit of the subject in that ability. The differences in merit for each individual were obtained by comparing each test with every other test.

The results were then obtained by averaging the figures in each of the thirty-six columns and the correlations between the different abilities found by the method of rank differences.

The correlations run as high as .788 for limerick and absurdity; .737 for limerick and directions, and decrease very gradually to three negative correlations which are almost zero: namely, —.032 for

words and mechanical puzzle; —.062 for mathematics and ingenuity, and —.160 for mechanical and ingenuity.

The following are the correlations of each test with the other eight tests:

Limerick	.629
Poem	.575
Directions	.525
Absurdity	.499
Logic	.493
Words	.366
Mathematics	.325
Ingenuity	.285
Mechanical puzzle	.210

The limerick and poem lead. Mathematics stands low in the scale as a representative of ingenious capacity and probably involves a relatively independent trait. The mechanical and ingenuity puzzles on account of their concreteness are not so likely to correlate well with the other tests, which involve mostly ideational processes.

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Secretary.

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REVIEWS AND ABSTRACTS OF LITERATURE

Sul Pragmatismo; Saggi e Ricerche. GIOVANNI PAPINI. Milano: Libraria Editrice Milanese. 1913. Pp. xii + 163.

Giovanni Papini, the aggressive philosopher of Florence, has already been introduced to the readers of this review by William James[1] and Professor Bush.[2] Since James's article the cause of pragmatism in Italy has sustained several losses. The pragmatist periodical, *Leonardo,* which Papini edited, was discontinued in 1907; of its contributors, Vailati passed away (1909), Prezzolini joined the ranks of the idealists, and Calderoni is no longer productive (p. ix). Our author intimates that he, too, has lost some of his former convictions (p. vii). His book, a collection of essays[3] written for the greater part in 1905–06, does not constitute a systematic, still less a complete study of pragmatism. It is nevertheless interesting, mainly because of the personality of its author, a dilettante philos-

[1] This JOURNAL, Vol. VIII., pages 337–341.

[2] *Ibid.*, Vol. IV., pages 369–371.

[3] The essays contained in this volume, including those reviewed by Professors James and Bush, are the following: "Death and Resurrection of Philosophy," "The Unique and the Diverse," "From Man to God," "Introduction to Pragmatism," "Pragmatism Straightened Out" ("Il Pragmatismo messo in Ordine"), "We Need Not Be Monists," "Will and Knowledge," "Acting Without Feeling and Feeling Without Acting," "The Will to Believe," "Pragmatism and the Political Parties," "Truths for Truth" ("Le verità per la Verità").

opher and writer of short stories, who, although he occasionally breaks through open doors or affects a cryptic style of utterance, more often evinces a keen power of grasping the import of theories and a subtle psychological sense. He has, by the way, written his philosophical autobiography, "Un Uomo Finito."

Our author is an extreme pluralist. Conceiving philosophy as an instrument for man's appropriation of the universe, he sees in the pursuit of the particular or concrete the most direct means of getting at reality (p. 36). Metaphysics, on the contrary, interposes between it and ourselves the screen of general concepts. Since thoroughgoing pluralism is anti-metaphysical, and absolute monism is unintelligible, metaphysic must take refuge in dualism "because it offers the maximum of generality combined with the minimum of comprehension" (p. 27). All the metaphysical systems are mere variations of this proposition: "the universe represents the result of the constant and universal opposition of the classical and the romantic principles, of the unique and the diverse" (p. 32). The intellectual development of Europe continually shows the "classical," *i. e.,* the universal, unitary, and passive, in conflict with the "romantic" principle which includes everything personal, particular, active.

Pragmatism is an attitude destined to give the death-blow to the traditional universalist and inert philosophy. It is not itself a philosophy (p. 69) and is not capable of definition: abhorring simplistic explanations it does not presume to hold one formula or theory as a final solution of all the complexities and perplexities of life. Despite the numerical diversity of pragmatist theories there is a common trait present in all, *viz.,* the recognition of the variable in human aims and activities, the "unstiffening of theories and beliefs." Pragmatism thus presents an attitude of "armed neutrality" with regard to the great questions which agitate mankind, and may be compared to a hotel-lobby (*teoria corridoio*) for the hospitality it gives to divergent pursuits and totally different personalities. Above all pragmatism tends to strengthen our grasp on life and develop all our potentialities. It appeals to our vital instincts and also to sentiments of pessimism and haughtiness. The practical people and the utopians are peculiarly inclined to pragmatism.

One may recognize three varieties of pragmatist theories. One group is concerned with the relation of the particular and the general (Peirce); another selects some particular end and frames theories and modes of representation adapted to it (for instance, Mach's economy of thought, esthetic instincts, satisfaction of curiosity); a third division deals with the culture of faith (*pistica*) and considers the origin of belief and its effect on truth, reality, and conduct. The unity of these three groups is given by their common end, namely, activity, which presupposes the power of prevision and is therefore dependent on the constitution of the exact sciences, *i. e.,* convenient and verifiable information. "From induction to the will to believe there is a continuity which is given by the sole end: the aspiration to activity (Wille zur Macht)" (p. 81). "Prevision being the typical and fundamental content of all knowledge," "the modifica-

tions which the prevision of certain of our capacities of modifying things imposes upon certain other previsions," in other words, the influence of our activity on our knowledge, is one of the fundamental questions of pragmatism. We can trace this influence in our belief in the reality of things we act upon (G. Pikler); in the distinction of primary and secondary qualities; in the preference shown by the sciences to certain hypotheses capable of prevision and verification, for instance, the economic interpretation of history. In short, "Not only knowledge is power, but also power is knowledge."

Voluntary action is defined after Calderoni as "that change of objects among whose causes are found also our beliefs." Belief does not act directly on reality as was held by James; it does not "create its own verification, but merely gives an impulse toward activity, which is the true modifier of reality," James's "will to believe" might be called the "eulogy of risk" since he taught "that the risk of an active choice is preferable to the passive, but implicit choice of skeptic and agnostic inaction" (p. 135). It adds greatly to James's credit to have been the first to recognize the necessity of adventure and plasticity in philosophy. The reciprocal relations of our actions and beliefs give Sig. Papini the opportunity to write an interesting chapter of concrete psychology (eighth essay).

The tenth applies pragmatist principles to the classification of the Italian political parties. That country is blessed with no less than eight (Catholics, Conservatives, Liberals, Radicals, Republicans, Socialists, Demochristians, and Anarchists). To accept their political creeds at face value would be an act of unpardonable naïveté, because one and the same slogan may bear a great variety of interpretations and conversely, widely different theories may lead in practise to the same attitude: the socialists, for example, are as intolerant as any ultra-reactionary as soon as they come into power. A pragmatist classification is not the dupe of words. It cuts across every political division and separates the men of action from the mere theorists and sluggards. As for theoretical differences of opinion, only one is significant in practise, namely, the conception of the state's rôle. This classification, therefore, leaves only four active parties: the Clericals and the Socialists on the side of the state's rights and the Liberals and Anarchists on the opposite side. These parties are distinguished from one another by their concern for the welfare of different classes and also by the varying degree of power which they are willing to concede the state.

In his earlier essays Sig. Papini evinced somewhat occult tendencies which required of the reader a good deal of will to believe before he would decide to take them seriously. These leanings are, however, abandoned in the subsequent essays. The last essay on "Truths for Truth," which is dated 1911 and outdistances the others by at least five years, bears witness to a conciliatory and frankly eclectic view of philosophy and metaphysics. The gist of his argument is as follows: The history of philosophy, the great laboratory in which philosophy is making, does not reveal a hopeless conflict of opinions as would appear on superficial observation.

If we institute a critical inventory of the philosophical systems, problems, and solutions, discarding the meaningless and bringing together the redundant or fragmentary, we shall obtain an essential agreement, although the relative prominence of certain principles varies with the different systems. If philosophy is at all to reflect the complexity of life, we must be reconciled to a multiplicity of ends and a corresponding diversity of theories. Although the era of great discoveries in philosophy is past, "possible or imaginary" metaphysics may still be attempted in response to certain artistic, moral, religious, or practical needs.

This philosophy, Sig. Papini rightly observes, is different from both positivism and the eclecticism of Leibniz, Hegel, and Cousin, in that it does not set a single value as the measure of all truths. His attitude presents, I think, many analogies to that of Renan and has its roots in the artistic need of a sympathetic inerpretation of all the aspects of life. It can hardly claim for itself the name of pragmatism if, instead of conceiving pragmatism as a general tendency or attitude, we limit its scope to a definite theory of truth.

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The Socialized Conscience. J. H. COFFIN. Baltimore: Warwick & York, Inc. 1913. Pp. viii + 247.

This book, intended for use as a text-book of ethics, is provided with Questions and Topics for Further Study, and reading-references—to such books as Dewey's and Tuft's "Ethics" (twenty questions and references), Wright's "Self-Realization," Rauschenbusch's two books, Nearing's "Social Adjustment," Hadley's "Standards of Public Morality." Its purpose is to emphasize topics "not ordinarily discussed in books on ethics. But after all, these and their kind are the vital things of life, and they furnish the common every-day questions of morality; they are therefore the things which most need discussion in books on ethics" (p. 74). "To the practical minded student . . . traditional ethics seems to offer little in the way of suggestion for the solution of many of our newly created moral problems. To him the discussions often seem formal and abstract" (Preface).

The gist of this book can be gathered from the following quotations: "It is only half a truth to say that morality is a personal affair; the other half is that personality is a social affair. The influence of nearly all of the ethical theories of the past tends to emphasize the *self*-realization; this is because these theories have been based chiefly upon the assumed principle of individualism. But we must keep constantly before us the social nature of morality, and bear in mind that moral theory, to be adequate to present needs, must be socialized" (pp. 62–3). "In summary we may say that the supreme moral end is the *realization of the social self,* or *socialized personality,* and the moral criterion by which conduct is to be evaluated and directed is the *socialized conscience.* . . . The one common factor that is needed in the solution of the social, political, educational, and religious problems of the present day is a re-enlightened and resensitized consci-

ence" (p. 67). "*Our consciences are not yet socialized!* If some one steals from, cheats, or defrauds me, I have no difficulty in seeing the injustice in the act. But if some one steals from, cheats, or defrauds the public, I regard it as lucky that I got off as easily as I did, and let it go at that, with not a moment's thought of the moral wrong in the case. Now society will not have become thoroughly moral until every member thereof feels the same emotional stirrings when he sees social injustice and wrong in any of these forms, as when injustice or wrong is committed against him personally. This is what is meant by the socialized conscience" (p. 165).[1] The first three chapters and the final chapter develop this point of view genetically and psychologically, the intervening five chapters apply it to the problems of the home, educational agencies, industry, the state, the church.

Excellent is the author's programme and quite in the contemporary current; the accomplishment, alas, is disappointing. There is nothing new in the book, nothing simplified or coordinated, nothing better said than others have said it. It is too fragmentary and sketchy for college classes, not simple enough in statement for secondary schools, not interesting or vivacious enough for the general reader. Although approximately two thirds of the text deals with the concrete applications of social morality, there is little actual grappling with *problems;* we have for the most part preaching, platitude, vague idealism, edifying, but not enlightening. There is much cloudy, unanalyzed statement, and some dubious assertions —especially when the author becomes most eloquent, as, in his longest chapter, in dealing with the evils of divorce and sex-immorality.

In style and form the book is equally unsatisfactory. The phraseology is commonplace, occasionally unidiomatic; there is much careless punctuation, some misspelling—which may be misprinting, as the printer's work has not been perfect. There is at least one attempt to coin a word—*commonality*—which is of questionable utility. The bibliography is given carelessly, without initials, and with several misquoted titles.

Anxiously, then, as many of us are awaiting more concrete and less technical treatments of ethics, and admirable as is the spirit and point of view of this book, we shall hardly be able to use it in our classes.

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. February, 1914. *Considérations sur le Repos et le Sommeil* (pp. 113–146): F. LE DANTEC. – Repose signifies, not immobility, but a change of functioning. . . . "Certain operations give me repose from the fatigue resulting from other operations." The state of sleep is characterized by a relative impermeability of the nervous centers, and in this state the individual leads "a more independent life, more approximating absolute life, of assimilation without imitation."

[1] All italics in original.

Bechterew et la Psychologie de Demain (pp. 147–169): N. KOSTYLEFF. – A discussion of the significance of Bechterew's rejection of "consciousness" and the introspective method, and of Bechterew's principle "that every psycho-neural act can be reduced to the schema of a reflex or excitation, reaching the cerebral cortex, awakening traces of anterior reactions, and finding in the latter the factors which determine the process of discharge." *L'Humeur* (pp. 170–188): L. DUGAS. – Humor (disposition, mood, temperament) is an "organic fatality," whose distinctive trait is instability, and is the "irreducible element that every character encloses." *Variétés. Un Philosophe Russe: V. Soloviov:* OSSIP-LOURIÉ. *Analyses et Comptes Rendus.* John Elof Boodin, *Truth and Reality:* A. LALANDE. Shearman, *The Scope of Formal Logic:* HENRI DUFUMIER. Luigi Suali, *Introduzione allo Studio della Filosofia Indiana:* J. BARUZI. E. Martin, *Psychologie de la Volonté:* FR. PAULHAN. Wincenty Lutoslawski, *Volonté et Liberté:* P. BERROD. Georges Sidney Brett, *A History of Psychology Ancient and Patristic:* FRANÇOIS PICAVET. Notices bibliographiques.

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NOTES AND NEWS

PROFESSOR RALPH BARTON PERRY contributes to the July issue of the *Harvard Theological Quarterly* an article on "Contemporary Philosophies of Religion," which closes as follows: "If sober and vigorous thought does not justify hope, then man may well fall back upon his imagination, and nourish illusions that shall be flattering in proportion to their unreality. But this will take care of itself. The optimistic bias of the imagination is the one religious source that will never fail. It should be the part of a philosophy of religion to scan the cosmic horizon for signs that shall be as hopeful as possible but that shall first of all be trustworthy; so that if there be any chance of *really reaching the haven originally desired,* it shall not be lost from a too hasty resignation or abandonment to soothing distraction. A philosophy of religion, in short, should devote itself to the construction, not of the most hopeful belief, but of the most credible hope."

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RELATIVITY, REALITY, AND CONTRADICTION

THE discussion concerning the subjectivity of the secondary qualities, begun more than a year ago by a communication of Professor Cohen's to this JOURNAL,[1] has penetrated to an issue more fundamental than that in which it began, and has disclosed the fact that the original difference of opinion was at least in part due to a lack of agreement upon this deeper-lying question. Any philosophical discussion which accomplishes so much as this (at least in an inning and a half) may be considered to be justified by its results, and therefore to be worth continuing. It is, in the main, about the new and larger issue that I wish now to present a few observations. But it is doubtless expedient to recall to the reader's mind the "dialectical movement" of this little controversy up to the present point in order to show how the initial problem has been found to involve the new one.

The classic argument for the subjectivity of the secondary qualities of matter is based upon the discrepancies between the qualities which an object occupying a given space exhibits in the perception of one observer and those which it at the same moment exhibits in the perception of another observer. It would, as the present spokesman of this ancient piece of reasoning observed, be self-contradictory to suppose that the object possesses, *as qualities of itself,* all the irreconcilable characters which it appears in different people's experiences as simultaneously having; *ergo,* some, at least, of these qualities are but appearances to these observers, not objective attributes of any independent physical reality. But, urged Dr. Cohen, there is nothing contradictory in a thing's having opposite predicates *in different relations.* The same line, *e. g.,* may simultaneously subtend two different angles—namely, from two different points of view. "True, and obvious," was the reply; "but ill adapted to prove the objectivity of the secondary qualities. In diverse relations any object may assuredly have, without contradiction, any number of attributes which would, if considered in any one relation, be incompatible. But if an object

[1] Vol. X., page 27; *cf.* also Vol. X., pages 214 and 510.

possesses a certain attribute *only as a function of its relation to another entity,* and that entity, moreover, is a subject, or sentient organism—then the attribute is precisely what one means by a subjective quality. In order to avoid contradictions, the secondary qualities are, by science and by modern common sense, regarded thus as functions or products of the relation to individual subjects of a physical reality which apart from that relation is without those qualities.''[2]

But, objects Dr. Cohen—and here the deeper issue begins clearly to emerge—this way of distinguishing certain qualities as subjective, implies that there are certain other qualities which, in contrast with these, are *not* functional or relational. It assumes that, besides its relations and the predicates dependent upon, and explicable only in terms of, its relations, ''every real thing has a 'nature' or character or set of qualities of its own.'' But to this assumption Dr. Cohen refuses to subscribe. Those who admit it, he thinks, can do so only because their thought is haunted by ''a ghost of the thing-in-itself.'' But ''whatever may be said of *dinge-an-sich,* it seems certain that science does not deal with them, and that none of its objects possesses qualities in isolation, but only in given systems. If things could not have contradictory qualities, neither could they have contradictory relations or attributes, and all predication would be impossible.''[3] So much as Professor Cohen thinks, was long ago proved by Plato in the ''Parmenides.''

It is evident that this way of thinking, if correct, may be applied to other ends than the disproof of the subjectivity of the secondary qualities of matter. It would, in fact, apparently render impossible any cogent proof of the subjectivity of anything. For all arguments—except those not strictly conclusive ones which rest upon the principle of parsimony—for the classification of any content of experience as ''subjective appearance'' proceed by pointing out some contradiction in the supposition that that content forms a true part of the objective order of nature. It is by one and the same type of inference that people have argued to the subjectivity of hallucinations and to the subjectivity of those elements in normal perception which are known as the secondary qualities. If, however, as Professor Cohen suggests, there is no reason why objects should not possess any number of contradictory predicates, this type of inference becomes invalid, in the one case as in the other. Thus Professor Cohen presents to our new realists a dialectical weapon not, I think, hitherto employed by them, which, if it be of true mettle, should

[2] This, of course, is not a quotation from the writer's previous argument, but a very brief summary of the points he tried to make in Vol. X., pages 214–218.

[3] This JOURNAL, *op. cit.,* pages 511–512.

serve them most conveniently in their defense of the paradox that, as has often been pointed out, is implicit in their "epistemological monism"—*viz.*, the view that all perceptual content, hallucinatory or otherwise, is equally objective, "external," and independent of the perceiver. For it should be noted that Professor Cohen's suggestion is not identical with that with which Professor Holt dallies in his contribution to "The New Realism." It is not the contention of Professor Cohen that irresoluble and unqualified contradictions exist in the objective world. Conceive every quality as relative to "a given system," and then it becomes incapable of really contradicting any qualities extrinsic to that system. Considered apart from these systems of relation, the contradictoriness of the attributes of things is real; considered with due regard to those systems, it disappears. Thus we need not hesitate to ascribe to a given "object" the most conflicting predicates; for we can promptly dispel the resultant appearance of self-contradiction, by merely adding that the predicates are not all ascribed to the object in the same relation. Such is the powerful yet simple logical device which Professor Cohen puts into the hands of the partisans of "pan-objectivism," to aid them in averting the most embarrassing implications of their doctrine. It is, I believe, the seventh distinct instrument for this end which has recently been invented; and, if it be not too invidious a comparison to say so, it seems to me to present, at first inspection, the neatest and most attractive appearance of them all.

Yet it will not do to be content with a first inspection. Upon closer analysis Professor Cohen's use of this notion of relativity would seem, in the first place, to be seriously ambiguous in meaning, in its application to the original question, that of the secondary qualities. The ambiguity will become evident if we introduce a distinction which Dr. Cohen neglects. Even in a world of relations and relational attributes only, there are, it must be supposed, *different* relations. A given quality might be a function of some relation, but not necessarily of a relation to a subject or perceiver. Is it, now, Professor Cohen's meaning that "science" regards all the qualities which can be predicated of a physical object as determined by its relation to different *observers*—so that, in relation to observer A it has one set of qualities, in relation to observer B another, possibly contradictory set, and so on; and, beyond the sum of all these, has no predicates at all? Or is it his meaning only that all the qualities are determined by, and vary with, certain other relations, which are unmodified by the relation to a subject and may subsist when the latter relation does not subsist? If the former be his meaning, his disproof of the subjectivity of the secondary qualities amounts to a proof of the subjectivity of all qualities. Is it this poisoned chalice

which he proffers with so friendly an air to the lips of the new realists? His slighting words about *Dinge-an-sich* might lead one to suppose so; for surely, life must be insupportable to a realist without *some* kind of thing-in-itself. If, however, Professor Cohen's meaning be the second of those which I have discriminated, he escapes universal subjectivism, indeed, but also fails to make out any case against the subjectivity of the secondary qualities. There would be nothing in his relativistic logic to render the distinction between the objective and subjective attributes of a thing impossible or unnecessary. The former class of qualities would consist of those which, though determined by relations, would be independent of the "consciousness-relation"; the latter would consist of the sets of experienced qualities which can escape reciprocal contradiction only by being regarded as functions of the diverse relations of the object to various percipients.

Thus, so far as the original issue is concerned, Professor Cohen's relativism proves either too much or too little. Interpreted in one of its two possible senses, it lands you in idealism or in a relativistic skepticism. Interpreted in the other sense, it leaves the specific question of the relativity of the secondary qualities exactly where it found it.

The hypothesis might, however, be modified by the addition of a further clause; namely, that the so-called "consciousness-relation" is never determinative of any quality, that the systems consisting of the experiences of different minds are *not* among the systems with respect to which objects may have qualities which they lack apart from those systems. And it is only with this supplement that Professor Cohen's suggestion can render the new realism any genuine service. So long as it is admitted that there may be qualities which can be ascribed to an object only by virtue of a special relation in which it stands to a sentient organism, and only from the point of view of that organism, the doctrine that consciousness is a wholly "external" or non-constitutive relation is obviously excluded. One's universe would still contain a realm of purely subjective existents, and would, therefore, be radically different from the neo-realist's universe. If, in short, Professor Cohen's relativistic logic is to be used for the disproof of the subjectivity of anything, the diverse relations which are supposed to make it conceivable that an object may possess "contradictory qualities," must all be relations between objects, relations independent of the perceiver.

Let us, then, take the conception under discussion in this strictly objectivistic sense. So taken, it will still be found to be ambiguous. It may mean either one of two quite distinct views. Professor Cohen's language at times suggests the more radical view that the

qualities of objects *are* relations between objects; to "the familiar distinction between the qualities of a thing and its relations" he tells us that he pays no deference. Other expressions of his, however, are reconcilable with the less paradoxical contention that qualities are merely relative, *i. e.*, are in some manner dependent upon relations. In the interest of completeness of treatment, it seems necessary to examine both of these views.

First, then, for the doctrine that qualities are reducible to relations and that, because of this, "qualities" which would otherwise appear incompatible can be predicated of a single object. Any one of three considerations seem to me fatal to this doctrine.

(*a*) It appears to be supposed by several recent philosophical writers that latter-day science has actually abrogated the notion of quality, as well as that of substance, and has taught us to think of the world as consisting of relations merely. I find it difficult to imagine a more evident and elementary distinction than that which such a supposition overlooks. Our science is, of course, concerned with the discovery of the causal relations between the qualitatively diverse phenomena making up our perceptual experience. And the causes or conditions, or, contrariwise, the effects, of a phenomenon are themselves formulated in terms of a correlation of two or more other phenomena. Science, moreover, or at least the sciences of physics and physical chemistry, have found it serviceable to regard all the causes of all the qualitatively various phenomena with which these sciences are concerned as resoluble into rearrangements of homogeneous units of matter or of energy; so that the difference between one physical event and another, on the side of their determining conditions, may be formulated purely in terms of the spatial, temporal, and numerical relations of the units involved. As a result of this, undeniably, there have been banished from that world of causes which our ruling scientific hypotheses put behind the world of our actual sense-experience, nearly all the sensible qualities of things. But this does not in the least mean that qualitative differences *are* quantitative differences in a homogeneous substance. A thing and its causes or conditions are not one entity; and it is a very naïve confusion to suppose that when we have discovered that the causes differ in their "nature" or attributes from the effect, we must forthwith deny of the latter the possession of attributes which we actually find it possessing. What blue is, as a datum of sense-experience, we know very well. And we know equally well that it is not an undulation of a colorless medium. We also know that the difference between it and red, as they occur in sensation, is not describable as a merely quantitative

difference between two wave-lengths.[4] It is, it is true, a not uncommon thing for physicists to say that the color *is* the undulation, or that heat *is* a mode of motion. But they do this precisely because they assume, what Professor Cohen denies, that the sensory qualities in question are but subjective, and that the external determinants of the sensation are alone independently real. In short, when they employ such expressions they are using the verb "to be" in a peculiar sense, big with philosophical assumptions which Dr. Cohen would repudiate. Even so, few physicists, I suspect, are so thoroughly victims of the ambiguity of the word "is" that they imagine the *meaning* of the concept of "red," or the nature of the sensation to be identical with the idea of a wave length of 6438Å.

(*b*) To reduce differences of quality to quantitative differences is, in any case, not tantamount to an elimination of quality from the universe. A homogeneous matter, for example, is not a qualityless matter. But if the program which Dr. Cohen appears to suggest were carried through, both science and philosophy would apparently be confronted with a world composed exclusively of relations—with no terms to be related! This is a brave paradox; but I doubt whether it will be found a helpful one by philosophy. And I am fairly sure that natural science will not find such a conception an adequate means for describing the richness, and the singular fulness in blankly qualitative content, of our actual experience, taken as a whole.

(*c*) Professor Cohen, as we have seen, appears to regard the relational conception of qualities as somehow capable of removing the taint of contradiction from propositions which a more abstract logic would consider self-contradictory. Now, it has, of course, been a commonplace of logic ever since Plato's time and probably longer, that if you take any relational attribute and inquire as to its predicability of a given term, you are obliged both to affirm and deny that attribute of that term, so long as you leave out of account the other term of the relation. Any object, as Plato would have said, "partakes of" both smallness and greatness, both equality and inequality; it is at once to the right and to the left, it is half and it is double, and so on.

[4] Professor Holt has recently attempted, with considerable ingenuity, to persuade the readers of "The New Realism" that the difference between what they experience when they see the color red, and what they experience when they are sensible of a sweet taste is nothing at all but a difference in the "time-density" of two vibrations. The outcome of the argument seems to me (as I have elsewhere indicated) to bring out admirably the hopelessness of the enterprise. It should be remarked that, even if the doctrine here under consideration be the one intended by Cohen, it is not quite identical with Holt's. For the latter, so far as I am able to gather, does not base the theory of the possible reality of contradictory qualities directly upon the theory that qualities are relations.

But it is all these things only in relation to *different* other objects. The so-called contradiction, in short, is none,—except for a Megarian or for a Plato engaged in out-megarizing the Megarians—for the simple reason that the relational predicates have no real meaning until both terms of the relation asserted are designated. If this is the kind of contradictoriness of qualities to which Professor Cohen refers, it is a kind which philosophy has long taken cognizance of and long known to be spurious. Elementary logic has a familiar name for the attempt to base a *reductio ad absurdum* upon a "contradiction" of this sort: the fallacy of accident. Not in this kind of relativity can Professor Cohen hope to find any relaxation of the restrictions imposed by the ordinary principle of contradiction. Relational predicates, as a matter of fact, are precisely the ones to which the applicability of that principle is most obvious—as soon as all the terms of the relation are specified. What would really make "all predication impossible" would be the supposition that an entity can at the same time be in a given relation to another entity and not in that relation to the same entity. The assumption of the absolute univocality of each determinate relation of each thing to any other specified thing is the *sine qua non* of all reasoning and all coherent thought.

Let us now turn to the other possible interpretation of Professor Cohen's thesis: that qualities are not of the nature of relations, but only relative. This, again, might mean either of two things.

(*a*) It might mean that the qualities of an object vary with, and are determined by, its relations. This, of course, is in general undeniable. To say of any quality or event that its occurrence in our experience is logically or causally conditional, is to say that it is a function of its relations. But obviously there is nothing in this sort of relativity which can free from contradictoriness any propositions which any one would ever be likely to think contradictory—which can, for example, assist us in thinking of a single plane surface as "objectively" both red and blue. Though a thing's relations to other things determine the character which at any given moment it has, they none the less unequivocally determine it to have, then and there, *one* character, and not two contradictory ones.

(*b*) As a last hope, it is apparently necessary to construe Professor Cohen's contention to mean that while qualities are irreducibly qualitative, the same "object" may have one quality, in its relation to one (physical) object, and at the same moment another quality in its relation to a second object. Just as it may be to the right of the one and to the left of the other, so it may be blue with respect to the one and red with respect to the other, a foot long with respect to the one and a mile long with respect to the other; and thus the disagree-

ing observers who simultaneously perceive it as having both colors or magnitudes, both truly report its actual, objective qualities.

It seems a good empirical objection against such an hypothesis, that the only instances of relativity of pure qualities which we actually discover in experience are instances of relativity to minds, or sentient organisms, not of relativity to other physical objects. It is an empirical fact that two observers often report of what is assumed to be one object that it has for them two discrepant characteristics. It is not, I believe, an empirical fact that a single observer perceives one object, at any one moment, as sensibly possessing for him two discrepant characteristics. He finds it, indeed, possessing diverse (though not, as we have seen, contradictory) relations to other things. But when its qualities are distinguished from its relations (as we have seen above that they must be), the former do not exhibit even the sort of multiplicity that the relations exhibit. At a single moment of perceptual experience (if the writer may judge at all from his own experience) an object is *not* given as red with relation to a thing lying in one direction, as blue with relation to something in another direction, as yellow with relation to something lying in a third direction. Nor, again, is a given portion of space tactually felt by a single percipient to be occupied by a hard resistant substance in relation R and at the same time to be empty and unresistant in relation R^1.

Not only do we lack empirical examples of the objective relativity of the qualities (in the sense now under consideration); it also seems impossible to conceive of true qualities as, in this sense, relative. The distinction between the immediately given qualitative elements of experience, and the relations in which these are enmeshed—a distinction which we have already found reasons for regarding as indispensable—consists precisely in the fact that the very notion of a relation implies a reference to at least two things, while the notion of a quality implies no such reference. The conception of the smallness or the "halfness" of a thing with respect to some determinate other thing, has meaning; and without respect to some other thing, it has no meaning. But the notion of "redness with respect to some other thing" is meaningless; and without respect to any other thing, red still means red. It is, of course, true that we, with questionable accuracy, introduce the category of quantity into our qualitative comparisons, and speak of one thing as "more red" than another; but this does not signify that the logical essence "redness" is entirely reducible to a relation of quantity or of intensity or to an idea of comparison. It is, again, true that the quality in question may, by the inductions of science, be found to be always conjoined with or causally dependent upon the existence of certain relations between

antecedent or contemporaneous things. But these factual relations of dependence do not enter into the meaning of the quality as an experienced datum. At the moment of its direct presence in experience there is in it, behind all of these extrinsic relations, a stark, raw, unanalyzable "whatness." A sensory *quale* is—if I may use a play upon words to sum up the point—not at all a "respectful" thing; it has a kind of absoluteness.

These considerations seem sufficient to justify a rejection of Dr. Cohen's relativistic conception of qualities, even in the last and most promising of its possible interpretations. Consequently, there is nothing in that conception which can show how "contradictory qualities" may be predicated of a single object without actual logical contradiction. No reason has yet been offered for an abandonment of what Professor Montague has recently designated "the axiom of uniplicity," *viz.*, the principle that "any one place at any one time must contain but one set of non-contradictory qualities."[5]

In affirming his loyalty to this principle Professor Montague has, of course, cut himself off, upon a fundamental point of doctrine, from the majority of the neo-realistic fellowship. The argument that the assertion of the objectivity of all content of actual perception implies the real existence of contradictory qualities in the same object has by this time driven a wedge deep into the once fairly compact mass of "new realists." The greater number have either expressly admitted the implication or have sought, by employing the notion of relativity in one form or another, to find a way of maintaining the real existence of contradictory qualities in things without affirming the possibility of the validity of contradictory judgments about things. But to Professor Montague this tendency appears not only pernicious in itself, but also full of menace to the realistic movement; so that he is constrained to reject the gifts borne by Professor Cohen. If he "had to choose between the devil of a familiar subjectivism and the deep sea of this new confusion," he would "unhesitatingly take his stand" with the present writer and the idealists. In view of the reasonings already set down in this paper, I need hardly say that in this matter Montague seems to me to have kept at least the weightier matters of the law, in comparison with which ulterior issues are relatively, though not absolutely, unimportant.

It is, however, of interest to recall that one of the *incunabula* of neo-realistic movement in America was a paper of Professor Montague's, printed in this JOURNAL nine years ago, on "The Relational Theory of Consciousness and Its Realistic Implications."[6] The principal contention of this paper was that "consciousness" should be

[5] *Philosophical Review*, XXXIII., January, 1914, page 55.

[6] Vol. II. (1905), pages 309–316.

regarded as a relation, because the progress of the physical sciences has been due to their repudiation of the notions of substance and quality and their "definite adoption of the category of relation." Psychology and metaphysics, we are told, may expect to make corresponding progress only when they follow the same method and "formulate the difference between physical and psychical as a difference of relational context." The entire argument appeared to imply that the concept of quality has become obsolete in modern thought, and had been, or could be, at all points replaced by the concept of relation.

I mention this, not chiefly for the purpose of showing that Professor Montague has changed his mind (an achievement of which any philosopher may be proud), but for the sake of bringing out an odd but instructive fact concerning the history of the new realism. It has, namely, from the first had in it a strain of relativism. The "relational theory of consciousness" charmed at first sight because it seemed to be in harmony with a larger tendency towards a relational theory of everything. It is true that, however incongruously, the relational theory of consciousness also charmed because it seemed to make possible a *non-relational* theory of *things,* at least so far as the "consciousness-relation" was concerned. A thinker of the true realistic temperament craves a world of objects which have each *some* intrinsic and solid character, which do not endlessly deliquesce into mere relations to other things, themselves equally characterless and elusive. By the device of degrading consciousness to an extrinsic "relation," such a thinker the more readily conceived of the physical world after this fashion. It was an amusing paradox that he should at the same time have found a sanction for this device in the reflection that science tends to an abandonment of the conception of inherent, non-relational qualities, and to a general reduction of all "natures" to relations. But it appears to be the fact that precisely these two incongruous motives were conjoined in the production of neo-realism in its American form. And the present cleavage within it shows that, as the doctrine approaches adolescence, the inner discord arising from its dual heredity is becoming increasingly acute.[7]

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[7] If completeness were possible in a magazine article, two further tasks should be attempted here: (*a*) a proof that the assertion of the subjectivity of some or all sensory data is not itself (as Professor Montague would seem to suppose) a form of relativism, open to the objections which have here been urged against that theory; (*b*) an examination of Professor Montague's substitute—recently restated and elaborated—for the relativistic way of escape from the difficulties of "pan-objectivism." With these topics the writer hopes shortly to deal elsewhere.

TRANSCENDENTALISM AND THE EXTERNALITY OF RELATIONS

IN Mr. Bertrand Russell's paper on the "Basis of Neo-Realism," the doctrine of the externality of relations is defined to mean that there is no internal complexity in terms corresponding to the relations they sustain to one another; and no exception is made of the so-called knowledge-relation. Thus, when any datum becomes the subject-matter of awareness, no change takes place in either the datum or the knower. In his later book,[1] perceptual knowledge is said to involve sensation, sense-data, and physical objects. Sensation is mere awareness,[2] "sense-data are to be regarded as resulting from an interaction between the physical object and ourselves,"[3] while the nature of physical objects can not be known. We can know, according to Mr. Russell, when the relations of sense-data in our private spaces correspond to the relations of physical objects in physical space, but not the nature of physical objects themselves.[4]

In spite of this author's assertion that the mind is capable of *a priori* intuitions of certain subsistent universals (of which we shall speak later), one finds in his writings no sufficient answer to the question how the mind knows and tests the correspondence here assumed between its ideas and the realities they represent. He writes,[5] "If, as science and common sense assume, there is one public all-embracing physical space in which physical objects are, the relative positions of physical objects in physical space must, more or less, correspond to the relative positions of sense-data in our private spaces. There is no difficulty in supposing this to be the case. If we see on a road one house nearer to us than another, our other senses will bear out the view that it is nearer; for example, it will be reached sooner if we walk along the road. Other people will agree that the house which looks nearer to us is nearer; the ordinance map will take the same view; and thus everything points to a spatial relation between the houses corresponding to the relation between the sense-data which we see when we look at the houses. Thus we may assume that there is a physical space in which physical objects have spatial relations corresponding to those which the corresponding sense-data have in our private spaces. It is this physical space which is dealt with in geometry and assumed in physics and astronomy." This passage is typical of Mr. Russell's reasoning concern-

[1] "Problems of Philosophy."
[2] "Problems of Philosophy," page 17.
[3] *Ibid.*, pages 132 f.
[4] *Ibid.*, pages 50 et al.
[5] *Ibid.*, page 48.

ing that correspondence between thoughts and things in which, he says, truth consists; and it would seem to be clear that in this doctrine of correspondence Russell's view differs from that of Green and other transcendentalists who hold that truth is unity or coherence rather than correspondence.

However, just what corresponds to what in the illustration cited above? Obviously, it is the inter-relations of one group of sense-data and those of *another group of sense-data.* The visual appearance of the houses at a distance corresponds to their visual or other appearance as modified by the tactual and motor experience of walking along the road; or our visual perception of the houses corresponds to the visual representation of them on the ordinance map; or our perception of them corresponds to that of other people. Nowhere in this illustration can it be said that we pass from an order of sense-data to an order of physical objects in physical space, unless by the latter is meant a certain grouping of sense-data. Moreover, we suspect this writer of assuming, without so stating in his book, the validity of the time-worn doctrine of primary and secondary properties; we suspect him of assuming that the primary properties of bodies, such as we become acquainted with in tactual and motor experiences, are real, while the secondary properties, such as we become acquainted with through vision and hearing, are phenomenal or ideal. He seems to mean that by comparing the order of the visual properties of bodies with the order of their tactual and motor properties we can discover a correspondence between the arrangement of sense data in perception and the arrangement of bodies and their properties in an independent physical world. Hence, it seems to me that his doctrine of correspondence as set forth in the earlier portions of his "The Problems of Philosophy" is open to every valid objection that has even been urged against the doctrine of primary and secondary properties, and his conception of truth as correspondence is not so different from the transcendentalist's conception of truth as unity as might at first appear.

I shall turn now to another aspect of Russell's philosophy, namely, to his doctrine of "universals." He tells us[6] that by the universal he means very much what Plato meant by the idea, and again,[7] that all universals are relations of space, or time, or resemblance. Universals subsist, rather than exist. He writes, "We shall find it convenient only to speak of things *existing* when they are in time, that is to say, when we can point to some time at which they exist (not excluding the possibility of their existing at all times). Thus, thoughts and feelings, minds and physical objects, *exist.*

[6] *Ibid.*, page 145.

[7] *Cf.* pages 147, 151, 158 ff.

But universals do not exist in this sense; we shall say that they *subsist* or *have being*, where 'being' is opposed to 'existence' as being timeless. The world of universals, therefore, may also be described as the world of being.'' From this quotation, it would seem that the unalterable order of relations which Green, for example, identifies with reality, is only a part of that which is real; and the question arises as to how the world of subsistences, the world of unalterable relations, stands related to the fleeting world of existences. This dualism of timeless universals and changing existences may at first seem to be a point of radical difference between externalism and transcendentalism. In Kant,[8] however, we find the same dualism described as the ''given object'' *versus* the ''thought object,'' and again as ''the given object'' *versus* ''the connected object''; while behind both objects lurks, for Kant, the thing-in-itself, just as for Russell the physical object lies beyond both.[9] It may, however, be said that such transcendentalists as Kant and Green regard the order of relations as the work of the mind, while Russell distinctly rejects that view. Very true, but this alone does not save Mr. Russell's doctrine of relations from the charge of being transcendental, for the reason that some of the transcendentalists hold that the timeless order of relations is ontological without being the work of the mind. The transcendentalists might be divided into the externalists and the internalists. To the former class would belong Plato, with whom Mr. Russell finds himself in closest sympathy, Schelling, Hegel, and some of the Hegelians, Ralph Cudworth and his co-workers, and others. The external transcendentalists are as emphatic as are the neo-realists in denying that the ontological order of relations is the work of the mind. The mind may know these relations or not know them; the relations remain the same in either case. The existence of an intelligible world is for Russell, as for the transcendentalists, dependent on an order of subsistent relations which are timeless and changeless,—which are, in fact, transcendental. Our knowledge of subsistences is, according to Mr. Russell, based on *a priori* intuitions, that is to say (in his language), on *a priori* knowledge by acquaintance, just as for Kant it is based on *a priori* concepts; and Russell maintains that we directly behold subsistent universals just as, according to Plato, we directly behold ideas.

There is, however, one respect in which Mr. Russell seems to hold views radically different from those of any transcendentalists. His doctrine of externalism seems to imply that there are terms that are absolutely distinct from the relations they sustain to one another. What are these terms? Mr. Russell is not permitted to define them in

[8] ''Critique of Pure Reason,'' tr. by Mueller, page 7 and Supplement 14.

[9] Compare also Locke's ''Essay,'' Bk. II., Chap. XXV., et al.

terms of the relations they sustain; he has voluntarily resigned that possibility. He has, however, suggested no other definition. We are not interested in this question as a problem in the logic of mathematics, or as a problem in any other sort of applied logic. However much mathematical considerations may have influenced his thought, it must not be forgotten that it is as a proposition in pure logic that Mr. Russell has set forth his doctrine of externalism in the two works to which reference is made above. Are the terms between which relations obtain sense-data or are they physical objects or are they something else? As to physical objects, Russell maintains that their nature can not be known, and that what we know concerning them is simply their order, or rather a correspondence between the order of sense-data in our private worlds and the order of physical objects in physical space and time. We have already seen that such a correspondence is for Mr. Russell a sheer assumption, a relation for the verification of which he has suggested no method. He says it is an assumption of common sense and science, but that is tantamount to saying that Mr. Russell's whole representative theory of knowledge is an assumption of common sense and science, and this we are by no means ready to grant. Even the bare existence of physical objects and, for that matter, other people's minds as well, seems to me to be assumed in this philosophy. This author says that the existence of physical objects and other minds is known by inference, but the basis of this inference is simply the questionable correspondence already referred to. Mr. Russell might say,[10] that the existence of physical objects is known *a priori* by acquaintance, that it is an instinctive belief, but this would not explain in the least the assurance we have that our ideas of particular objects, and of particular mental processes in other people's minds, are trustworthy. In short, Mr. Russell has not shown how the terms between which relations obtain are or can be physical objects.

Can the terms between which relations obtain be sense-data? "All acquaintance," writes Mr. Russell, "such as my acquaintance with the sense-datum which represents the sun, seems obviously a relation between the person acquainted and the object with which the person is acquainted. . . . Thus, when I am acquainted with my seeing the sun, the whole fact with which I am acquainted is 'self-acquainted-with-sense-datum.'"[11] All sense-data are immediately known, known "by acquaintance," and here this immediate acquaintance with sense-data is construed to be an acquaintance with a relation between the person and the object. Nowhere in this book does Mr. Russell give a clear statement as to what he means by sense-data,

[11] *Ibid.*, page 79.

[10] He does so say on page 37 of his "Problems."

that is, as to the logical status of sense data. Moreover, it is not clear what he means by person, in the above quotation. Acquaintance with a sense-datum is acquaintance with a relation between a person and an object. What is this "something which we call 'I,'"[12] which seems to be the central thing in what he calls the person? I am completely at a loss to answer this question in the terms of Mr. Russell's discussion. In short, one finds in his theory of knowledge the same shadowy ambiguity as to the terms entering into relations that one finds in the philosophy of Green and other transcendentalists. They are like the shadows cast by an arc light swinging in the wind,—if I may use one of Mr. Russell's own brilliant figures of speech.

In the first chapter of his "Prolegomena," Green writes of relations as follows: "Abstract the many relations from the one thing, and there is nothing. They, being many, determine or constitute its definite unity. It is not the case that it has existence in its unity and then is brought into various relations. Without the relations it would not exist at all. . . . It is true, as we have said, that the single things are nothing except as determined by relations which are the negation of their singleness, but they do not, therefore, cease to be single things. . . . On the contrary, if they did not survive in their singleness, there could be no relation between them—nothing but a blank featureless identity."[13] Thus, Green seems to say within the same paragraph that there are and that there are not things independent of their relations. Green's whole argument vibrates between the conception that there are terms *to be* related and the conception that relations somehow generate their terms. And so also does Mr. Russell's. Again, Green writes that "Of two objects which form the terms of a relation, one can not exist without the other, and therefore can not exist before or after the other. For this reason the objects between which relations subsist, even a relation of succession, are, just as far as related, not successive." Accordingly, Green held that time and change are not essential to relations, and this brings us back to Mr. Russell's doctrine of subsistent universals.

In these and other excerpts from Green one finds recognition of many things that play important parts in neo-realism. There is the ambiguous conception of terms to be related; there is the notion of relations as transcending their terms; there is the question as to whether, and how far, the mind can know terms as distinct from the relations they sustain to each other; there is the doctrine that relations are timeless, or at least, that relations only obtain between co-existing terms. It is true that Russell does not regard relations

[12] *Ibid.*, page 80.

[13] Pages 35 f., 1899.

as the work of the mind, but in this respect his doctrine differs not at all from the doctrine of relations maintained by many transcendentalists. Are we not warranted in asking whether Mr. Russell's transcendentalism advances the problem of relations beyond the point at which Locke and Kant left it?

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THE FITNESS OF THE ENVIRONMENT FOR THE CONTINUITY OF CONSCIOUSNESS

PROFESSOR HENDERSON, in his book from which the first part of the above title is borrowed, has demonstrated with much ingenuity how it is that our terrestrial surroundings are just fit for the conservation of animal life. The atmosphere is of the proper density and mixture, the ocean of the precise temperature and neutrality, and the basic elements of organic compounds of exactly the required valence to yield the entire plexus of biologic life that now prevails on the globe.

The question I wish to raise is: What must be the nature of the environment which should secure to us the continuity of the thought process? Two things are necessary for the continuity of consciousness: first, awareness of the present, and second, recollection of the past. Or, to be more precise, the interlocking of the present with the past. Our consciousness of the future is really a function of our consciousness of the past. A being can look ahead only as far as backward, and no farther. The child does not know what to-morrow is because he seldom remembers his yesterday, and for the same reason the future of the aged man becomes narrow and circumscribed as a result of declining memory. What must be the nature of the environment, then, which should yield the richest and most tenacious interlocking of the present with the past?

There are, to begin with, two kinds of environments which stand in antithesis to each other. One is the absolutely homogeneous, the other the absolutely heterogeneous. By homogeneous environment I mean the knd in which there are no two things that are different. Indeed, within it there are no things, but all is one thing. It is the kind of environment that might be made to exist for a gold-fish in a glass jar. Conceive the water of the vessel to be of constant temperature and salinity; conceive the food of the animal to be uniformly dissolved throughout the water; conceive the walls of the jar to extend farther back in space than the animal can traverse within its natural life-time; finally, conceive all vibratory disturbances such as

motion, light, and sound either constant or eliminated altogether. It is obvious that the experience of an animal in such an environment would not be rich. It would be the same experience every instant. After the first pulse of life nothing new would enter its consciousness. The last chapter of that animal's life would be written with the first stroke of the pen. It would always be living in the past, though possibly it would not know it. Its consciousness would center around a single pulse or point of experience from which it could never get away. As such a consciousness would necessarily be of zero dimension, it follows that there could be no continuity of the thought process in a completely homogeneous environment.

So let us turn to the absolutely heterogeneous *milieu*. By heterogeneous environment I mean the kind in which not only no two things are the same, but in which no two things bear the slightest resemblance to each other; indeed, it is the kind of environment in which not even the same thing persists in a uniform state for an appreciable length of time. Such surroundings need not necessarily be destructive to the biologic process. Suppose air changed to water, water to earth, and earth to air, at irregular and unexpected intervals, it is conceivable that such an animal as the kingfisher, or some other creature that can walk, fly, and swim with equal ease would be well able to withstand such hurly-burly. Conceive everything on the earth undergoing a perceptible change. All things do change, it is true, but, apart from the coarser spatial movements, we experience things and not their change. But suppose conditions were such that the tree you saw yesterday were replaced by a flower to-morrow, your dog, like Faust's, became a devil, and your table a typewriter. And you, like Dr. Faust, were quite able to adjust yourself to each new situation, because the situation itself would modify you in such a way as to enable you to survive the eternal round of change. What would be the nature of consciousness then? A million new experiences, not one abiding, not one recurring, not one resembling any of the myriads that have preceded it! Obviously an organism living in such an environment would have a manifold of impressions. Its consciousness of the present would extend to the *n*th power. Would it have a sense of the past? If not, then the heterogeneous environment would be no better than the homogeneous one. With respect to the latter we said that consciousness would center round a single point of experience with no possibility of expansion; hence no continuity. With respect to the former, consciousness would be diffused over a wide range of unrelated experiences with no possibility of connection; hence, also, no continuity. What, then, must be the nature of the environment which should afford us the greatest variety of experiences and at the same time preserve

and awaken the richest memory of the past? Inasmuch as the former depends on diversity and the latter on uniformity or similarity of impressions, we have before us a problem in *maxima* and *minima*.

Experiments on the process of recognition within the visual realm, which I have conducted for several years, divulged a set of facts that seem to throw some light on the problem before us. My task was to find out the relation between recognition and degree of similarity of *meaningful* objects. That is to say, it was an experiment on ideational recognition and discrimination with graded stimuli, as distinct from sensory discrimination, which characterized all previous experiments where quantified stimuli were used.

My material consisted of a large number of picture post-cards grouped in pairs on the basis of similarity. The amount of similarity between the members of each pair was determined in terms of percentage, by 15 competent men—students and instructors in the Harvard graduate school of arts and sciences. Two cards that were totally dissimilar—one representing a red rose, the other a gray church outlined against a blue sky—were given the arbitrary value of 0 per cent. *S* (*S* = similarity). Two other cards that were identical constituted the 100 per cent. *S* end of the scale. Between these two extremes my 15 judges were advised to locate the other pairs of picture post-cards, in terms of ten or multiples of ten. By taking the average of the 15 judgments rendered for each pair of cards, I obtained their amount of similarity.[1] The reliability of this average was, of course, determined by the mean variation. Yet the mean variation differed with every degree of similarity, and this is due to the fact that it was a function of the range of judgment, as it should be. That is to say, cards that were rated as 40 per cent. *S* had a larger M. V. than those that fell within the 0 per cent. or 80 per cent. unit of the similarity scale. The reason is that the cards of 40 per cent. *S* afforded a wider range of judgment—a range that varied between 0 per cent. and 90 per cent.—than did the cards which fell into either of these last units. The following table gives the scale of similarity, the average M. V. corresponding to each unit of the scale, and the number of pairs of cards that entered into the construction of each unit.

TABLE I

Per cent. *S.*	0	10	20	30	40	50	60	70	80	90	100
Av. M. V.	0	..	12	12	13	12	11	9	6	..	0
Pairs	50	0	15	25	43	57	78	61	28	0	50

The largest M. V. we have is 13 corresponding to 40 per cent. *S*. If we bear in mind that the range of this judgment was 80, possibly

[1] A like method was used by Professor Thorndike in the construction of his writing scale.

90 units, we shall see that our largest M. V. is 16 per cent. possibly only 14 per cent. of the total range. We may conclude, then, that these judgments were fairly representative of the actual similarity that existed in the cards. To avoid any doubts I might further add that the judgments were rendered by each individual separately, *i. e.*, without any suggestion or advice from any one. The only instruction I gave to my men was to judge on the basis of their first impression, not to debate too much. As all the cards were spread out before them, as well as the 0 and 100 per cent. norms, the subjects were allowed to look over the entire display so as to get an idea of the relative degrees of similarity before they began the actual rating.

With the cards thus standardized and properly marked on the back, I proceeded to the experiment on recognition and discrimination. The method was this: One of the standardized cards, marked *A* (the normal), was exposed among a definite number of other picture post-cards, called fillers, for a definite time, say 5 seconds. An interval of 20 seconds then intervened, during which time the subject, separated from the experimenter by a screen, was required to retain as much of the material he had just observed as he possibly could. In the meanwhile, card *A* was removed and the variable, *B*, substituted. At the end of this interval the whole group was exposed once more for 5 seconds, and the subject was required to say whether all the cards of the second exposure were identical with those of the first, or whether one of them was changed, and, if so, which one. Not only were my subjects obliged to indicate the card which they thought was new, but they also had to name or to describe the card which it had displaced.

For this experiment I had ten subjects, all trained psychologists. Of course none of them had seen the cards before. After each pair of exposures new cards were used to construct the environment. A critical pair of cards was never used in more than one experiment—*i. e.*, never used twice on the same subject. The reason for exposing the critical card among a group of others was to test the process of recognition under conditions corresponding to life, namely, with distributed attention.[2] It is clear that where I made no change at all I had the condition of 100 per cent. *S*. Without going into details as to how I manipulated the various factors involved so as to obtain those conditions which, with the greatest number of cards exposed for the shortest time possible, would yield 100 per cent. correct discriminations when a card of 0 per cent. *S* was substituted and 100

[2] This experiment was carried on in the Harvard psychological laboratory under the direction of Professor Münsterberg, to whom my thanks are due for many valuable suggestions. A more extended report of the investigation will be published before long in the *Psychological Review Monographs*.

per cent. correct recognitions when a card of 100 per cent. *S* was substituted (*i. e.*, when no substitution was made at all), suffice it to say that I finally succeeded in finding the ideal combination of size and length of exposure which gave me these results within reasonable limits.

What we are concerned with chiefly is this: (1) What is the per cent. discrimination corresponding to each degree of similarity? This will give us an index of the extent to which consciousness of new experience is impoverished or enriched by increasing or decreasing similarity, *i. e.*, uniformity of environment. For it is obvious that the higher the degree of similarity the lower the per cent. discrimination—that is, the fewer the experiences of newness; and *vice versa*. (2) What is the per cent. recall occasioned by the discriminations corresponding to the various degrees of similarity? Inasmuch as this recall, besides depending in part on immediate memory, would depend in the main on association by similarity, it follows that the greater the resemblance of the new experience to the old, the more often would it revive the memory of the old. Here we have an index of the extent to which increasing or decreasing similarity of stimuli—*i. e.*, of environment—tends to revive or inhibit memory of past experiences. Or, in other words, tends to connect the past with the present.

Now inasmuch as discrimination (D), is a function of dissimilarity; and recall, (R), a function of similarity, the highest value of $D \times R$ which we can obtain for any value of S, will therefore be an index of that sort of environment which is most ideal for the continuity of consciousness—that is, for the interlocking of the greatest variety of present experiences with the richest memory of past. Table II. contains the results from which we derive our answer. The number of judgments that entered into each determination may be obtained by multiplying the number of pairs of cards which entered into the construction of each unit (see Table I.) by 10. The first horizontal line gives the degree of similarity; the second the corresponding per cent. discrimination, or judgments of *new* when a substitution was made; the third percentage of times that the discovery of the new card succeeded in reviving the memory of the old; and the fourth gives the product of D and R to two figures.

TABLE II

Per cent. *S.*	0	25	35	45	55	65	75	80	85	100
Per cent. *D.*	100	92	87	77	67	55	45	34	21	0
Per cent. *R.*	61	93	95	95	93	91	94	?	?	..
$D \times R$	61	*85*	*82*	73	62	50	42	..	..	..

From the above figures we notice the following facts: When the stimuli are totally unlike—*i. e.*, possess zero similarity, they set up a new psychic process every time, as evidenced by the fact that substitutions of 0 per cent. *S* are recognized as new always, without exception. On the other hand, impressions set up by stimuli of this character tend to blot out the memory of past experience to the extent of 39 per cent. I say blot out because my introspection notes show that even when my subjects had an image of the normal card of 0 per cent. *S* during the interval, the impression produced by the variable acted "like a flash of light," "like a blow between the eyes," and drove the idea of what the normal was completely out of mind. From this we may conclude that inasmuch as stimuli of absolute dissimilarity have but little association or recall value, a totally heterogeneous environment, by being detrimental to memory, would not yield continuity of thought processes. And this is as it should be, for what good would a memory do in a world where no two experiences were ever alike? Let me add, however, that there is nothing *a priori* about this "should be." It should be because it could not be otherwise, and that is all there is to it.

As we go along our scale of similarity we find that with increasing likeness of stimuli there goes a diminishing number of new experiences. Even when *S* has a value of 25 per cent., 8 per cent. of the stimuli fail to make a new impression on consciousness. And when the "physical world" becomes 55 per cent. similar our range of new experience drops to 67 per cent., when the environment becomes 85 per cent. homogeneous our consciousness contracts to the deplorable figure of 21 per cent. But perhaps one would think that the diminution of new experiences in an environment of increasing homogeneity would be compensated by a richer recall. My figures do not point to that. Stimuli of 25 per cent. *S* have as large an association (*R*) value as those of 75 per cent. *S*. That is to say, association by similarity seems to reach its maximum with a very small amount of similarity. And this I think is very fortunate, for it at once affords us the conditions where we can have the largest variety of experiences coupled with the richest memories of the past. In order to determine what the exact mixture of similarity and dissimilarity must be which should yield the best mental life, we need simply find the value of *S* that corresponds to the highest value of $D \times R$. Now the highest values of $D \times R$ are 85 and 82, corresponding to 25 per cent. and 35 per cent. *S*, respectively. Hence we may conclude that an environment which is a mixture of about 30 per cent. homogeneity and 70 per cent. heterogeneity is the most ideal environment for the continuity of consciousness.

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REVIEWS AND ABSTRACTS OF LITERATURE

A Study in Incidental Memory. GARRY C. MYERS. Archives of Psychology, No. 26, February, 1913.

A voluminous literature has grown up about the study of memory, but little concerns directly the problem of what has been called "incidental memory," a term first used by Wallace in the study which constitutes the twelfth monograph of this series. Attention to the stimulus and an intended act of recollection have formed part of most tests in this general field. In addition to what thus enters into the individual's experience, there is a mass of impressions which do not primarily condition reaction or appeal to the individual's interest at the moment. It is the results of a study of the measure of retentiveness in these incidental impressions and its variations which are here presented.

As these supplementary features of the witnesses' experience are invariably explored in the legal scrutiny of testimony, it is from the psychological inquiry into the latter problem that our information concerning incidential memory has chiefly been derived. Of this material the writer gives an interesting résumé in his introduction. His own investigation covers a large variety of phenomena. It includes tests of incidental memory for the proportions and areas of well-known objects, such as bills, coins, and postage stamps, of words and the number of their component letters, of letter squares, dates, events, and extent of movement. In each case the reactions of characteristic groups and classes are separately presented, sex differences, and the effects of training, age, and professional occupation upon particular forms of perception and retention being thus brought out.

"Not one in twenty could reproduce six simple words in correct order immediately after writing them, in case they did not know beforehand that these words were to be reproduced," says the writer in his general conclusion. "It was a rare exception to find a subject who could represent the Roman figures on a watch dial unless his attention had been previously called to their arrangement. Fewer than half the subjects tested could associate the correct year with events most familiar to them. About half the individuals tested correctly estimated the number of letters in their own names."

As to the general causes of these facts, "we either shut out entirely from our senses those things which are not in accord with our interests and prejudices, or we perceive them very imperfectly. This perceptive selection with its resultant influence upon association the writer applies to certain assumptions of the Freudian school, referring the apparent associative inhibitions to original failure to establish the associations in question. This study shows "how meager is our memory of the most commonplace objects, relations, and events that were not in the central field of interest, or closely attached thereto, when they were presented to the senses." He has earlier pointed out that errors in any perception tend to

be perpetuated in subsequent perceptions mediated by the same sensory complex. "Moreover, one often has a mass of imperfect, fragmentary, and unclassified perceptions which, when subsequently joined together in terms of experience, present conclusions that are distorted representations of the original stimuli."

"In the process of learning, then," the writer concludes, "the vital factors are the manner in which the stimuli are presented to the senses and the attitude of the subject at the time of their presentation. It is more important to organize the stimuli in their presentation than to organize subsequently perceptions of chaotic stimuli. Therefore the true aim of education should be to teach the child to study rather than to recite."

ROBERT MACDOUGALL.

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Dernières Pensées. H. POINCARÉ. Paris: Flammarion. 1913. Pp. 258.

This volume, published posthumously, contains a number of miscellaneous papers which M. Poincaré had intended to bring together as the fourth volume of his contributions to the philosophy of science. Its content is partly new and partly old. To the latter material belong chapters four and five, which review and complete the author's attacks, incorporated in the second part of "Science and Method," upon the Cantorians, as represented by Russell and Hilbert; chapters two and three, which carry on the analysis of space and geometry begun in Part II. of "Science and Hypothesis," and continued through Part II. of the "Value of Science" and the first chapter of the second part of "Science and Method"; and, perhaps, chapter seven, on "Les Rapports de la Matière et de l'Ether," which is closely related to the second part of "Science and Method." However, M. Poincaré is always worth while when he repeats himself, for his mind never stands still and, for him, repeated issues are issues refined and subtilized to such a degree that it is not always easy to reduce them to their prototypes.

Of the new essays, chapter one, "L'évolution des Lois," justifies the scientist in refusing to entertain the hypothesis indicated by its title; chapter six, "L'hypothèse des Quanta," discusses a momentous physical hypothesis of Planck and develops from it an astounding suggestion of a discontinuous universe contradicting absolutely the scholastic adage *Natura non fecit saltus;* and chapters eight and nine give us our only glimpse of the author's moral philosophy.

Except for the cosmological implications of the "Quanta," the most noteworthy moments of the book are the assertion of the mutual dependence of logic and psychology (p. 139), and the definition of M. Poincaré's method in language frankly pragmatic, culminating (p. 146) in his first explicit acceptance of the term. Later he identified pragmatism with idealism as opposed to the Cantorian realism. This passage will furnish a real problem to commentators on Poincaré's philosophy, for while his

idealism is expressed in orthodox Berkeleian language (pp. 158–9), the whole analysis of the relation of thoughts and things in his previous writings is hard to identify with this position.

The essays concerning morality, chapters eight and nine, are unfortunately too brief to do more than define roughly the scientist's reaction upon the relation of science and morals, but there is a suggestion here of the same estheticism that controlled the account of creative imagination in "Science and Method" as the dominant factor in a moral situation. That we shall not be led further by him in this direction is by no means the least loss philosophy has sustained in the untimely death of Henri Poincaré.

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JOURNALS AND NEW BOOKS

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. January, 1914. *Über Herbarts Lehre von intelligiblem Raum* (pp. 129–171): BRANISLAV PETRONIEVICS. – Herbart's doctrine of intelligible space is presented and criticized from the points of view of its own incompleteness and of its bearing upon the construction of a real discrete space. Herbart could attribute no objectivity in the usual sense to the intelligible space. His position here and that of his successors is given. The fundamental interests of Herbart which the doctrine of intelligible space served are treated in some detail. *Die Entste-hung des stoischen Moralprinzips* (pp. 171–188): GOTTFRIED BOHENBLUST. – The Stoic teaching is rooted in Heraclitus; and the emphasis on self control and conformity to the All is to be considered practically an emphasis on equivalents. Sources are cited and later Stoic development treated. *Zur Geschichte der Skepsis. I. Franciscus Sanchez* (pp. 188–223): A. CORALNIK. – The Portuguese Jew Sanchez (1552–1632) is treated as a type of the skeptic in natural science, of which there are examples from Sextus Empiricus to Boutroux, Mach, and Russell. Sanchez attacked Aristotelian syllogistic reasoning and said, "Why do you constantly talk of conclusions and not of things?" Science is the complete knowledge of things, and that is not attainable. Sanchez never investigated the concept of causality, and, in so far, is more a nominalist than a skeptic. He was caught in the terms and ideas of Scholasticism; yet in his emphasis on the use of the senses he was modern. *Das System Benedetto Croces* (pp. 223–235): ECKART V. SYDOW. – A condensed presentation of Croce's fundamental position on concepts, with the chief points of his views on the nature of Esthetics, Logic, Economics, and Ethics. This division of the disciplines indicates the four possible categories—the beautiful, the true, the useful, and the good. *Rezensionen. Die neuesten Erscheinungen auf dem Gebiete der Geschichte der Philosophie. Zeitschriftenschau.*

REVUE PHILOSOPHIQUE. August, 1913. *La dysbiose* (112–157): A. MARRO. – Three factors determine homicide, "psychic hyperesthesia," "impulsive automatism," and the anti-social sentiment (la dysbiose). The present article traces the growth of the anti-social sentiment and expounds its connection with the instincts of self-preservation, sex, and social sympathy. *Le problème moral: Idées et Instincts* (158–182): C. BAUCHAL. – A study of the evolutionary nature of moral instincts and moral ideas. "Morality adapts itself to the structure of society in such a way as to secure the equilibrium of the forces which constitute that structure." To the principle: "No society without morality" it is necessary to add: "No morality without a society." *La psychiatrie et l'éducation morale des Normaux (fin)* (183–201): A. LECLÈRE. – Considers the value of psychiatry in practical pedagogy, particularly in connection with the education and moralization of the defective, morbid, etc., mind. *Notes et documents. De Descartes à James:* A. D. H. *Analyses et comptes rendus.* Georges Dumesnil, *La sophistique contemporaine:* HUBERT. Pierre Delbet, *La science et la réalité:* FELIX LE DANTEC. Lloyd-Morgan, *Instinct end Experience:* HENRI PIÉRON. Theodor Lipps, *Psychologische Untersuchungen: Zur Einfühlung:* G. L. DUPRAT. *Notices bibliographiques.*

Brown, Warner. The Judgment of very Weak Sensory Stimuli. University of California Publications in Psychology. Berkeley University of California Press. Pp. 70.

Samter, Ernst. Die Religion der Griechen. Leipzig und Berlin: Verlag von B. G. Teubner. 1914. Pp. vi + 16.

Schiele Friedrich Michael, and Mulert, Hermann. Friedrich Schleiermacher Monologen nebst den Vorarbeiten. Leipzig: Verlag von Felix Meiner. 1914. Pp. xlviii + 199. 3 M.

This book forms Volume 84 of Meiners Der Philosophischen Bibliothek. It is a critical edition and contains an introduction, bibliography, index, and notes.

NOTES AND NEWS

AT the meeting of the Aristotelian Society on June 8, Mr. David Morrison read a paper on "The Treatment of History by Philosophers." "Can historical process be adequately explained by principles which have sufficed for the explanation of the processes of inanimate nature? or, if it can not, are we compelled to question whether, after all, mechanical principles suffice, even for the explanation of the world of nature? In any consideration of final cause in history we are compelled to face the question of the nature of time and its relation to ultimate reality, and we are forced back to the source and primary meaning of causality as we find it in ourselves as active or efficient. A use of the principle of causality, applicable to most scientific investigations, seems not strictly acceptable when we deal with human causes, unless it can admit spontaneity or individual activity as a fact. The question of the freedom of the human will

is thus a quite real question for any one writing a philosophy of history, and so also is the question of the reality of time. If time is unreal, then what we see in history may, indeed, be the fragmentary presentation of something eternally perfect; but it may give us only glimpses of an ultimate chaos. If time is real, the end is not yet attained, and seems, indeed, never completely attainable, and that to some people appears an insuperable objection. But the thing must be one way or the other. The relation of these two views of the nature of time to the philosophy of history, was illustrated at length by comparison of the theories of Dr. Bosanquet, M. Bergson, and Professor Varisco. It was shown that for all these writers, history presents philosophy with problems which can not simply be ignored, problems connected with such concepts as efficient and final cause, finite personality and value, and with questions as to the reality of time, the nature of real possibilities, the relation of mind and body, and the relation of mechanism and teleology. The contest is ultimately between spontaneity or individual activity, and the scientific concept of inert matter as a constant quantity. We can not decide the ultimate essence of value without deciding the significance we are to give to feeling. The distinction of selves is not overcome, even in our highest emotional experience, although that may give rise to osmotic processes among selves, and it is doubtful if even the most rapt mystic would be satisfied, if the value he realizes in his love of God were preserved as another's, and not as his experience. In history we lay our count with nothing short of the whole world, and this world has produced those highest emotional experiences which alone have rendered tolerable for us much else that it has produced. Without the existence of that great scale passing from simple human happiness to supreme exaltation of soul, should we ever have spoken of value as something actually existing in the world? The president, in opening the discussion, said that he considered that much injustice had been done to the school of writers who follow Mr. Bradley and Mr. Bosanquet in representing their doctrine as one of the unreality of time. They did not declare that time is unreal, but that it is not ultimate in the sense that it contains reality; reality contains it, it is one of the features contained in the absolute. He illustrated this in calling attention to the importance attributed by them to historical development, and more particularly, to the contention of Mr. Bosanquet, that real value resides in what is universal, and that there is no value in psychological states as such, but only in so far as they are mental states, cognizant of what is of universal significance. This view had been even more strikingly illustrated recently in the works of the Indian mystic, Tagore. Dr. Wolf held that the philosophical historian approached his problem in a more proper spirit when he tried to determine the kind of value history has, rather than what he would like it to have. Mr. Mead said that if we take history in block, it is impossible to find meaning in it. If a philosopher is going to consider any scientific matter, he will surely have to dissociate fact from allegation and unproved theory. Looking at history in this way, we see it as a mixture of fact and unproved theory, and we can hardly imagine meaning to run through both. This is the distinction that modern historians

are seeking to establish between *Geschichte* and *Storicismus.* Mr. Carr emphasizes the tendency in each of the three philosophers discussed in the paper to insist on the impossibility of cutting universals, values, spiritual reality of every kind, free from their attachment to scientific reality. However important the value we give to conscious experience, however vastly the spiritual overflows the material and temporal, it is in indissoluble relation with it, and we can give no meaning to life or mind entirely detached from the materialism or mechanism of nature. Mr. Tudor Jones, Mr. Worsley, and Mr. Shelton also spoke, and Mr. Morrison replied."—*Athenæum.*

THE following letter has been sent out by the Comité International de la Médaille et de la Fondation Henri Poincaré:
Messieurs:

Pour rendre hommage à la mémoire de Henri Poincaré et pour attacher son nom à une Fondation scientifique, les Membres soussignés du Comité international, d'accord avec la famille du grand savant, ont l'honneur de proposer à ses amis, à ses confrères, à ses collègues, à ses admirateurs de tous les pays, de vouloir bien participer à une Souscription internationale destinée:

1° A frapper une Mèdaille à l'effigie de Henri Poincaré;

2° A constituer un Fonds dont les arrérages seraient employés par l'Académie des Sciences à encourager ou à récompenser de jeunes savants qui s'occupent des parties de la Science dont le génie de Henri Poincaré a assuré le progrès: l'Analyse mathématique, la Mécanique céleste, la Physique mathématique, la Philosophie scientifique.

Une Médaille de bronze sera envoyée aux personnes dont la Souscription sera égale ou supérieure à 25 francs et inférieure à 50 francs; une Médaille d'argent sera envoyée aux personnes dont la Souscription sera égale ou supérieure à 50 francs.

The letter is signed by leading European philosophers, psychologists, scientists, statesmen, and men of letters. Contributions to the fund should be sent to M. Ernst Lebon, Secrétaire-Trésorier, rue des Ecoles, No. 44^{bis}, Paris, 5^{e}, France.

THE completion of the third edition of "The Golden Bough" has suggested to the many friends and admirers of Dr. J. G. Frazer that the present is a suitable time to offer him some token in recognition of his great services to learning. It is proposed that a Frazer Fund for Social Anthropology be established to make grants to traveling students of either sex, whether connected with a university of not, with a view of their investigating problems in the culture and social organization of primitive peoples, a department of anthropology which Dr. Frazer has always been eager to promote. Contributions to the fund may be sent either direct to the secretary and treasurer, Mr. F. M. Cornford, Trinity College, Cambridge, or to the "Frazer Fund Account," Messrs. Barclay and Company, Mortlock's Bank, Cambridge.—*Nature.*

THE following new psychological journals have recently been launched: *Archiv für Religionspsychologie;* edited by W. Stählin; published by J. C. B. Mohr (Paul Siebeck), Tübingen. Subscription, 12 Marks. *Münchener Studien zur Psychologie und Philosophie;* edited by Oswald Külpe and Karl Bühler; published by W. Spemann, Stuttgart. Each number sold singly.

THE editors of the *Psychological Bulletin* have announced that owing to the large amount of experimental material submitted to the *Psychological Review,* for which that journal has no available space, an effort will be made to establish a *Journal of Experimental Psychology* next fall, under the editorship of Professor John B. Watson.

THE University of Paris has approved the nomination of Professor James Rowland Angell, head of the department of psychology, and dean of the faculties of arts, literature, and science in the University of Chicago, as lecturer at the Sorbonne in 1915.

DR. ALOIS RIEHL, professor of philosophy at Berlin, has given the seventeen thousand marks presented to him on his seventieth birthday for the establishment of Dozentenhaus, intended to be a hall of residence for lecturers at the university.

THE Macmillan Company is about to publish "Greek Philosophy—Part I. Thales to Plato" by Professor John Burnet. The work will be one of the series of "Schools of Philosophy," edited by Sir Henry Jones.

DURING the third and fourth weeks of June Professor C. J. Keyser, of Columbia University, delivered a series of three lectures on science and religion at the University of Montana.

THE Hon. Bertrand A. W. Russell, F.R.S., late fellow of Trinity College, Cambridge, has been elected Herbert Spencer lecturer at Oxford University for the year 1914–15.

THE works of Professor Henri Bergson have put upon the Index, on the ground, it is said, that their plausibility is not less dangerous than frank materialism.

PROFESSOR A. K. ROGERS, of the University of Missouri, has been appointed professor of philosophy at Yale University.

Vol. XI. No. 17. August 13, 1914

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

THE COMING PHILOSOPHY

THE following pages, though some controversial strains may run through them, are inspired on the whole by a sense of pleasure and relief. I have read Professor E. B. Holt's book on "The Concept of Consciousness" and I have understood it. At least I think so; and if the sequel should prove the contrary, I hope the author or his friends will admonish me publicly or privately. Impotence to understand the new American philosophy has weighed upon me for years. The trouble could hardly lie in any want of sympathy on my part with the general direction of the school nor (what is a great bond) with its aversions; indeed, my "Life of Reason" was taken in some quarters for a contribution to the movement. Could I have become afflicted so soon with the intellectual deafness of age? Or were the new developments of the school so profound and so scientific as to baffle my ignorance and superficiality? There may be something in each of these explanations; but now that after long and painful efforts I feel I have overcome the difficulty, I do not hesitate to say that it lay chiefly in this—that the new American philosophy (a fusion of transcendentalism, pragmatism, immediatism, and logical realism) is itself perplexed by confused thinking, half-meant, random assertions, undigested traditions, uncouth diction, and words turned from their right use. Never was a group of thinkers so sophisticated and so ill-educated; Greek sophistry was perverse, but it was skilful; medieval scholastic language was barbarous, but it was plain. "It is said," Mr. Holt writes (p. 313), "that a third [theory] has been devised by Dewey, which I regret my inability to discuss because after careful perusal of the words I have been unable to gather a connected meaning." Now what has happened to Mr. Holt with one of his colleagues has happened to me with most of them, and in a lesser measure with Mr. Holt himself: not that his style is at all better, but that his wits are sharp, he leans on logic and physics more unequivocally, and above all he carries his doctrines out boldly to their extreme consequences, and so relieves us of the suspicion that he might not have meant in the beginning what he seemed to say.

The fundamental thesis is this: that consciousness is nothing but its immediate objects, which are all exactly what they would be if no one was conscious of them. These objects are of every sort—terms, propositions, sensible qualities, relations, values, emotions. They are all universals, that is, they are all capable of being repeated without losing their identity; and the only sense in which they may become particular is that, when repeated in a determinate context, the object so individuated can not be repeated again, unless, indeed, the whole context is repeated; so that (unless the world goes round in cycles) each fact in it is particular, although, when abstracted from its context, it remains a universal still, and is identical with all the other instances of it that may be found in other contexts. When any of these beings—say the disc of the full moon—comes under observation, it enters a mental context which is more limited than the context it has in the mathematical and even in the material world; but in all three worlds it remains the same identical universal being, and there is no sense in supposing that it is sometimes a mathematical disc, sometimes a material disc, and sometimes a psychic disc in its nature. It is always that being the entire nature of which is simply to be a disc—a logical or essential disc if you will; and this identical being when it appears in the evolution of nature is a disc materialized, and when it appears in consciousness is a disc perceived; not that these are two different sorts of disc, but the same universal disc in different contexts.

An implication of this view, which Mr. Holt is far from deprecating, is that no being is intrinsically logical, psychic, or material, but that each may enter any of these fields, so that feelings and purposes may be a part of natural objects, wooden tables and multiplication tables may be parts of the mind, and equations and laws may be parts of both mind and matter; while mind and matter, with all that is in them, remain parts of the realm of logical or neutral being. A point, or the binomial theorem, is nothing essentially mathematical or ideal; it may be a physical and existential element, and indeed material things are composed of nothing but universals of one sort or another, evolving in accordance with some formula itself abstract and universal. Even thought is not essentially mental, for it is nothing but the objects thought of—triangles, trees, people—and these miscellaneous objects may lie perfectly well in nature and grow, at the same time that they appear in consciousness and are noticed. Pleasure itself is not essentially psychic. When it is felt it is brought within consciousness, but it may lie unnoticed in the movement and relations of things. The roses that blush unseen do not waste their fragrance, because fragrance is pleasant in itself and can not be wasted; it may merely be missed, and not figure in

the sensations of a dull passer-by. What defines the psychic field, and raises what lies within it to the conscious power, is the response of the nervous system; a response which may be to anything embodied in the environment, at any distance of time or space, and, of course, among other things, to beauties, purposes, and all other values supposed to be essentially immaterial, but really as truly embodied in matter as are mathematical volumes and velocities. Memories and fancies are simply remote or abstract elements of nature to which the nervous system is responding. Furthermore, errors exist in the absence of opinion. The mere apprehension of some neutral being is not an error, nor can any term be false in itself. But when a formula begins to be expressed in a series of facts, that formula is equivalent to the proposition that it *is* so expressed, and to the purpose that it shall be; and if a contrary formula, also in operation, requires different facts to express it at the same point of time and place, one or both must be disavowed by the facts and must fail; and the one that fails will be an error. When we are deceived it is merely that one of these ill-fated propositions actually afloat in the world has come within our hypnotic view. It is a little failure in creation that our errors register and are, as if we registered and were a failure in the Stock Exchange.

This system is an immense simplification, and I can well imagine the sigh of relief and exultation with which the distracted pupil of modern philosophy might greet it. Art remains long, however, in spite of the impatience of genius, and we are not at the end of the story.

It is to be observed—for it is a sign of the times—that the system is confident and ambitious. "We shall one day learn that all being is a single, infinite, deductive system in which the entire variety develops deductively from a relatively small number of fundamental propositions" (p. 164). The aim is not to put together a personal system of philosophy, judicial, imaginative, religious, but rather to discover the system which is in the universe. Such is the aim of science, although scientific men may be less conscious of it and less prone than philosophers to anticipate the total system that might come to light in the end. When philosophers try to be scientific they are apt to fall into metaphysics—I mean into the abuse of making central and generative of the whole universe some principle peculiar to a particular field, in which personally they are most at home; so that their scientific philosophies are personal, after all. Hence the saying of Pascal that the principles of the philosophers are all true, but their systems false, because the contrary principles are true also. Mr. Holt will have it that propositions generate things and that deduction dominates evolution. Now this is pretty plainly an

abuse of logic and a reversion to a Platonic sort of metaphysics. The new logic is no doubt better than the old; it is mathematical instead of grammatical, and it leans on a more thorough and loving study of nature, discerning forms of change—processes, laws, equations—which, in fact, are woven far more intimately and lastingly into the structure of nature than are the plastic types, zoological and moral, on which the ancients doted. But forms of change are not changes, any more than ideals of man are men. To identify definitions with things and deduce existence from ultimate dialectical elements is gnostic procedure; and Mr. Holt's ontological hierarchy has a strangely gnostic air. Here it is, in abridgment:[1] identity, difference, number, the negative, logico-mathematical entities, forms of order, algebras innumerable, secondary qualities, intensity, geometry, higher mathematics, space, time, motion, mass, mechanics, physics entire, chemistry, material things, life, sciences of life (like paleontology), consciousness, psychology, anthropology, history, value.

Before we reach time in this chain of beings we are in the eternal, and although Mr. Holt makes propositions identical with forces and deduction identical with causation (for a realist with the motto that "everything is what it is and not something else" he identifies a good many things) it is clear that in the timeless the only procession possible, like that of the persons of the Trinity, will be by way of essential complement or explication, without creation or change. Of course if we begin by taking a pregnant proposition we shall find that others "follow"; but the succession and the difference between synthesis and analysis lie in our method of survey; in the object there is only a mutual implication of elements, since it is out of time, as our survey is not. Again, until we reach space and material things, various propositions or purposes can not meet in conflict or meet at all, unless they involve one another. How in the eternal menagerie shall identity devour difference, or intensity sting and drive off the algebras innumerable, all of which must remain what they are? The superexistential is a happy family. If the eternal is to suffer it must become incarnate, and a mortal mother must be found for the child. Facts are transformations of previous facts, by which new qualities, themselves changeless, come to take the place of others, perhaps very like them, so that the transition is, or seems, continuous; but these qualities are not facts on their own account, preexisting and coming together in space, like so many atoms, to compose the new being; they are connected by no external relations of genesis, position, or date, but only by those essential relations which must bind them always. I am not so rash as to deny that

[1] Page 155 seq.

an algebraic expression exists for succession—the order of an irreversible manifold in one dimension, or something of that sort; but the fertility described by that formula or any other is not its own, but that of things; else the formula, which is a timeless being, would have tended to breed its material expression always and everywhere from all eternity; and as the negative would have been equally omnipresent and active, creation would have been stifled in the womb, and there would be nothing but a perpetual and universal inhibition of every formula by every other. The initial bias of matter, accident, or brute existence unequally distributed must first give logic its foothold in time and place, if deductive evolution is to be set rolling; it must supply a groundless arbitrary premiss of fact from which local and real consequences may follow. Mr. Holt's metaphysics is too Platonic; it leaves us in the air.[2]

The whole timeless prologue to creation is, therefore, useless for deducing those material objects which, according to Mr. Holt, make up consciousness when the nervous system responds to them; but it is not useless altogether, because without it we should not understand how consciousness catches sight of many things which are apparently not parts of the material environment. If, however, material things are themselves compounded of immaterial elements, any proposition they justify or any appearance they present may be an integral part of them, and, therefore, of the consciousness of them, when one arises. The devil, for instance, sometimes appears or is thought of, and yet, perhaps, is not one of the material irritants of the nervous system; but if the devil is a part of the negative, as he says in *Faust* that he is, he will turn out to have been always a component element of nearly everything on earth; and consciousness, being a cross-section of things on earth, may very easily strike that negative vein in the quartz, and catch the silhouette of Satan in any thing. Unfortunately there are things which it is harder to make room for in the outer world than for the principle of negation. Suppose I am at sea, a prey to mounting

[2] There is, indeed, a very different metaphysical system adumbrated in the new philosophy; a temporal mechanism of qualitative existent elements, *minima sensibilia* and *intelligibilia*, which should foregather, like the atoms of Anaxagoras or the perceptions of Hume, into images and processes. Logistic theory would be driven, I suspect, to such a mechanism of immediate data, if it realized the impossibility of deducing a flux from timeless terms and timeless propositions. But this would be to abandon the courageous metaphysical conceptualism of Mr. Holt, who thinks the concept of flux is a flux in person; it would be to push nominalism into the heart of mathematics, maintaining (as I understand Mr. Bertrand Russell now does) that only the instances of anything (of numbers, for example) have any kind of being whatever, while as for universals, like the numbers themselves, they can be only predicates, and "it is a fallacy even to mention them."

nausea, and at the same time intent on the cruel, insultingly blue vault of heaven. Where, in the environment, is this cruel vault, this insulting blue, and this restless feeling? We might agree on all hands that these things are nowhere, if we consider their intrinsic being; the immediate data of experience need have no place in nature—they may be homeless and unattached, like some heaven of music or religion. Yet Mr. Holt maintains, I hardly see on what evidence, that no being appears to consciousness unless it is actually an integral element, however formal, of the environment to which the nervous system is responding; and the nervous system, he admits, is nothing but a material mechanism responding to a material world. It follows that the vault, the blue, the cruelty, the insult, and the nausea, are integral elements in the scene of my voyage. The nausea travels, I suppose, from the unhappy waves (for the pathetic fallacy is obvious and sober truth for this system) through the decks into the stomach. The vault is presumably a cross-section of the atmosphere; but is it forty miles high, or lower, and at what distance does it sink into the sea? Does the blue color lie on this vault only, as I seem to see it, or does it pervade the air? And are the cruelty and insults there chronically, or only when the seasick passenger passes unheeded beneath? In any case it is a relief to remember that these self-subsisting qualities and feelings, though exactly what we feel, subsist unfelt; the waves are not conscious of their inherent nausea, and the blue sky meets them at the horizon all unseen. In another place Mr. Holt condemns the notion of the subconscious; there may be as much forgotten or unrecovered consciousness as we choose, but there can be no unconscious or subconscious consciousness. I should agree to that; but is not an unfelt feeling much the same thing? Are we not confusing logical character with natural existence, essences with facts? The neutral and timeless being of nausea, insults, cruelty, concavity, and blue is possible being only; it is the ideal or description of how these things would look if they were seen, or what form they would possess if they existed. This unchangeable essence of each of them is quite independent of consciousness, but it is equally independent of waves, sky, ships, stomachs, eyes, and the whole flux of existence. What, I pray, is a nausea, or a cruelty, or an insult, or a landscape, which is not merely the character these things would have when perceived, but is an integral unperceived element in the actual material world? In general, what is the meaning of a nervous system *responding* to a secondary quality, a feeling, a proposition, or anything but a motion? Are we not being buffeted by a maddening perversion of language? Of course the reaction will vary with the quality of the motion that provokes it, and if, speaking in a way at

once pedantic and slovenly, we say that a formula for motion *is* a motion, and that the sort of motion the nervous system reacts on when we see blue *is* blue, we may proclaim that the nervous system reacts on the formula and the color as given in consciousness. But it is a forced generalization to conclude, because in the case of gross contacts we look for what actually touches us, that in all cases we are conscious of all our nervous system responds to, and conscious of nothing else; or that because when we react upon light we are conscious of a bright color, it is this bright color that we react upon. The light reacted upon must have a direction and a motion, neither of which appears in the bright color; or are we seriously expected to believe that when a plant reacts differently on light of different rates of vibration it reacts on different colors as the human eye perceives them, and perceives the very same without eyes? Yet Mr. Holt says that animal psychology is a more solid science than human psychology because by seeing what animals react upon we can see at once what they feel, whereas tiresome people who talk might tell us they felt something different. And I think that the science of animal behavior is, indeed, more solid than descriptive ethics; because when an animal reacts on colors, it is easy to translate that stimulus and that reaction into mechanical terms, abstracting from those of our own perception; whereas in descriptive ethics our private prejudices are hard to drop, and the mechanical equivalent for a code of honor or an ascetic discipline escapes us altogether.

Mr. Holt runs into these extravagances in order to avoid "introjection"; but I think his conception of pure or neutral being affords a simpler means of avoiding it, if we admit—what the wise have long known—that experience is full of unsubstantial objects, that is, of pure or neutral beings not embodied in the material environment to which the nervous system responds. This would not require us to say that these unsubstantial objects—dreams, fictions, secondary qualities, mathematical and formal entities—are in the mind, much less (absurd phrase) that they are made of mental stuff. The unsubstantial is made of nothing; and to speak of the stuff that dreams are made of, or of the very coinage of the brain, is to speak of what is coined or made of nothing, since like the unsubstantial fabric of a vision it leaves not a wrack behind. Consciousness itself is unsubstantial and not only is made of no stuff, but has no filling; and the phrase "contents of consciousness" is a clumsy and misleading metaphor, taken too seriously by the Germans. Mind can have no contents, but only objects. Of course, I should not *take it into my head* to quarrel with such idioms as that things *occupy the attention, come into one's mind,* or *fill one's thoughts;* but no one blessed with a little mercy towards language would press these

metaphors so hard as to infer that ideas or dreams or arguments were so many gold-fish made of attention-stuff, swimming in a consciousness that filled the bowl of a skull. Words are feathery things not made to be pressed, but to be sent back and forth lightly and smartly, like a shuttlecock; and philosophers who press them in search of accuracy only pound them to death. We say loosely that things are in the mind when they are nowhere; and what leads us into that way of speaking is the fact that these homeless objects enter the history of the world only when somebody thinks of them and in virtue of that fact. But they remain essentially what they are severally—music music, mathematics mathematics, angels angels—and are not mental in substance, locus, or ontological relations; for to enter the history of this world is not ontologically necessary to any timeless and merely formal thing.

However much we may strive to identify consciousness with its objects, if we admit that consciousness exists at all, we must admit, I suppose, that it makes a new group or specious unit out of those objects. Selection individuates the part selected. What is excluded, though it remains in being just as before—materially, if its being was material, logically, if its being was logical—does not attain that sort of intensity or actuality which attention bestows on the conscious part. If the new realists deny this, would they not do better not to attempt a definition of consciousness at all, but to deny that it is definable, because like being it is universal? If what the nervous system selects is not thereby suffused with any specious unity, emphasis, or luminosity which it did not have before, must we not assume that all being, and every possible cross-section of it, vibrates with consciousness, and that every quality, proposition, and term carries with it the perpetual apprehension and assertion of itself? In that case the nervous system would do nothing for consciousness, and we ought to agree with M. Bergson that it is not an organ of consciousness at all, but only of motion. But then what a mystery it becomes, or rather what a contradiction, that consciousness should actually carve out the parts of being that the nervous system responds to, and should surround them with a false darkness!

"A navigator," Mr. Holt writes, "exploring his course at night with the help of a searchlight illuminates a considerable expanse of wave and cloud . . . and other objects that lie above the horizon. Now the sum total of all *surfaces* thus illuminated . . . is defined, of course, by the contours and surface composition of the region . . . and by the searchlight and its movement, and by the progress of the ship. The manifold so defined, however, is neither ship nor searchlight, nor any part of them, but is a portion (oddly selected) of the region through which the ship is passing. This cross-section,

as a manifold, is clearly extended in space, and extended in time as well, since it extends through some watches of the night. It includes also color qualities. This cross-section, furthermore, is in no sense inside the searchlight, nor are the objects that make up the cross-section in any way dependent on the searchlight for their substance or their *being''* (p. 171). This simile expresses admirably the manner in which the field of external perception is unfolded as we live; and we need not quarrel with the fact that the name consciousness is not given, as we should have given it, to the light issuing from the lantern, but rather to the things on which it falls. That is, after all, a matter of language, though not unimportant, since it favors the silent elimination of actual consciousness from the problem. What is to be noted is that a searchlight playing on things divides them physically into a lighted and a dark portion, as the sunlight does the moon; and this demarcation is obvious to any bystander. When the light of thought, however, or even of vision, falls on half an object, no dividing line whatever is visible to a third person between the two halves. Besides, the simile does not express well the manner in which things lapse from the field of attention or are sustained in it. This field is more like the wake of the ship, or the luminous tail of a comet, with a sharp nucleus forward, where attention bites, and a vague dishevelled trail behind, in which some elements are prolonged or keep reappearing, and others go under at once, while many new eddies and figures are formed of themselves. In other words, the field of consciousness, not to speak of consciousness itself, is a symphony of memories, suggestions, impulses, and inventions; it is a life and a discourse, rather than a cross-section of any external world, even of one conceived as compacted of all the logical terms and relations that might describe it.

About the unity of consciousness Mr. Holt says rather petulant things, such as that the idea of succession *is* a succession of ideas, although ''the representative theory would never countenance anything so obviously true.'' He goes on to explain that when we imagine anything extended our mind is extended, and when we imagine anything past, our mind is past, so that, I suppose, when we imagine something future or something unreal, our mind must be future or unreal, too. This result is instructive; it comes logically enough of identifying active cognition with passive images, and passive images with operating material objects—quicksands of confusion which are none the firmer because much modern philosophy is built upon them. In the cognition of succession there is a movement perceived, and if the elements that seem to take one another's place are called ideas, there is a given succession of ideas. But in that sense of the word idea the actual experience of succession is no idea; it is an act of ap-

prehension, such as Mr. Holt prefers to ignore. Yet he would not maintain, I presume, that every succession of ideas, however discrete and disjoined, is an idea of succession; but why not, if one thing simply *is* the other? I know how irritating the unity of consciousness can be made. What have we not suffered from the ambiguities and the humbug hanging about a unity that unified now because it was the flash of attention or synthetic glance of apprehension itself; again because it was the nominal ego identical in all experiences, whoever might have them; a third time because it was a person that endured as events passed and gathered them one after the other in his capacious memory; once more because it was a grammar of cognition, peculiar, but essential to the human mind, which limited and strained human experience, passing it through the sieve of innate faculties; or finally because it was a creative fiat that generated all the universe and its history, according to a dumb inward demand? All these unifications except the first were speculative, and either merely nominal, or loose and not extant; and if we understand by consciousness the scattered experiences of a human being from the cradle to the grave, I should agree with Mr. Holt that the unity of consciousness has been much exaggerated, and that such unity as exists in a man's life is to be measured by the degree in which his thoughts and actions embody some coherent genius or character. The unity of apperception, however, can not be exaggerated because it is no matter of degree or quantity. It is a constitutive form, as forms of articulation constitute words, and what is not subject to it simply does not enter the mind. It is the mental counterpart to the response of the nervous system. To think you have composed consciousness by collecting its objects is like thinking you have created knowledge by collecting a library. Mr. Holt overlooks the mental expression of animal responses because throughout he understands by consciousness not awakened attention contrasted with unconsciousness, but the group of objects noticed contrasted with all else that lies in the field of being. Now to be gathered into a library distinguishes a group of books from all others quite as effectually as to be read, chewed, and inwardly digested. In fact it distinguishes them better: because it is easy to discover what volumes have or have not their place upon certain shelves, but who shall say what mastication, digestive juices, forgetfulness, and spontaneous variation may have let into a man's mind in reading? How much simpler, then, to maintain boldly that reading does not exist, but only book-buying, and that consciousness is not any inward difference between feeling and not feeling, noticing and not noticing anything, but is that collection of things which secure a response from the nervous system, as a library is that collection of books which have secured a nervous response from the book-buyer.

Yet is it not a pity that to make things simpler, or to satisfy a mania for "monism" and a certain joy in originality, the heart-searching discoveries of German philosophy should be hushed up? For no serious attempt is made to refute or to reinterpret them; they are simply flouted.

By this unconcern we undoubtedly rid ourselves of something inconvenient in the theory of knowledge, whether the image, or the thing, or knowledge itself is not quite clear, and perhaps ought not to be asked; at any rate, we avoid dualism and the representative theory. What are these? Anyone who sees a difference between one thing and anything else is, in one sense, a dualist, and at the same time a monist, since he sees a relation between the two things. In this particular case, however, is dualism the doctrine that the act of knowing is one thing and the thing known is another? Or is it rather the doctrine that knowledge of things is impossible because they are screened from us by ideas in the mind, which, as Berkeley and Kant taught, are the *only* objects of knowledge? The latter sort of dualism should indeed be short-lived, since if ideas are the *only* objects of knowledge, things ought never to have been heard of, and may be dropped. But Mr. Holt says (justly, I think) that ideas are a special sort of thing; so that a dualism between material things and ideas, each taken as a distinct group of logical beings, is not impugned by him. Representation, too, is admitted in the sense that one object may be the sign of another, as writing is of speech; but in admitting this Mr. Holt adds that a symbol can represent nothing in the thing symbolized save what is identical in the two; as a map or a photograph represents the distribution of parts, but not the size of the original. To be represented a thing must be reproduced bodily, it can not be merely suggested. Nevertheless a photograph by its chiaroscuro, and a map by conventional tints, outlines, or numbers, represent the relief of the object without reproducing it; and a written word, which reproduces only the order of elements in the spoken word (and this only if we disregard diphthongs, silent letters, and other anomalies) nevertheless suggests the sound, which it does not reproduce. Do the individual letters represent or do they not represent the wholly different individual sounds which we utter when we read them? If a sign represents only such elements in the original as it reproduces, I hardly see how it conveys anything further than what it is bodily, or how it remains a symbol at all rather than a smaller and intransitive original in its own person. Whatever use of the term representation we choose to adopt, whence does consciousness fetch the heterogeneous supplementary elements which are undoubtedly evoked? I should agree with Mr. Holt or with any critic of psychological association that it would be silly to

say, meaning it literally, that the mind furnished these supplements. *Nemo dat quod non habet;* and until the association has operated and hatched the image afresh, the mind does not have that image to give. Doubtless it is the machinery of the brain that from time to time gives birth to it, as the atmosphere gives birth from time to time to "identical" flashes of lightning; but that carries us even farther away from the given symbol.

All this, however, is but a minor complication in our author's argument. The chief offense which representative knowledge gives him, and gives all the immediatists, is not that it is representative, but that it is knowledge. One object, they admit, may represent another, but that an idea or thought that has none of the qualities of its object should know and describe that object is what altogether confounds them. Of course, if thought is ignored and the word idea is used passively and intransitively as Berkeley used it, for an image or a definition, an idea can not know anything different from itself, nor anything identical with itself, nor anything whatever. It is not cognitive at all, not being a consciousness or spirit, but only an object or term. Idea, however, in psychology is properly a transitive term like opinion or sensation indicating an operation of the mind upon an object, not the dead object itself; it is the act of conceiving, as sensation is the act of feeling. In this active sense neither ideas nor sensations can resemble, in any pertinent respect, that which they know or feel. They are cognitive or intellectual experiments, having intent, scope, and intensity, but no more identical with their objects than shots are identical with their targets; and I do not observe that a shot, in order to hit, has to become like its target in color, shape, or substance. Of course, if people insist that intelligence, or the faculty of knowing, can not exist, because they can give no account of it, and that, therefore, all men and angels must be without it, and are doubly fools if they pretend to have such a thing, we can only bow our heads; yet the aversion of recent philosophy from intelligence can not destroy intelligence, so long as life continues to find its expression in it. If logic and psychology unite in proving that it is impossible to be a mind, because everything must be an object or a set of objects, logic and psychology must permit the mindful few to disregard them: for a thing is possible enough if it occurs.

To cut Gordian knots in this fashion, by denying some chief element in the situation, is more dazzling than satisfactory: witness how the idealistic solution, that makes everything so easy by denying the existence of external things, has left us chafing and returning to our vomit. All the religions and philosophies in the world leave the world still standing, and soon seem a very little thing in it. Many years ago the Scotch realists decided to purge away the ideas;

but since that medicine took no effect, the American realists have now decided to double the dose, and to abolish the mind as well, telling us that what we call ideas and what we call minds are simply parts or collections of objects. I suspect that what seems to some of us the blindness of this procedure seems rational courage to these realists only because, in spite of their name, they are still idealists at the back of their heads. Mr. Holt speaks (preface, p. xi) of the "concrete whole of experience," meaning, apparently, the whole universe. Yet the universe, according to his explicit doctrine, is independent of experience and far outruns it on every side, so that it can be called the world of experience only by accident, because experience has touched a corner of it, as America might be called the world of Columbus. Yet when it is instinctively named "the concrete whole of experience," I suspect that it is being identified with experience as a whole, and that we are being pulled back into absolute idealism, from which this sort of realism has not really cut loose. For if actual consciousness was assumed at the beginning as an unquestionable correlate of all being, one can see why the need of actual consciousness should not be felt when the field of view of some particular animal is considered. If the group of things perceived by that animal could be somehow delimitated, the mental presence of that group need then give us no further pause, since mental presence was assumed to be native to all being from the beginning. If this suspicion of mine is unjust, I should be glad to have it dispelled; but how else are we to explain that a whole book should be written on the concept of consciousness, and the concept of actual consciousness should not once be broached in it?

The identification of actual things with the form or description of them leads to another paradox, with which all the new realists seem especially pleased, namely, that various minds, in knowing the same thing, know one another, and are, to that extent, the same mind. If a mind is its images, and its images are its object, a mind evidently can know nothing but itself (again the most orthodox idealism) and when two minds are identical, in that they have the same object, each in knowing itself knows the other also, and no less directly, although, it must be confessed, without knowing that it does so. If when Othello and Leontes are jealous the quality of their jealousy is the same, their two consciousnesses will be, in so far, identical; and as they know the same thing they are in so far the same thing and know and are one another. This will not prevent each of them, I conceive, from remaining perfectly ignorant of the existence of the other or of the fact that the other was ever jealous; though the quality of jealousy which each has endured may be the same.

This new philosophy, then, is certainly not out of the wood, but it has cleared some hopeful paths in it. It posits a whole realm of neutral or essential being; it reasserts that truth, form, and material existence are independent of knowledge; and it places consciousness, after all, on a different level from its objects, since it admits that consciousness comes and goes, not with these objects, but with an animal reaction upon them. Mr. Holt in particular has a sense for the pathos of the natural world, in its intelligible structure and tragic fertility, a sense which makes him rise sometimes from his needless paradoxes and controversial spleen into a sincere eloquence. "I have asserted these ideas," he says (pp. 257–258), "to be mere vague nuclei of neutral entities, denizens at large of my ridiculous realm of being, nonvital, unreal, untrue, and un-everything else save un-being. . . . But the *meanings* I have intended are just those things that we meet every day—both small and large, vague and clear, faint and glaring, soft and harsh, pleasant and agonizing, living and dead." Forgetful and reckless as this philosophy may be, and partly because it is rather forgetful and reckless, I feel that it is the coming philosophy: I say *coming,* not *coming to stay.* Philosophies come and go not for their truth or falsehood, but for emphasizing and extending insights prevalent in particular circles or ages. The next age or circle finds that emphasis wanton and that extension extravagant; something else, it feels, is what is really obvious and typical. A hundred years ago people could be enthralled by the idea that the universe and all that therein is were simply terms in their personal experience, created and projected by a lurid genius struggling in their heart. We are no longer so romantic; yet, in our democratic humility, some of us are secretly sentimental; and it melts us to be told that nature, falsely thought mechanical by our heartless elders, is the work of a tender genius, not personal or lurid now, but laborious, crawling, and multitudinous, which is making, with a mother's pangs, for a life all growth and love. A vitalist, evolutionary, mystical philosophy is accordingly not without its vogue. In America, however,—and this is very significant, because the new America is simply modernism unencumbered—the shrill note of mechanical action and the shrill intelligence adapted to it dominate everything else; and a philosophy which sees in outer things the obvious and typical reality and in the mind merely the same outer things in so far as they are responded to in action, is just the philosophy, I should say, to catch the ear of the times; for only those who are docile to their age are able to instruct it. Besides, these external things are conceived at once pictorially, to conciliate the impressionists, and algebraically, to conciliate the calculators. Error is identified pragmatically with failure and with buried opinions—so that if I foresaw and refuted a coming

superstition, it is I that should be refuted by it and proved superstitious—and purpose is identified with presumable destiny or movement in any assignable direction; identifications which are also very modern and American in spirit. All this is, in a sense, as it should be. Other insights have had and will have their innings; and it would be unreasonable to demand spiritual concentration or great flights of thought from those whose cue is to deny thought and spirit, or to explain them away. But how deny or explain away actual thinking? Simply by identifying thought with its immediate objects, and then looking for these objects in the texture of the material world. Hence a double inquiry forces itself upon this school, an inquiry for which it is well equipped and for which the moment is propitious; namely, to analyze more sharply than any one has yet done both the immediate objects of experience and the texture of matter. Given a scrupulous inventory of each of these spheres (including the logical, non-substantive penumbra of relations surrounding them, and of things that may be truly said of them) it would be easy to confront the two and see if one is really a portion of the other. Meantime, whatever the result might be on that issue, science would have gained a closer view into some dark corners of nature.

G. SANTAYANA.

THE EXTERNALITY OF RELATIONS[1]

THOSE realists who hold the doctrine of the externality of relations have seemed to be more interested in drawing out the consequences of their principle than in discussing or proving it. It is not an altogether grateful task to examine the problem critically, because it has been formulated in such a context that what one has to say is apt to seem abstract formalism to one party to the debate, or an elaborate *petitio* to the other. Some division of the question seems to be the first thing needed, and this paper is intended as a modest attempt to further it.

What, then, in the first place, is meant by "externality of relations"? In the "Platform of Six Realists" the principle is affirmed by all but one of the six, but it is fully defined only by Mr. Marvin and Mr. Spaulding, while the principle on which all five agree is really the possibility of one entity entering unchanged into more than one relational context. Besides this, there is certainly a difference of emphasis, if nothing more, between the formulation of Mr. Marvin and that of Mr. Spaulding. But as these gentlemen always appeal to Mr. Russell when this question is under discussion, I sup-

[1] Read before the Western Philosophical Association at Chicago, April 9, 1914.

pose it is fair to take his statement of the doctrine as canonical; and according to this, it consists of two propositions: "(1) Relatedness does not imply any corresponding complexity in the *relata;* (2) any given entity is a constituent of many different complexes."[2]

Three proofs seem to be offered for this doctrine by its advocates; and I think that these proofs help one to understand the conclusion, though the possibility of this is denied in their logic. These proofs are (1) that from asymmetrical relations; (2) that from the nature of analysis; and (3) that from the relations of simple terms.

An asymmetrical relation is defined by Mr. Russell as one in which one term is so related to another that the second does not in its turn bear a similar relation to the first; xRy, but not yRx. Typical cases of such a relation are that of a whole to its part, or of a greater quantity to a less. Mr. Russell argues that such relations are unintelligible on both the monadistic and the monistic theories of relation, that is, on the theory which grounds the relation in the nature of the related terms and, therefore, he holds, reduces every relation to two propositions; and on the theory which grounds the relation in the system to which its terms belong and ultimately, therefore, in the nature of the universe or of the absolute. He also holds, and argues elaborately to show, that such asymmetrical relations are involved in number, quantity, order, space, time, and motion. And from this he draws the conclusion that "we can hardly hope for a satisfactory philosophy of mathematics so long as we adhere to the view that no relation can be 'purely external.'"[3]

This is obviously a topic which the inexpert in modern mathematics will very properly be cautious in approaching. Over this gateway to the new realism, as of old over that to the Academy, there is a warning inscription; and in this case it seems to read: "Let no one who is not versed in Cantor, Dedekind, and Frege, enter here." Perhaps this is why this particular proof of the externality of relations has usually been accepted or rejected as proffered, without discussion of its specific grounds. But it is open to the layman to notice that a strong party among the mathematicians have opposed Mr. Russell's conclusions. This mathematical opposition has at last made its appearance in the philosophical debate in the interesting article of Mr. Schweitzer.[4] In the course of this article Mr. Schweitzer maintains two theses which, if allowed, dispose of this proof. They are: (1) that asymmetrical relations are no more ultimate in mathematics than symmetrical; (2) that asymmetrical mathematical relations are explicable on an internal basis. I speak as a fool; but Mr. Schweitzer seems to make a good case, and I am

[2] "The Basis of Realism," this JOURNAL, Vol. VIII., page 158.

[3] "The Principles of Mathematics," page 226.

[4] This JOURNAL, Vol. XI., page 169.

glad to avail myself of his intervention as a dispensation from this phase of the argument.

But the general theory of relations which underlies this discussion is in any case a philosophical topic; and it is to this that I confine my remarks under this head. Mr. Russell asserts that the only alternative to the external theory of relations is a choice between monadism and monism, between Leibnitz and Mr. Bradley. One or neither! I would suggest that the proper answer is, both—and possibly something which is not included in either theory taken by itself. No terms confront us which are self-sufficient in such a way that they contain within themselves all their relational destiny; nor, on the other hand, do they merge in a bare identity or wholeness which leaves no room for their specific differences. Reality is an intelligible system of distinguishable entities. When we distinguish these entities, we recognize that they have specific natures of their own; when we say that they are related in this way or that, we recognize that their natures are such as to allow them to take a certain position in this or that systematic connection. However inseparable the specific natures and the system may be ontologically, they remain separate aspects of reality for our thought. Apply this to Mr. Russell's chosen example of the assymetric relation—*A* is greater than *B*. *A* and *B* each have specific magnitudes; thus the relation in question is grounded in *A* and *B*; but not in *A* and *B* apart from the quantitative system to which they belong. In that system these magnitudes have a determinate order; and this is what we mean when we say that *A* is greater than *B*, or that *B* is less than *A*. And if it is urged that this merely postpones the difficulty, which arises anew in regard to the relation of the magnitudes, I would reply that the objection is merely verbal. We do not usually make explicit mention of the systematic background in our judgment, but the judgment in this case really means that *A* and *B* have each their own place in the quantitative system.

The second argument for the externality of relations is based on the knowledge relation. It is said that if this relation is internal to the thing known, knowledge becomes impossible. A usual way of stating it is this: "If knowledge modifies its object, the object can never be known." Or again, it is said that as all thinking implies the validity of the analytic method, the validity of analysis can not be denied without self-contradiction. The first statement is gravely ambiguous. If it means that all who reject the doctrine of external relations hold that the act of knowing makes or alters the things known, it must be denied; only subjective idealists would say this, and many of them would make serious reservations in doing so. This meaning of the statement is, however, the only one on which

the difficulty it asserts presents itself. The only sense in which we can all accept the statement, "Knowledge modifies its objects," is that of the truism, "All known objects are knowable," or that of the postulate, "All reality is intelligible." *"Omne ens et unum et verum et bonum,"* say the Scholastics. Nothing new in the postulate, certainly; and how trivial the truism! Nevertheless, either accepted, this particular argument for the externality of relations, in the sense in which the doctrine is defined by Mr. Russell, breaks down. For either truism or postulate implies a complexity in the thing known corresponding to the knowledge of it. It is one thing to be so-and-so, and another to be knowable as so-and-so. In fact, I think that if the realists are to maintain the second of Mr. Russell's principles—"Any given entity is a constituent of many different complexes"—in regard to the knowing complex, then they must give up the first. "Relatedness does not imply any corresponding complexity in the *relata.*" It is the same knowable A which is, let us say, an as yet undiscovered disturbance of the ether, and which is afterwards known; this by the second principle. But if so, it is as complex as it is later found to be, and at least is knowable; thus the knowing relation is grounded in it, and the first principle is contradicted.

Mr. Spaulding's "Defense of Analysis" offers another form of this argument. He asserts that the internal relations theory implies, in one of its aspects, that "the parts or elements are all constituted by their relations to all other parts in the same complex." Therefore, "in strict consistency with the constitutive theory, it is impossible to find or pick out, or identify, any entity as a genuine term; but the theory is stated, argued, and known—supposedly as an objective theory—and terms and propositions are identified as just those terms or propositions; and principles of proof are accepted." It follows, he concludes, that the theory refutes itself, since it must use the theory of external relations for both its statement and its defense.[5]

The reply to this is that the dilemma does not hold; external relations are not the only alternative to exhaustively constitutive relations. Relations sometimes constitute terms of discourse, or entities of definition; they never constitute existences.

But the conception of analysis itself is one of the chief difficulties here. Mr. Spaulding says: "The adequacy and validity of analysis can be demonstrated if both the terms and the organizing relations, to whose discovery analysis also leads, are considered."[6] Exactly! But the trouble is, that on the theory of external relations, the relations must be, for analysis, terms of the complex. Mr. Russell recog-

[5] "The New Realism," pages 165, 167.

[6] *Ibid.*, page 168.

nizes this. "Propositions," he says, "are not completely specified when their parts are all known. . . . The fact seems to be that a relation is one thing when it relates, and another when it is merely enumerated as a term in a collection."[7]

Go a step farther. Propositions bear relations to one another, of contradiction, implication, and so on; they are in their turn terms of a higher order. But it would be obviously absurd to say that these relations "imply no corresponding complexity in their *relata*," that they are not grounded in their terms. Take these propositions as known; then the continuity of their nexus is the manifestation to us of the transitive and dynamic character of reality in its most inclusive sense, and of the individual's knowledge as well. It would seem that to this we might all agree; for all of us—realists, idealists, and pragmatists—agree that reality is known in propositions. It is in our conceptions of how this happens that we differ. The neo-realist usually holds that propositions, and other entities, whether existent or subsistent, enter a special type of complex, the knowledge-complex, without undergoing any other change in doing so. The idealist often holds—as for that matter Aristotle seems to have held—that it is just in being known that reality fully is, that it receives its final finish, its *actus*. The pragmatist holds that knowing is a process of doubt-discovery, in which an existent is modified into a (subsistent) proposition. Now I submit that it is at least arguable that each of these three positions, however great their differences otherwise, is consistent with the statement, "reality is known as it is through propositions." But if so, then it follows from what has just been said that they are all three, and that of the realist not least, inconsistent with the external theory of relations.

The third argument for externality I quote from Mr. Russell: "A term A may have a relation to a term B without there being any constituent of A corresponding to this relation. If this were false, simple terms could have no relations, and therefore could not enter into complexes; hence every term would have to be strictly indefinitely complex."[8]

The first reply to this which occurs to one takes us back to Plato. It is, of course, that there must be a constituent of A corresponding to the relation (or of B, as the case may be), or else a relation of the relation to A (or B) will be necessary, and so on *ad infinitum*.

A formal rebuttal of this sort proves nothing, of course; but it does make us aware that we need to examine the presuppositions of the argument. These presuppositions are, I think, those on which the theory of external relations really rests, when it is strictly de-

[7] "The Principles of Mathematics," page 140.

[8] This JOURNAL, Vol. VIII., page 159.

fined and kept clear of extraneous questions. The presuppositions seem to be two: (1) There are absolutely simple terms; (2) The only alternative to ultimate simplicity is infinite complexity.

In the case of concrete existing entities, the first proposition must be denied. There is none of them, perceived or conceived, which does not contain distinguishable aspects or internal differences; each and every one of them is, if I may use the phrase for once, a unity in difference. As to subsistents, they are either defined or indefinable; if defined, they are obviously not simple; if indefinables, then they are constituted by their relations as stated in the fundamental axioms of the sciences in which they appear. This very pertinent objection to externalism was clearly stated, in the case of the indefinables of mathematics, some three years ago, by Mr. De Laguna; and, so far as I know, none of the adherents of the theory has replied to it.[9] Its truth is implied in all that Mr. Russell says about points, to mention only one example.

The simples of Mr. Russell, so far as he names them, seem to be always subsistents, and usually indefinables; or else sense-primitives, if I may call them so, such as colors. Now in the case of any color-sensation, for example, we always find the distinguishable aspects of color-tone, saturation, and brightness; and this is the only color-term which can be in question for the purposes of this discussion, since it is the only one which enters into relations which can be described as external in any sense—the hue as mere hue has no independent existence of its own.

The second presupposition is that if simple terms can have no relations, all terms must be infinitely complex. This is another instance of neglect of the systematic background. Relations do not require to be entirely grounded in the term; sometimes the complexity involved is almost wholly in the system in which the terms occur. Music is a striking example of this; some of you may remember the famous passage of Cardinal Newman on that topic. Its opening words exactly illustrate the point I am trying to make: "There are seven notes in the scale; make them fourteen; yet what a slender outfit for so vast an enterprise! What science brings so much out of so little! Out of what poor elements does some great master in it create his new world!"

The method of discussion which I have followed in this paper may seem to some too formal and abstract. I can only plead, in the words of Mr. Russell, that it is often the case in philosophy that applications are more interesting than fundamentals. The analysis has been purposely made rather formal, and ontological terms have been em-

[9] See his article, "The Externality of Relations," *Philos. Review*, Vol. XX., pages 612 ff.

ployed instead of epistemological, so far as possible, partly to avoid any appearance of begging the question, and partly because I think the realists are justified in demanding that it be discussed from this side. Their theory in this respect, however, has often been better than their practise. It seems to me that the real issue has been much befogged by bringing in partly extraneous matter, such as the question of independence in knowledge; to ask, for example, whether dependence is a relation, or, on the contrary, whether all relations are dependences, is to start an endless debate, which is quite useless until the prior question of the externality of relations in general is settled —and then becomes, I think, superfluous.

Moreover, if my criticism of the three proofs is correct, it is not merely negative, but leads to this positive result,—that the first principle in Mr. Russell's statement of the doctrine, with which I began, must be denied, while the second is valid, at least in many cases, for I notice that none of the objections to the proofs applies to it. I therefore conclude that while every related term has a complexity in it which corresponds to, and in part accounts for, its relation, it is formally possible that the same term may be a member of an indefinite number of complexes. And this I would propose as the valid formal theory of relations, as far as it goes.

Additional confirmation of this result is to be gained from the application of the methodological test, recently suggested by Mr. Tawney.[10] Since the development of science depends on the investigation and establishment of relations, to assume the absence of any corresponding complexity in *relata* would bring it up against dead walls on all sides. But on the other hand, to assert that no relative invariants are discoverable would be equally bad, since it would prevent all delimitation and definition of problems, and all formulation of general laws.

It would not be fair to conclude this brief discussion without an acknowledgment of the justification and value of the recent realistic critique of "internality of relations." Some idealists have been overprompt to use the doctrine as an immediate solvent of metaphysical problems, a sort of royal road from logic into theology. Their arguments have seemed to imply that if one caught hold of the universe at any point, so to speak, then, since everything implies everything else, one could assume the whole system as though it were already known; then a dash of subjectivism, a reference to the "relating activity of the mind," and the absolute consciousness was proved. The philosophy of the great idealists was not of this shallow and inconsistent sort; and if the realists have aroused a general and merited

[10] See his article, "Methodological Realism," *Philos. Review*, Vol. XXII., pages 284 ff.

distrust of such "short and easy" methods in philosophizing, they deserve our gratitude for it. The subjective implications of "relation," "relating," and their kindred terms, are pitfalls for the unwary; perhaps it would be well to substitute a consideration of *order* or *system* for them.

I conclude with a question which seems to suggest that more than categorical analysis may be necessary in order to solve the problem of relations completely. Are there unilateral relations? Aristotle and the Scholastics held that there were; and the neo-realists' emphasis on asymmetrical relations is a return to their point of view. Formal analysis seems to support them; for it would seem that a corresponding complexity in one of the terms, together with that of the systematic background, would be sufficient to ground the relation. But modern natural science will have nothing to do with such relations; all its relations are bilateral. Perhaps this is an indication of the limitations of formal analysis as such, though it does not invalidate its proper claims.

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REVIEWS AND ABSTRACTS OF LITERATURE

Space and Personality. ARCHIBALD ALLAN. Edinburgh: Oliver and Boyd. 1913. Pp. xxv + 607.

Should Parmenides become reincarnate and review the metaphysical teachings of the past twenty-four centuries, it is probable that he would judge them in much the fashion of the author of this extensive work. For the sage of Elea, all things were demonstrably one, not in the sense of interrelatedness and collective organization, but in that secondary (and properly metaphorical) sense of common self-identical essence which is so dear to lovers of cosmic simplicity. In every object for him, the fundamental and original thing, both in itself and for experience, was its existence or being; its properties were secondary both logically and psychologically. Now, existence (being) is an identical factor in all things, admitting of no differences of degree or kind. An object either is or it is not. Hence the essence of all things is the same, and Xenophanes's prophetic dictum, "The All is One," is literally true. By a like argument this "One" is changeless, that is, eternal.

So likewise reasons our author, though he takes a step in advance, and identifies this "One" which is "All" with a familiar object of ordinary belief. "We must assert," he says (p. 71), "that we all have a genuine consciousness of Being, Reality, What-we-are, without the remotest need of either quality or quantity to authenticate it to us as Being. Our consciousness of What-we-are, Reality, Absolute Being is never less than Is, Space-Being, within which all thought lives, moves, and has its being, and in which all its motions are finally subsumed." Our author thus

requires us to find the Absolute in experience independent of all content—a universal That with no What. This Absolute, he thinks, men have always known, and, apart from a few *tours de force* in philosophy, have never questioned; but they have not realized its importance,—that it is the Absolute. Now, however, He (the Absolute) whom some of us have ignorantly worshiped is declared unto us. He is Space. This is affirmed primarily on the ground that it can not be thought away, and that nothing can be thought of as existing independently of it. These reasons suggest materialism, but the author's leanings are plainly idealistic.

To continue: "Is," he says (p. 41), "is surely the first and last affirmation which counts for any one or any thing. . . . Philosophy is being constantly pushed into the 'abyss'-consciousness of Space, under the strongest conviction that it Is; our deepest experience is of this abyss." (Naturally our author in his extensive reviews of the metaphysical systems of the past has little to say about Leibniz.) "This Space-consciousness" (p. 43) "is the true *prius* of everything that can be thought or said. Its utter elimination of every 'image, feeling, or definite thought' is what gives it its abounding value. For as such it is the Real that supremely negates everything but itself, and thus, through absolute negation, affirms itself as the *everything on which and out of which all becomes that Is.*[1] And in such a consciousness, concrete and natural beyond every experience of the concrete and natural, we have . . . never a vestige of a consciousness of *diversity* in being" (p. 52). That is, the All is One, and that One is *Space.* Parmenides was (pardonably) crude in thinking it to be matter.

If one is so constituted that he can not be easy in his mind regarding the world until he has founded it securely upon a noumenal Absolute, it would seem that Mr. Allan's conception should be a helpful one. The Absolute still remains inaccessible to experience as regards content (its whatness) as is the way with capitalized Absolutes, but, when identified with space, its thatness seems to be sufficiently vouched for empirically. Space is, indeed, as the author properly insists, not an object of perception; but the elements, or empirical materials, from which our minds construct it are inextricably interwoven with all our experience of the natural world, indeed, with all experience whatsoever, according to Mr. Allan. May it not be maintained, therefore, that in this conception of the Absolute a long stride has been taken toward the proof of its existence? I make this suggestion with diffidence, for it may well be that one great charm of an Absolute is its inaccessibility to experience and remoteness from common life; in which case our author's well-meant attempt is likely to be but ill-received by his friends.

Mr. Allan notes that there is a natural emotional reaction from his conception of the One and All on account of its emptiness; but he very properly denies that that is pertinent ground for objecting to it. Of *course,* the Absolute is without content, or empty, for our sense-bound minds; it is necessarily so, since as to content we know (empirically) only phenomena. The Space Absolute, however, is no more empty than the various other predicated Absolutes from the authors of the Upanishads and

[1] Final italics mine.

Plotinus to Schelling and Hegel. This appears to be but another case where familiarity (*i. e.,* with space) breeds contempt. Emptiness, however, is, of course, but the phenomenal side of the Absolute. In itself, that is, beyond any experience of it possible to us, Space-Being is the all-potential, resplendent One of Neo-Platonism, "the grand *Fons et Origo* of all that is." "Kenosis is Pleroma." "The Eternal in his endless Kenosis, empties Himself, and reveals thereby his inexhaustible fulness, his Space-Being." Mr. Allan's objection to other proposed Absolutes, such as the "Absolute Unity" of modern philosophy, a unity depending in part upon organization and not upon pure identity of essence alone, is that "we are never sure that this unity will not again diverge from its united state and plunge us into its former Duality, Plurality, Division, and differentiated Totality. We must first find the consciousness which can not by any possibility suggest even a hint of division. . . . And this consciousness, we maintain, is to be found in the consciousness of Space-Being" (p. 57).

Our author is less happy when he turns to the identification of human personality with space. This is a point calling for special attention from him, for he holds that self-consciousness is the surest and most original of all forms of knowledge. Yet this is only loosely to be called self-consciousness, for there is only a vague awareness of an ego as object. The real awareness is of *what* we are. "When we fill 'I am' with a content of Space-Being, then, for the first time in our experience we have true knowledge, not of an 'I am,' but of What-We-Are. The consciousness of Space, and what-we-are is one. We find it impossible to think them differently" (p. 45). At first this contention seems to be a contradiction of the Parmenidean position that awareness of existence is prior to awareness of content, but we must remember that for the author space is absolute "is-ness." Its only cognitive content is pure being; so that, for him, to know *what* we are is simply to know ourselves as indefeasible and uncontingent actuality.

This explanation must also be borne in mind in his confident appeal to the reader's introspection, as in the following (pp. 27ff.): "In reality, when we 'enter ourselves,' and focus our reflective powers . . . we are surprised to find that the ultimate residuum of being left to us as certified true or real is not a consciousness of a Thought, Feeling . . . not the 'particulars' of Hume, nor the 'Noumenon' and 'Phenomenon' of Kant; nor yet the 'Notion' or 'Spirit' of Hegel. Neither is it the 'molecule' of science . . . nor is it the 'self' of philosophy. . . . We have not the faintest *experience* of such things [not even of thoughts and feelings?]. What we truly and really experience is a consciousness of Space"! It is hard to acquit Mr. Allan of resort to an undistributed middle in this claim; for is he not saying,—Space is pure and absolute being; We ourselves, as revealed in consciousness, are pure and absolute being, Therefore, we ourselves are space? This effort to identify space and personality by means of a common predicate is more or less evident on other pages. Of course, if all the properties of the two subjects were shown to be common, the argument would be valid, but that (impossible) result is not

effected, nor indeed attempted. What we are told is (p. 51) that, we have not the remotest consciousness of being *sustained* in being, but as simply self-existing Is, in the same way as we conceive Space as self-existing. What-we-are always yields the same consciousness which Space does." In other places it is pointed out that space and the ego are alike in being immediately given in experience, in being whole (single) objects without parts, and in being simple and, so far as present to consciousness, unlimited. Be it so, what, on the other hand, is to be said of that remarkable and persistent trick of the ego of dividing the world into two parts—subject and object? This sort of thing Mr. Allan denies to space, which he holds to be the great unifier, not divider. One such disagreement of predicates evidently outweighs any number of cases of agreement when the question is one of identity.

The bulk of this well-written, well-printed work is devoted to the application of the main thesis to questions of logic—the concept, the judgment, etc.—questions of physics, especially energy, and questions of theology, religion, and ethics. The character of the conclusions reached is suggested in the following extracts from the concluding chapter (pp. 589ff.): "The fact is clear that all thought is bent towards annihilating the conception of the essential Severance of Being. The same struggle has, of course, been evident in every religion in all ages. The strenuous efforts made to bridge the gulf between God *and* Man, as sundered from each other, by means of appeasement . . . witness to the same trend of the world. But the human mind requires a genuine concrete basis [substance?] . . . before this Truth of Whole-Being can be reached. And no such basis is ever forthcoming from, or possible in, the conceptions of mere *Motions,* or *Processes* of Being. *Neither Life nor Thought has the authority of Whole-Being given to it.* Hence it is vain to found upon the processes of Evolution, or the processes of Biology, or upon the Cosmos or Thought."

"'I and the Father are one.' Perhaps no words are of so much importance to mankind at this hour. In them personality is transcended. . . . Duality of being is only affirmed in order to be transcended in Indivisible Being. 'Personality' is subsumed in Space-Being, which is still more than 'personal'-being. . . . We say, I Am. But this is not to say, 'Not you,' 'Not the World,' 'Not the Universe.' There are no negations possible in this I Am, . . . when we say, 'I Am,' everything says it. It is the voice of Whole-Being. . . . In awe and adoration men then exclaim, 'This is God, who is *immanent* in all things.' But when each thing is reverently interrogated, 'Art thou then God?' each abashed whispers, 'He is not in us.' . . . Then men in their weary perplexity mutter, 'He must then be beyond each thing.' God *transcends* all things. Thus is God objectified, and becomes, Himself, a Thing. He is here, there; this, that. He is placed, sphered, isolated, and limited; men not discerning that the 'I Am' is ever the voice of what they are: eternal Deep: *Der Apgrund:* Space-Being."

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Henri Poincaré. V. Volterra, J. Hadamard, P. Langevin, P. Boutroux. Paris: Alcan. 1914. Pp. 246.

Following close upon the number of the *Revue de Métaphysique et de Morale* (September, 1913) especially devoted to the work of Poincaré, is this new tribute to the greatest scientific genius of contemporary France, and although two of the contributing authors, M. Hadamard and M. Langevin, were also contributors to the former memorial, only one of them, M. Langevin, reprints his previous paper. It is inevitable that there should be a certain amount of repetition in a work of this sort, especially in the case of Poincaré, for he saw one problem only as a means of attaining the solution of another and his thought moved from mathematics to physics or astronomy as easily as in the counter direction.

M. Volterra has not the grace of a Frenchman in paying his personal tribute to Poincaré's genius, but his exposition of the mathematics is clear and illuminating even to a reader not trained in higher mathematics, and is in close relation to M. Hadamard's development of the " problem of three bodies " which conditioned so much of M. Poincaré's researches in the field of molecular theory, dynamics, and celestial mechanics.

M. Langevin's paper is half again as long as any of the others. He exposits ably Poincaré's contributions to analysis, mechanics, mathematical physics, the theories of Maxwell, Herzian waves, light, telegraphy, electro-technique, the theory of Lorenz, the principle of relativity, thermodynamics, satistical mechanics, kinetic theory, cosmology, the theory of radiations, the quanta, and even touches upon his philosophy.

If M. Boutroux had been primarily a philosopher, his contribution might have profited, for although he has conscientiously disentangled the philosophic elements of Poincaré's writings, neither he nor any other writer on the subject has as yet presented a well integrated study in this field. The materials are but flashes of illumination, yet the logical habits of their author's mind presumably justify us in uniting them in a point of view that would readily lend itself to further elaboration. Indeed, the fifth chapter of the Dernières Pensées, suggests that some such integration was beginning to take place in Poincaré's mind, and it is an incalculable loss to philosophy that this process was not permitted to proceed.

The volume closes with a *curriculum vitæ,* astounding in the activities indicated and the honors received. Once, at least, the world has not been unaware of the presense of phenomenal intelligence.

Harold Chapman Brown.

Columbia University.

JOURNALS AND NEW BOOKS.

REVUE PHILOSOPHIQUE. April, 1914. *Logique et Psychologie* (pp. 337–352): E. Goblot. – " Logic has . . . for object the laws of the operations of the mind," but logic must still be included in the psychology of intelligence. *Vers l'Intuition Expérimentale de l'Electron* (suite, pp. 353–378): A. Rey. – A continuation of a study of the experimental

data tending to substantiate the notion of the elementary electric charge. *Droit du plus Fort et Droit dit "Naturel"* (pp. 379–402): A. SCHINZ.– ". . . that which one calls the rights of the people are not what one calls the rights of the feeble, but of the strong." The social progress of our age is due to the acquisition of a feeling of their strength by the feeble of yesterday, and a corresponding diminution of the feeling of strength on the part of the strong of yesterday. *Revue Critique. L'Idéalisme Social:* JULES DELVAILLE. *Analyses et Comptes Rendus.* Luigi Valli, *Il Valore Supremo:* FR. PAULHAN. Giovanni Marchesini, *La Dottrina Positiva delle Idealita:* G. L. DUPRAT. Georges Rouma, *Le Langage Graphique de l'Enfant:* E. CRAMAUSSEL. Semi Meyer, *Probleme der Entwicklung des Geistes; die Gesitesformen:* G. L. DUPRAT. Charles E. Hoopers, *Common Sense:* L. DUGAS. Otto Rank, *Das Inzest-Motiv in Dichtung und Sage:* N. KOSTYLEFF. Paul Gaultier, *Les Malades Sociales:* ARTHUR BAUER. Lewis Léopold, *Prestige:* L. ARRÉAT. Georg Cohn, *Etik og Sociologi:* ALFRED BLANCHE. *Revue des Périodiques.*

Gebhardt, Carl. Spinoza Briefwechsel. Ubertragen und mit Einleitung, Anmerkungen und Register Versehen. Leipzig: Verlag von Felix Meiner. 1914. Pp. xxxviii + 388. 4 M.

Gebhardt, Carl. Spinoza; Lebensbeschreibungen und Gespräche. Leipzig: Verlag von Felix Meiner. 1914. Pp. xi + 147. 2.50 M.

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NOTES AND NEWS.

THE following letter concerning the international competition for the centenary of Dante Alighieri's death has recently been received.

TO THE EDITORS OF THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY, AND SCIENTIFIC METHODS:

Permit us to call your attention to the following literary contest, commemorative of the sixth anniversary of Dante's death, which occurs in 1921.

The *Rivista di Filosofia Neo-scolastica* and the Catholic Committee for the Dante Centenary, in response to the noble suggestion of one of their members, Professor Augustin Gemelli, announce an international contest whose object is worthily to commemorate in the field of research so unforgetable a date.

The theme of the contest to be: "To expose the philosophical and theological doctrines of Dante Alighieri, illustrating them at their source."

We do not conceal the fact that the vastness of the theme proposed demands an extraordinary preparation on the part of the competitor and a labor of patient and arduous research. Neither do we conceal the fact that an exhaustive treatment carries with it grave difficulties, but we hope that there will be no lack of response, in view of the long period of time conceded.

The essays must be received by four o'clock P. M. of the *31st day of January, 1920,* at the office of the Secretary of the Italian Society for Philosophical and Psychical Research (Milan, Italy, Via P. Maroncelli 23). They must be unedited and may be developed in any of the following languages: English, Italian, French, German, Latin.

A commission to be named at the expiration of the contest by the promoters of same, and which shall be composed of learned men of different countries, who have already promised their aid to this end, will examine the essays, and according to their decision, which is to be without appeal, they will assign a prize of *Five Thousand* Italian lire to the winner of the contest.

Only one monograph can receive the premium, whether from the point of view of the exposition of doctrine, whether from that of the study of the sources in which Dante has dipped, or whether from that of bibliography. If none of the competitors succeeds in this task, it is left to the faculty of the Examining Committee to assign the sum total of FIVE THOUSAND LIRE or a part of same, in such proportions as it may establish, to those essays which shall have worthily exposed particular phases of the proposed problem. The prize work or the essays honored with partial prizes are to remain the property of the promoters of the competition. These latter undertake to publish during the year 1921, the centenary year, the complete monograph or the collection of essays honored with partial prizes.

The essays are to be delivered anonymously and must be accompanied by a sign or number to be repeated on a sealed envelope, which shall contain the competitor's name and address.

The Examining Committee in its sittings will follow the usual academic rules.

For the Rivista di Filosofia Neo-scolastica
AGOSTINO GEMELLI
of the Royal University of Turin.

For the Dante Centenary
PROFESSOR MESINI.

Milano and Ravenna, June 15, 1914.

THE Ernst Haeckel foundation for monism has transferred to the University of Jena $75,000 for the *Phyletische Archiv,* a publication of the Phyletische Museum established by Professor Haeckel.

DR. CAMILLO GOLGI, professor of pathology at Pavia, known especially for his investigations on the minute structure of the brain, celebrated his seventieth birthday on July 7.

Vol. XI. No. 18. August 27, 1914

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

IDEO-MOTOR ACTION[1]

THE problem of ideo-motor action has again been brought to the foreground by Professor Thorndike, who has called in question the orthodox view that an idea of a movement, in and of itself, has power to produce that movement. Pedagogical methods resulting from this doctrine, such as imitation, teaching children how to do given acts by acting the part before them, and reading tales of the noble and heroic as a means of developing character, are dismissed as factors in education. The reasons for this conclusion, I believe to be well grounded and to require no review. But they raise the questions: Are we, then, to conclude that ideas are of no use at all in conduct? If ideas of *movements* do not produce action, what sort of ideas *do* lead to action and *are* of value in education and pedagogy? It can not be denied that all our teaching, preaching, writing, and legislation are based upon faith in the motive power of ideas, and it is of primary importance to know what sort of ideas will lead to the results desired by these activities. The most positive statement upon the latter question that I find in the recent "Educational Psychology" is the following: "If the doctrine of this book is true, suggestion will succeed in so far as it is a process of manipulating a person's ideas and attitudes so as to get him into a situation to which the desired response rather than another is connected by the laws of instinct, exercise, and effect."[2] From this and other passages I infer that ideas have some efficacy in getting a person into the right situation, and function in that situation through some stimulus-response connection. At any rate I shall take this suggestion as the text of my paper and, upon this basis, attempt to show in some detail the value, functioning, and working of ideas.

The question of the value of an idea is as old as philosophy, but, strange to say, twenty-seven hundred years of speculation have failed to bring any agreement upon the solution. Whether this is a refutation of the speculative method or a proof of the insolubility of the problem I shall not try to decide. But it appears that an

[1] Read before the Psychological Club, Columbia University, March 12, 1914.

[2] Thorndike's "Educational Psychology," Vol. 1, page 293.

ancient statesman and a modern philosopher do agree upon the function of thought, and both upon empirical grounds. These are Pericles and Dewey. The former attributed the power of Athens to the power of thought. He said: "The great impediment to action is, in our opinion, not discussion, but want of that knowledge which is gained by discussion preparatory to action. For we have a peculiar power of thinking before we act, and of acting, too; whereas other men are courageous from ignorance, but hesitate upon reflection." The latter, viewing thought from a biological standpoint, came to the conclusion that its business is not to transcend nature or to create in idea a mystical and beautiful object of contemplation in the form of an eternal and absolute world, but to direct conduct and solve its problems. Such an agreement between a practical man and a philosopher is as worthy of attention as it is rare. When a philosopher, after reflection upon the power of thought, decides not to set it up as a divinity in some far away world of magic and wonder, but says that the place of its birth is not too humble for its functioning, it is but a step to the suggestion that thought, like other natural functions, is subject to experimental treatment, and that possibly this method as the opposite of the speculative will tell us more exactly how thought controls and directs conduct.

In agreement with this suggestion we shall view ideas or thought as a form of conduct and subject to the principles controlling conduct in general. To discover, then, the action of thought we shall find it helpful to consider genetically the conditions under which conduct occurs or responds.

Beginning with the behavior of the lowest animals, we notice that conduct is always in response to some stimulus coming from the environment, and further that the character of the stimulus determines the character of the response. For example, if an amœba is given a strong mechanical stimulus, it moves away; if it is given a weak mechanical stimulus, it moves toward the stimulus; and if a small particle of food is placed at its side, it envelops it.[3] If the anterior end of an earth-worm is touched, it creeps backward; if the side is touched, it turns away; if the posterior end is touched, it creeps forward;[4] and if it is thrown on its back, it twists around upon its ventral side.[5] The "flexion," "scratching," and "clasping" reflexes in a frog are other examples.

If we pass to higher forms, the stimulus-response principle holds throughout; but a great variety of objects may act as a stimulus setting off an equally great number of responses. The connection

[3] Jennings, "Behavior of Lower Organisms."

[4] Jennings, *J. of Ex. Zool.*, Vol. 3, page 435.

[5] Pearl, *Quar. J. Micro. Sci.*, Vol. 46, page 509.

between particular response and particular stimulus is, however, definite and is determined by the character of the situation on the one hand and the physiological condition on the other. For example, the perception of a wire loop, a button, a string, a thumb latch, a door, etc., by a hungry dog or cat placed inside a box having food on the outside may set off the necessary movements for getting out and securing the food. If a hungry South American cebus monkey[6] is placed in a cage and an experimenter with some food is on the outside, the monkey can learn to reach for food when the experimenter picks it up with his left hand, or shows it a white, diamond-shaped card-board, or a single brown card, or a card with a black ring on it; or if he picks up food with his left hand from a pile directly in front of the bar, or picks it up from a small brown pasteboard box. The monkey learns not to reach for food or change his reaction from the ordinary when the experimenter picks up food with his right hand, or shows it a black, diamond-shaped card-board, or a white and gold card, or a card with two black concentric rings on it, or takes food from a dish a short distance in front of the cage, or when he swings his left forearm diagonally around from his right side, or picks up food from a white crock, or a small saucer. The monkey was taught these various discriminations by being rewarded with food when he made the reaction desired by the experimenter, and not rewarded when its reactions were otherwise.[7]

If rewarded with food after a successful trial, a trained hungry rat will run a complicated maze without error as soon as it is placed inside it. If placed before a box containing food and banked with sawdust, or if the door is pasted shut with strips of paper, the perception of the sawdust or the strips of paper will, after a learning period, lead to the proper reactions for getting to the food.[8] Raccoons can learn to climb upon a box to be fed when a high note is sounded or when a large card is shown, and to stay down when a low note is sounded or when a small card is shown.[9] Further examples need not be cited to show that animal learning is dependent upon the perception of particular stimuli under particular conditions and situations.

We shall now pass to human learning. Here experimentation shows no exception to the stimulus-response principle. Apparently there are no reactions, however refined, which do not take their origin from a sensory cue of some kind. Just as there is no spontaneous generation of fermentation or life so there appears to be no spon-

[6] Thorndike, *Psych. Rev. Mon. Sup.*, Vol. 2, No. 4.

[7] Thorndike, *Psych. Rev. Mon. Sup.*, Vol. 3, No. 5.

[8] Small, *Am. J. of Psych.*, Vol. 12, page 206.

[9] Cole, *J. of Comp. Neur. and Psych.*, Vol. 17, page 211.

taneous behavior of the nervous system involving only the so-called motor paths. On the contrary, control of voluntary movement depends upon perception of the adequate stimulus. One of the first experiments relating to this point was made by Bowditch and Southard, who tried to touch a given point first by fixating it with the eyes, then closing the eyes and touching the same point by relying upon the muscular sense. They found that the movements were more accurate when accompanied by vision.[10] Bair trained fourteen subjects to move their ears with the *retranens aurem* muscle, usually an entirely unused muscle. He found that they succeeded after they had isolated and could attend to the particular sensation resulting from the movement of this muscle.[11] Professor Woodworth made an experiment in which he aimed to move his big toe while keeping the others quiet, and found that he succeeded after he could once exclusively attend to the sensation resulting from its movement.[12] He concludes that the sensation of movement is necessary in the acquisition of voluntary control; that a reproduced image of the sensations is valuable in reporting whether the result has been attained; but that the power to recall an image at will is not equivalent to acquiring voluntary control; and that the latter does not depend on kinesthetic images. He later made a more extended study of the same problem, in which he discovered that images are unimportant for the control of simple automatic acts like opening the eyes or wagging the jaw. Such acts can be performed immediately upon the reception of the external stimulus without the intervention of imagery. The fact that images are unimportant in such cases does, however, not prove that they are equally so in the learning of complex voluntary acts like typewriting or telegraphy. Another important contribution in this study is a pointing out of the value of "set" in voluntary control. Upon this Professor Woodworth says: "When a man confronted by a novel situation observes this and that feature of it in turn, each new perception leaves behind in the nervous system a temporary adjustment to the feature observed, until the whole situation becomes, not clearly mirrored in any one moment of his consciousness, but dynamically represented by the sum or resultant of these partial adjustments. If he then thinks of some change that he can make in the situation and decides to make it, the definiteness of his intention is not contained wholly in the field of attention at that moment, but depends upon the total neural set, and so on the total situation."[13] Later investigators, as we shall see, have con-

[10] *J. of Physiology,* 1881, pages 3, 232 ff.

[11] *Psych. Rev.,* Vol. 8, 1901, pages 474–510.

[12] "Le Mouvement," pages 330 ff.

[13] "Garman Memorial Volume," page 391.

firmed this conception, but have found that a long practise series is required to make the organization of "set" definite and effective.

A very important study on voluntary control has been made by Miss Downey,[14] who experimented with handwriting for the purpose of determining the importance of imagery. She found that while her subjects were dependent on sensory cues of some kind for the control of the writing process, no two used the same imagery throughout. Three of her subjects depended primarily upon automatic or muscular control; and four, on conscious control. But all depended on visual cues to some extent, it being most prominent in those using conscious control. Auditory imagery was prominent in three, and conscious grapho-motor in two. These results may be illustrated by referring to some of her tests. When her subjects wrote blindfolded, all showed mistakes in spacing, alignment, and in beginning the lines at the margin. Blindfolded writing with the left hand showed further deterioration in these respects. In inverted writing one succeeded by vocalizing the words and starting with a definite intention to invert. Two started with visual cues, but afterwards depended on muscular control. One visualized the letters upright and then inverted them mentally and wrote. One visualized the letters upright, inverted them, reversed, projected the image on the paper, and then wrote. Two subjects failed in this process because of inadequate sensory cues. For example, D., who was dependent on visual imagery, could not adequately visualize the letters upside down. These individual differences are further illustrated in the tests in which the subjects were required to write with a tablet placed on the forehead, or on the top of the head, or parallel to and at right angles with the back, or over either right or left shoulder. Three succeeded in these various forms by imagining the results as in normal writing such as looking down on the writing from above and at the left. Three others had no visual imagery, but depended upon kinesthetic reports and anticipatory motor cues. The peculiar dependence of the result upon the character of the imagery is illustrated in the case of S., who, in writing from left to right on top of the head, saw the letters as from below, with the result that the writing was reversed. But when he saw them as from above the writing became normal. There was a similar result in the case of H., who wrote mirror fashion upon the forehead, but at times reproduced normally when she imagined herself seeing the letters from the front. The best tests, however, which Miss Downey made to bring out the importance of imagery were such as writing with eyes open while counting aloud, reading aloud, counting mentally the number of times a particular word occurred in a rhyming list read

[14] *Psych. Rev. Mon. Suppl.*, Vol. 9, 1908, pages 1–148.

aloud by the experimenter, or writing blindfolded and counting aloud. From these tests we may expect that if a writer depends on a given sensory cue, a distraction affecting that cue will raise his writing time more than any other distraction. For example, if a writer depends upon articulatory or vocal motor control, reading aloud will raise his writing time more than writing blindfolded. The results were in agreement with these expectations. If a writer's usual sensory cue was interfered with, his writing time was raised much above the normal, but this was not the case when the distraction affected an unusual cue. When those who depended on voluntarily produced imagery had their attention completely distracted, they found it impossible to write. Another interesting result was that when a used cue was distracted, the writer could shift to another, *e. g.*, change from visual control to articulatory or auditory. But the principal result of the experiment is that the control of every voluntary act depended upon some sensory cue. If this cue could not be secured in perception, it was supplied by imagery.

Judd[15] assisted by McAllister, Steele, Cameron, and Courten made a series of experiments that have a bearing upon our problem. These included three experiments upon illusions, one upon reaction time, and one upon practise without knowledge of results. In the experiments upon illusions the eye movements were photographed both at the beginning of a practise series, when the illusion appeared, and at the end, when the illusion disappeared. In the Müller-Lyer illusion it was found that before practise the eyes made many more pauses in the underestimated area than in the overestimated area; but after the practise series, the eyes moved with equal facility along the entire line and made an equal number of pauses in each field. In the Poggendorf illusion it was found that before practise the eyes moved along the oblique irregularly, making frequent and long pauses at the points of intersection with the verticals. After practise the eyes moved along the oblique line with almost no deflection, with fewer and more equally distributed pauses, and with shorter and more rapid motion. In the Zöllner illusion it was found that before practise the eyes moved along the long parallels very irregularly, making many pauses at points of intersection, many deflections, and many twists. After practise there was a close adherence to an undeflected and regular movement along the long lines with pauses at regular intervals. In the reaction experiment the movements of the reacting hand both before and after the reception of the get-ready stimulus were recorded on waxed paper. The record showed a marked unsteadiness of the hand after this signal, indicating an increasing tendency to react. In the practise

[15] *Psych. Rev. Mon. Suppl.*, Vol. VII., 1905, pages 1 ff.

experiment without knowledge of results the subject was required to indicate the projection of a series of oblique lines both above and below a given horizontal. Two hundred trials upon each line distributed over a period of ten days showed no improvement. A series of tests with knowledge of results was then made upon two obliques, one forming an angle of 60 degrees above the horizontal, the other an angle of 45 degrees below the horizontal. A practise series distributed over ten days corrected the error with the first line, but increased it with the second. The correction of the first line was effected by placing the projection at a point higher than the first point indicated. The same habit was transferred to the second line with adverse results. What is significant in the illusion experiments for our purposes is that when the perception of the illusion disappeared the sensory stimulus was different from what it was in the illusion. The reaction experiment indicated that the reception of a sensory stimulus tends to be followed by a motor response even when it should be inhibited, and the reaction experiment indicated that perception of one's results of reactions to be perfected changes the character of those reactions. In each case control of the reaction depended upon getting the right sensory cue.

Another series of experiments bearing directly upon our problem are the so-called practise experiments. Hitherto attention has been directed principally to the amount of improvement of a given function, its persistence, and the form of the practise curve. A careful review of the literature, however, points to the conclusion that improvement in a given function depends in a great measure upon the forms of perception to which the desired movements are made. Leuba and Hyde,[16] who had students practise writing English prose in German script by the aid of a copy of the German script alphabet, found three stages of progress. In the first stage the student pronounced in inner speech the English letters separately, then associated them with the perception of the German letters which were pronounced in inner speech and then written. In the second stage, the inner speech process dropped out and the writing of the German letters followed immediately upon the perception of the English letters. In the third stage the English letters were no more perceived separately, but in word and phrase groups and written in the same units. It is interesting to note that in each stage the units of reaction correspond with the units of perception.

Rowe[17] in an experiment designed to analyze the sensory processes in voluntary control had four subjects practise, until the reactions became automatic, writing ten standard words by pressing

[16] *Psych. Rev.*, Vol. 12, 1905, page 357.

[17] *Am. J. of Psych.*, Vol. 21, 1910, pages 513 ff.

small rubber bulbs arranged so as to correspond in number and letter order to the lower row of keys in a Blickensderfer typewriter. The letters were indicated by means of a cardboard placed in front of the bulbs. In general, during the first stage of development, the subjects had to look at the stimulus words, pronounce them in inner speech, pronounce each of the letters in inner speech, and find them on the cardboard, and then look at each letter carefully while pressing the proper bulb, often dividing the attention between the cardboard letter and the pressing movement. In a second stage, the perception of the cardboard and the keyboard were eliminated and the reactions followed upon the memory image of the copy. In the third stage, after the ten words could be written in one series of coordinated finger movements, perception of details was eliminated and there remained only a general "set" characterized by attention to the situation as a whole in which were present general bodily, tactual-kinesthetic, and visual sensations. Inner speech still occurred in some cases, but was unimportant, for many of the reactions preceded the inner speech. His conclusion from his observations is that without sense-processes relevant to the situation purely ideational processes are incompetent to initiate movements. Sensations are the *sine qua non* of consciously controlled acts. In the development of voluntary control the correct movement is first made reflexly, certain sense elements connected with it are then caught by the attention and are made functional through its effect. In the highest volitional processes both clear perception and clear imagery are necessary, but attention may leave the process through the substitution of the general symbol for the details of the original.

Another experiment which shows the close dependence of voluntary control upon the form of perception is Book's study of skill in typewriting.[18] In this connection the short-circuiting in the perceptual processes in the development of speed is interesting. This may be illustrated with reference to those using the touch method. The subjects committed the keyboard to memory, after which it was screened and the process of writing begun. The subjects first got the copy; second, pronounced the letter; third, located it mentally on the keyboard, for example, from a visual image of its correct position; fourth, got the finger on the proper key by first locating its row and then counting and feeling the individual keys until the proper one was found; fifth, pronounced the letters again and made the correct movement. It is little wonder that during the early stages the letter to be written was sometimes forgotten during this complicated process. Improvement was made by a gradual fusion of these steps. The initial spelling fused into the sight of the letter

[18] "Psychology of Skill," 1908.

so that the remaining processes followed successfully upon sight of the letter. The mental locating of the keys and the complicated finger movements made to find the right key fused into a motor-touch image so that as soon as the letter was seen it could be correctly located by getting a "feel" of the movement necessary to hit the desired key. Later the motor part of the image dropped out and the correctness of the movement was recognized by touch alone. Finally the inner spelling also dropped out so that the sight of the copy led directly to the proper reaction. The inner spelling, however, reappeared whenever difficult words were met.

In a second stage the learner reads and writes in syllable and word units. One subject describes this process as follows: "An easy word is taken in as a whole; a few short easy ones are taken in as a connected series. A long and difficult word may be broken up into groups of easy familiar combinations, or in case of extreme difficulty, it may be incipiently spelled letter by letter, and by attending to each individual movement. This way of spelling words or taking in familiar parts of them, and the manner of the movements seem to run closely parallel all the time. I take a thing in on the keyboard just as I take it in in the copy—by letter, by combinations of letters, by words or groups of short easy words."[19] The same subject is again quoted as follows: "A word simply means a group of movements which I tend to as a whole. I seem to get beforehand a sort of "feel" of the whole group which is run through with that sort of conception and direction of attention."[20] In learning to make group movements inner spelling was at first necessary to give the right sequence, but when the groups became familiar it faded away.

In the expert stage, phrases, clauses, and sentences became the unit of attention. Movements were no longer attended to in word groups, but attention was directed toward getting through with the sentence as a whole and with performing the movements in the right succession. The eyes were kept continuously on the copy a number of words ahead of the hand. The pronouncing of the words served to start and control the series of movements.

Such in outline is the order of development in learning to typewrite by the touch method. The genesis in the sight method is not characteristically different in principle. It will be found that the genesis is of the same character as other investigators have found, beginning with sharp attention and perception of every detail and ending with attention and perception directed to the process as a whole. It may be asked why this cumbersome process must be gone through in the learning of skill and why we can not begin writing in sentence units

[19] *Idem,* page 38.

[20] *Idem,* page 39.

at once instead of worrying with the drudgery of letters. One reason may be the physical resistance of the muscular tissue to a sudden adaptation to such complicated movements. But I doubt whether this is the chief difficulty, because the muscles of the young are extremely flexible. I venture to suggest that the difficulty lies rather in the nervous system, in its inability largely to get adequate sensory stimuli. A sentence can not be written upon the perception of a single letter. This requires a perception of the sentence as a whole and a feeling of the entire series of movements as a whole. In other words, the unit of reaction must correspond to the unit of perception. The converse of this proposition may be equally true. It is altogether likely that the limit of the unit of perception is determined by the limit of the reaction. But this does not gainsay the contention that voluntary control depends upon perception.

If it is true that voluntary control depends upon the perception of the adequate stimulus, then we should expect a loss of this function to follow upon an elimination of the sensory cue. There is some physiological, pathological, and clinical evidence in favor of this view, but not as much as we could wish for. Bernard[21] made an experiment in which he produced total anesthesia of a frog's hind feet by cutting the sensory spinal roots innervating those parts. The result was a failure in the coordination of the feet. Mott and Sherrington made a similar experiment on a monkey by cutting on one side of the cord the dorsal roots of the nerves supplying the arm and the leg. The authors conclude that volition in these members was absolutely abolished by this operation.[22] Sherrington, reporting on a second experiment upon this problem, concludes that destruction of sensitivity in particular regions causes objectively observable disturbances of movement. "The effects of the anesthesia upon the musculature of the part are three—(1) paralysis, (2) ataxia, (3) atonia."[23] Munk in repeating the experiment of Mott and Sherrington concluded that voluntary control does not depend upon the muscular sense alone, but may be recovered by practise through other senses like vision. Flourens noticed that cutting the semicircular canals in pigeons caused confused and disordered movements.[24] Ewald, repeating the experiments, found that extirpating a canal on one side caused a twisting of the head, an unequal extension of the feet, and an inclination of the body toward the injured side.[25]

[21] "Leçons sur la Physiologie du System Nerveux," Paris, 1858, pages 1, 251.

[22] *Proc. Roy. Soc.*, Vol. 57, pages 481 ff.

[23] *Ibid.*, Vol. 61.

[24] "Researches Experimentales sur les Proprietes et les Functions du System Nerveux," 2d ed., 1842, pages 452 ff.

[25] "Physiologische Untersuchungen über das Endorgan des Nervus Octavus," 1892.

There was a loss of normal balancing movements on that side. Turning to some pathological and clinical evidence, Gley and Marillier[26] report a case of a patient deprived of all sensibility in the upper half of his body. When blindfolded the patient's arms could be moved in any direction by the experimenter without his being able to describe their position, he could not discriminate between a weight of 250 grams and one of 1,850 grams, nor tell the difference between hard wood and soft rubber, nor make movements upon command. Bleuler[27] describes a case of total anesthesia on the right side, in which the patient could not move his right arm except when he saw it. A. Pick[28] reports a case of complete loss of deep and superficial sensibility on the right side. The patient could open and close her right hand when she fixated upon it, but not when the hand was outside the center of vision. Berkeley[29] reports a case in which there was total loss of thermic, pain, olfactory, gustatory, equilibrium, pressure, and weight sensations, an almost total loss of vision, a partial loss of muscular sense, and a progressive dulling of hearing. The patient, who had not lost sanity, could not move the indicator in a dynamometer upon command, although she made every effort to do so. She could not help herself in any way.

Hoppe[30] describes a case in which the muscular sense and the sense of the position of the limb were almost absent. The right arm seemed completely paralyzed and the patient could not move it upon command. But she learned to do so by watching the doctor's hand move and then repeating the movements.

These cases point to a close dependence of voluntary control upon some kind of sensation and that, in case of need, there is possibility of transferring control from one sense to another. Such shiftings are similar to those reported by Miss Downey.

What we have gained from this review of experimental evidence on the sensation-movement relationship is: (1) that both human and animal behavior takes place in response to sensory stimuli; (2) that the character of the stimulus determines the character of the response; and (3) that control of the response depends upon control of the stimulus. Propositions (2) and (3) are still open to further experimentation. But the findings of Bryan and Harter, Book, Leuba, and Rowe upon the specific correspondence between perception units and reaction units, and Judd's discovery of the disappearance of illusions after the sensory stimulus was under control, leave little room for doubt. At least it is safe to accept them as

[26] *Revue Philosophique,* 1887, XXIII., pages 441 ff.

[27] *Archiv für Psychiatrie und Nervenkrankheiten,* 1893, Vol. 25.

[28] *Zeit. für Psy. und Phys. der Sinnes.,* Vol. 4, page 175.

[29] *Brain,* Vol. 23, page 14.

[30] *J. of Mental and Nervous Diseases,* Vol. 32, page 145.

favorable hypotheses. It will be observed that no fiats of will are reported, no so-called feelings of innervation, nor feelings of the muscles and joints in movement. These are superfluous intermediaries between the stimulus and the response. Control is obtained by attention to the stimuli and to the results of the movement. Perception of the results of one's movements is rather a stimulus for the following movement.

If the above conclusions are accepted we have not far to go to find the function of ideas. It will be recalled that Bair's subjects could move their ears after they could attend to the sensation resulting from their movement, and Professor Woodworth could move his great toe after he could attend to the sensation produced by its movement. In trying Bair's experiment upon my left ear, I discovered that after the ear once got into motion the new position of the muscles produced a new sensation. It was not a sensation of the muscle in motion, but a sensation of the muscle after this motion was completed. Attending to this sensation independently gave me control over the desired movement. This and the other experiment reported suggests that the function of ideas or cognition is to analyze the sensory stimuli to which conduct responds. These stimuli may then be caught by the attention and responded to voluntarily. A change in conduct is then effected through attention to a different stimulus. Why I respond to one stimulus rather than to another is due to a complication of factors such as those of instinct, habit, desire, and satisfaction, but in particular, to the interest of the present moment. For example, just now I am interested in writing this paper. I attend only to those things which have a relevancy to my problem. I see hundreds of books before me, but I open and read only a few of them. If I should read a classical periodical which I now see it would pain me as a waste of time. That is, I am adjusted to respond only to matters concerning the ideo-motor problem, and have developed a temporary set to that effect. I developed this set in response to a problem which was again brought vividly to my attention by reading Thorndike's "Psychology" because of a general interest in the science. I might continue giving account for my interest in psychology, and so on indefinitely; but the point I wish to make clear is that "set" is a temporary response of the nervous system as a whole to a present situation and is in turn determined by my past conduct. It is therefore due in part to present stimuli, but probably more to responses to stimuli in the past.

Reverting to the problem of the function of ideas, I wish to describe more in detail the process of analysis. For example, when a boy goes through the Columbia library and begins turning off the lights, the sensation produced is a stimulus to get out and to go home

for rest. Going out of the building, down wooden steps, and out at a narrow wooden gate is a stimulus to turn north. Coming to a show window in which are displayed wines and candies is a stimulus to turn west. Going up a hill and seeing iron posts on each side of stone steps is a stimulus to turn in. Before I had analyzed the characteristic stimuli at each turning point, I could not find my way without error. I turned west at the wrong block or in at the wrong door. I then set to work and made a comparison of the marks at each corner where I should turn and picked out certain easily distinguishable marks which were peculiar to each and which I could take as a never failing stimulus to turn in a certain way. After I had done this I could find my way home without apparently seeing anything. This analysis and fixation of the proper stimuli is accomplished through my ideas and power of cognition.

In the most highly technical scientific process the function of ideas is nothing different. Experimentation is simply an accurate means of finding and analyzing the proper stimuli for the formation of judgment and conduct. For example, before the time of Galileo, the Aristotelians said that bodies fall in proportion to their weight, that each body seeks its natural place, and that the natural place of a stone was on the earth and of a feather in the air, etc. These are accurate descriptions of our sense-perceptions in daily life. Galileo noticed from general observation that the velocity of a falling body was constantly on the increase and conceived the hypothesis that the velocity is proportional to the distance descended through. Finding, as he thought, a logical contradiction in this theory, he made another according to which velocity is proportional to the time of descent. Finding no contradiction in this view, he proceeded experimentally to verify it, by rolling balls down an inclined plane and measuring the times of descent. The time was measured by means of a water clock consisting of a wide vessel with an orifice at the bottom which was closed with the finger. As soon as the ball began to roll Galileo removed his finger and let the water run into a balance. When the ball reached its terminus, he closed the orifice. He found that while the times or units of water increased simply the distances increased quadradically—*i. e.*, that the distance varies directly as the square of the time of the descent.[31] What prevented Aristotle from reaching this conclusion was that he had no means of analyzing his gross perceptions. Galileo devised a means, in the inclined plane, water clock, and balls, which enabled him to make accurate perceptions and find the proper stimuli upon which to form a judgment. This way of devising an experimental method of analysis is the function of ideas.

[31] Mach, "Science of Mechanics," page 130 ff.

In this connection I must also make a brief reference to the work of Pasteur[32] on fermentation. Before and during his day fermentation was believed to be due to spontaneous generation. Grape juice and milk soured very soon after extraction and apparently without the addition of new elements. The hypothesis of spontaneous generation was therefore an accurate description of the gross sense perception of the phenomena. Pasteur, however, submitted milk and other liquids to experimentation, using a more vigorous technique, and succeeded in showing that fermentation was due to foreign particles coming in contact with the liquid, particles in the surrounding air or in and around the containing vessels. His paper on lactic fermentation, which published this result, is a classic example of the power of an idea. A copy fell into the hands of a young surgeon of Scotland, Dr. Lister, who concluded from this paper that probably putrefaction in wounds was a form of fermentation caused by particles in the air and on the surgeon's hands and tools which came in contact with the wound. He therefore began operations in which the wounds and the surgeon's hands and tools were thoroughly cleansed by a solution of carbolic acid, and in two years discovered that out of forty patients upon whom amputations were made thirty-four recovered. The meaning of this may be gathered from the fact that during the same time in Paris where antiseptic surgery was not practised the mortality after amputation was 60 per cent., and during the siege of Paris almost every one operated on at the Grand Hotel, the temporary ambulance, died of purulent infection.

Another copy of this paper fell into the hands of one of Pasteur's countrymen, Davainne, who had observed small filiform bodies in the blood of animals that had died of anthrax,—a disease which annually killed 20,000,000 francs worth of domestic animals in France. Pasteur's paper suggested that probably the filiform bodies he had observed caused the disease in a manner similar to those causing fermentation. He verified his hypothesis by successfully inoculating healthy animals with the blood taken from the diseased animals. Koch, from Berlin, later took up the study and succeeded in isolating the particular germ causing the disease. Pasteur took up the study and by attenuating the virus containing the bacillus anthracis discovered a vaccine which rendered animals immune to the disease. This alone meant an annual saving of 20,000,000 francs to France, which gives a quantitative notion of the value of one of Pasteur's ideas.

We can not go into the study of Pasteur's work any farther.

[32] Vallery-Radot, "Life of Pasteur," Mrs. Devonshire's transl.; Pasteur. "Studies on Fermentation," Faulkner and Robbs's transl.

It is sufficient to mention that some of the results which sprang from the new ideas contained in Pasteur's study of lactic fermentation are antiseptic surgery, the cure of anthrax, hydrophobia, diphtheria, and in general the processes involving antiseptics and serum-therapy. The value of this resists a quantitative estimate. I refer to this not as a matter of history, but to illustrate the value and working of ideas. Pasteur by means of an exact technique succeeded in analyzing and isolating the proper stimuli with reference to fermentation. He puts his findings into language, and publishes them. The paper crosses the sea and falls into the hands of a sagacious reader in a foreign land. The result is antiseptic surgery. This alone illustrates the process. The reasons that, before Pasteur, surgery, diphtheria, rabies, etc., were the plagues and decimators of humanity are that no one knew to what stimuli to react in these phenomena. It was left to the ideas and cognitive powers of Pasteur to devise an exact technique and analyze those stimuli, and after that analysis, control at once followed and the dreaded evils vanished. The work of Pasteur in itself proves that ideas produce productive action and results when they are of the right sort and point out the right sort of stimuli.

If this paper has accomplished its aim in showing that the work and function of ideas is to analyze stimuli to which conduct responds, we are in position to understand why an idea of a movement does not produce it; and why imitation, the teaching of animals and children how to do certain acts by acting the part before them, or by putting them through the desired acts, and the reading of tales of the noble and heroic are usually ineffective in getting the desired results. They fail to point out the proper stimuli to which the desired acts are a response. On the other hand, such methods, as well as preaching, lecturing, making laws, and writing books, do yield productive results when they succeed in pointing out the proper stimuli for the conduct desired. Such activities need, therefore, not be stopped for fear that ideas will produce no movements, but it is necessary that they be directed toward the adequate stimuli.

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VALUES AND EXPERIENCE[1]

IN a recent paper[2] I tried to indicate how scientific thinking is to be recognized as only the m re reflective stage in man's vital enterprise of exploring and manipulating the rich world about him,

[1] Read at the annual meeting of the American Philosophical Association, New Haven, December 29, 1913.

[2] *Philosophical Review*, Vol. XXII., pages 520–538.

a world primarily not of facts, but of meanings. From the same standpoint I should like to touch on some questions raised during the past year on the subject of values.

Forsaking the vast accumulation of petrified data piled up by the more intellectual operations of man for centuries, and throwing ourselves (shall I say, by an act of intuition?) into the heart of ordinary naïve human experience, we find ourselves in a world not so much of material persisting objects of brick and mortar as of weltering and stewing, promising and threatening, agents and forces. If nothing else, the world is one of change, or rather, of changes. Things are happening, coming and going, upward and downward, inward and outward, forward and backward. It is a dynamism of an incessant and unmistakable character.

It is not, however, a *mere* dynamism, but one that shows certain qualitative characters not connotated by that term. The agencies operative are agencies that throw themselves as it were into our attention. They stand over against us in a genuinely objective sense—threatening, appealing, coercing, attracting, repelling. They appear as good, ugly, bad, magnificent, wrong, beautiful, upright. In fact, they are *just* these: they are goods, uglies, bads, magnificents, wrongs, beautifuls, uprights. As such and only as such are they *there* at all. The original material of all human experience presents itself in this intimate and face-to-face manner. It is especially obvious in the more novel experiences of the adult and, we suppose, in the earliest experiences of the babe. The situation may be no further defined, but it has at least this romantic, this rich, this brimful character.

Moreover, if this be true of vague and novel moments, there is no warrant for maintaining that developed and intelligent moments are lacking in this character. The development and organization of the former into the latter involves no denial of the meaningful character—in fact, it requires the *presence* of it to furnish the very stimuli and clues to the development. This, now, is what we mean by the term "values." Generalizing, we may say that the world as experienced is a world of appreciative qualities, of *value* aspects. It is not an impersonal casing that compasses us about, but a multiplicity of guide-posts that may serve our human purposes and become linked with our personal fortunes.

A moment ago I called attention to the dynamic character of the world we live in. We saw it as an ever-changing flux. If, now, our interest in the value aspect of the world becomes a little reflective and we wish to look back into the experience to determine more accurately just in what this aspect consists, we shall find that our statement of the incessant alterations and variations must be modified.

A most significant feature of this flux is that it is not entirely haphazard, chaotic, without direction. Some changes seem to have worked themselves up into systems of changes, more and more coordinated, more and more organized, and form concretions within the whole dynamic flood, vortices appropriating to themselves more and more of the surrounding changes and rendering them less haphazard, more unified and correlated. Definite directions have thus emerged. And as these innumerable vortices, these concretions, strike out their numerous paths, the welter of changes about them tends to be resolved into more definite agencies ranged in reference to these paths. We have, then, not a world merely of chaotic and turbulent curdlings, but a world of life striving to range its material in accordance with the developing life of its organisms. In such a world "progress," "interests," "purposes," etc., first have their meanings. If we call an hypothetical chaotic world "dynamic," how much more truly may we apply the term to a world in which organizations of changes are directing this dynamic character or even furnishing new modes of it themselves. We have a dynamism referable partly to the extra-organic, partly to the organic.

We, as one or a set of these organisms, find the agencies about us falling constantly into perspectives. The world presents itself inevitably in guise of friend or foe (whether faithfully or unfaithfully) and we observe ourselves constantly approaching this and retreating from that, accepting this and rejecting that. This selective activity is guided by the relations of the actions of agents confronting us to the tendencies and interests of ourselves. Those phases of experience that lie ready to further and reinforce our natural tendencies we call good; those that thwart us we unhesitatingly denominate bad. In either case the relation of the given activity to ourselves and our own activities is what we understand as its meaning.

Certain dangers we must guard against here. To speak of the dynamic character of experience as divisable into organic and extra-organic does not imply any hard and fast distinction. The so-called "organic" end of our contrast may refer at times to the larger or the more unified part of an individual human self as *versus* smaller or less unified parts; it may refer to the interests bound up with the life of social classes or of social institutions as *versus* the tendencies of other classes or institutions, or of their own component parts.

It has just been indicated that the relation and reference of an extra-organic activity or agent to the activities or tendencies of the organism is the source of meaning. More broadly, in so far as a content is experienced, it is a meaningful content, friendly or unfriendly, good or bad, attractive or repellent. And this, now, is just what we

mean by "value." In a word we may say: the term "values" is correctly applied to those phases of experience which by virtue of their dynamic relations to our selective organic life range themselves into a more or less personal perspective.

In the light of the foregoing we may now offer the proposition that experiencedness = meaningfulness. This amounts to the statement that the philosophy of pure or immediate experience implies and presupposes a value-philosophy. Now to put the general standpoint of this paper into a nutshell, let me convert this proposition, and trust to the remainder of the paper to justify it indirectly by showing what light is then shed on certain problems formulated during the past year. *A value-philosophy implies and presupposes the philosophy of immediate experience.*

One of the questions proposed by Professor Sheldon last October[3] was whether the concept of value was unique, irreducible, ultimate, or could be reduced to terms of other categories. Compare this with the formulation by the executive committee last March,[4] namely, the relation of existence and value, and especially the detailed formulation of the four members, and it is obvious that we have here a fundamental problem.

The preceding pages have tried to show that value is primary in all senses of the word in any human experience, and that it is, therefore, a primary category in any construction of the world on the basis of experience. Had I time I should like to maintain at length that this human experience is the *only* possible *adequate* basis for such construction, that from it all intellectual enterprises rise and to it as their touchstone they return. All this, however, I shall have to presuppose.

One objection to my statement that values have been found absolutely primary in experience may run as follows: you find values primary indeed in naïve experience, but in the reflective experience that turns back for examination of the former you resolve it into the reciprocal attitudes of two dynamic agents, the central one organic, the other extra-organic. Now this involves the old question as to whether subsequent analysis destroys the unity and uniqueness of a given content of experience. Surely there is but one answer: such later analysis does not destroy the uniqueness, it is only an hypothetical ideal dissection of the experience on the basis of partial likenesses and differences that we fancy we trace. Furthermore, the ubiquity of the value-character is nowhere better shown than in the fact that the products of an act of analysis are themselves functioning as values in a new enterprise. Be it remembered,

[3] This JOURNAL, Vol. X., pages 587–588.

[4] *Ibid.*, Vol. X., pages 167–168.

finally, that analysis is prompted by, propelled by, guided by, and tested by, the actual experiencing of values as uniquenesses.

The distinction between "values" and "things" is, after all, really a relative distinction. Values are what we really have, the original data. Objects, as I have tried to show elsewhere,[5] are the result of a gradual precipitation out of a solution of general meaningfulness. They are certain constancies of import that the eager mind has seized upon in its purpose of organizing a fairly well-behaved world to live in. The ease with which such constancies of meaning become petrified into static wooden objects is only too well shown in our philosophical terminology. But the relativity of the distinction is again shown in its application to the content of a given moment's experience. If we speak of the value aspect of a given object *A*, we are for the time setting one phase of the whole content over against all the other phases. This one phase is most closely and obviously linked with our temporary interests, while the others are lumped together in the form of the material data. We are separating "value" from "thing" when we consider the beauty-worth of the painting, as over against its worth as a house decoration, as a point-to-point duplication of the represented face or landscape, as the object of expensive purchase, as something of which to be proud, as an object with which to please friends, as a bit of color immediately attracting the eye, as a heavy weight upon the hanger, as being a short distance from the floor, as having a greater dimension horizontally than vertically.

Those who hold to a hard and fast distinction between "values" and "things," are to be accused not only of oversight of the relativity of the distinction, but also of having fallen victims to that dead hand out of the past, the concept of substance. Though its explicit, corporeal form in deliberate thinking has long since been laid, its ghost is still abroad and manifested in unintentional implications. It is doubtless a natural tendency of the human mind to wish its ordered material to "stay put," but to look behind manifestations to see what the core or ground is in which these manifestations inhere, is a fruitless and bootless project. It reminds one of an interest in hidden spirits in contrast with an interest in antecedent determinants. This concept of substance involves a striking petrifaction of the various active manifestations of this our active world. The dynamic is represented as static. And so we find at the root of the distinction between "values" and "things," an over-emphasis upon the regularity and constancy and an under-emphasis upon the process and activity of experience.

A fundamental point in the formulation proposed by the four

[5] *Philosophical Review*, Vol. XXII., pages 521, 525, 531.

members is the place to be given consciousness in our study of values. This is not central to the questions offered by others during the year, but is plainly due to an interest in preserving continuity of discussion from year to year. As such it deserves notice. Let me recast the question asked to avoid other confusing issues. "Is consciousness necessary to the presence of values?" The answer may be put briefly: It is necessary in the same sense and degree and only in the same sense and degree as it is necessary for the presence of anything else—your "things," for instance. If we take the reflective point of view outlined above and consider the value-situation analyzable into organic agent striving for ends, vague or definite, and agents of the environment exerting pressure, favorable or unfavorable to these ends, we see at once that the real question is not as to whether consciousness is involved, but as to how much it is involved. Nobody knows just where the limitation between conscious and unconscious is to be drawn (if it is to be drawn). We may go into lower forms of animal life or into the complexities of human, social, and institutional life, and find on every hand cases in which the positive or negative attitude of the central agent toward surrounding agents is hardly to be called either conscious or unconscious. Whether the choice exhibited in the "motor-reflex" or "avoiding reaction" of Jennings's paramœcia is to be called conscious in a rudimentary sense, who shall say? Whether the attitude of the Republican party toward the new tariff and the currency law is to be considered a conscious attitude is likewise difficult of answer.

The element of awareness, then, we may assume to be not the critical nor the characteristic feature of valuation. It enters more characteristically in the moment of *e*-valuation. The attitudes and processes involved in evaluation are usually more highly conscious. The proof of the real character of a doubtful value as well as the resolution of a conflict between rival values in immediate experience is accomplished by a more careful analysis and definition of the values that require greater attention on the part of the experiencer. This movement of evaluation is, indeed, the heart of all intellectual life.

One of Professor Dewey's questions last May[6] was whether valuation (or what I have called evaluation) modifies antecedent values and creates new values. The answer is an unhesitating affirmative. It would seem like uttering a platitude to call attention to the fact that all the work of education in its manifold branches is directed largely by this efficient interest in modification of old values and in direct production of new. To return to the point of view of reflective analysis of human experience, this modification and creation of

[6] This JOURNAL, Vol. X., pages 268–269.

values involves modification on both sides of the value-situation, both organic interests and extra-organic environment. Education taken in its narrower sense as training the individual student to use his powers and to develop them, emphasizes the former; education taken in a broader sense as including the constant tendency to investigation and experiment and the constant work of remolding great moral and social ideals, emphasizes the latter; and yet the distinction is truly a matter of emphasis.

Here now we have a hint as to the essential nature of the distinction of subjective-objective. If, in the interests of evaluation, of reconstruction of our ideals and ends, we abstract for closer scrutiny those elements of the original value-experience that are most unmistakably connected with the organism's share—that is, with feelings, or desires, or judgments, or dispositions, or presuppositions, or the like—we are giving a statement of the *subjective elements* of the whole value. On the other hand, if we abstract those elements distinctly referable to the extra-organic part—that is, economic commodities, gods, the Altman collection, strawberries in March, posterity, the greatest good of the greatest number, etc.,—we are giving a statement of the *objective elements* of the whole value. Be it remembered that we are not making the *whole real value* either subjective or objective: we are only analyzing it and abstracting different elements for closer scrutiny, and these elements are not and can not be called the value. To have the value as a true value we must have it again in all its unanalyzed dynamic simplicity and immediacy.

It should be remarked that another use of "subjective" is certainly legitimate, namely, its application to the great class of facts found useless, hindering, confusing, and hence not entitled to pews in the congregation of the real. But this use, by emphasizing the personal equation, is really a twin brother of that just given.

In conclusion, then, we may say that a value is neither wholly organic nor extra-organic, but is an experience later analyzable into the two and their interrelation; and that however analyzable, a value still remains a *fact* as unique and primary and important as ever.

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REVIEWS AND ABSTRACTS OF LITERATURE

Principia Mathematica. A. N. WHITEHEAD AND B. RUSSELL. Volume II. Cambridge: University Press. 1912. Pp. xviii + 772.

The second volume of "Principia Mathematica" develops the three subjects of Cardinal Arithmetic, Relation Arithmetic, and Series. The last topic is not concluded. Development of Cardinal Arithmetic is based upon the "Prolegomena" which occupies the last half of Volume I.

Volume II. opens with a prefatory statement of symbolic conventions incident to the "theory of types," after which the authors take up the definition and properties of cardinal numbers. This initial topic is comparatively simple and offers a good example of the manner in which mathematical concepts are derived from simpler logical concepts,—the purpose of "Principia Mathematica."

A cardinal number (say, 5) is to be defined as the class of all classes which are similar to a given class (of five members). To this end similarity has already been defined in terms of one-one relations. Two classes, α and β, are similar when there exists at least one correlating relation which establishes a one-one correspondence of all members of α with all members of β. $[\alpha \operatorname{sm} \beta . \equiv . (\exists R) . R \in 1 \rightarrow 1 . \alpha = \mathrm{D}`R . \beta = \mathrm{C}`R$ (*73 · 1, vol. I.)] All classes similar to a given class of five members will be classes of five, and the class of such classes is the cardinal 5. The cardinal numbers are, then, all those classes of classes which have the relation of similarity.

The oddity of this definition lies in its "extensional" character. The cardinal number of a given class is ordinarily thought of as a *property* of the class, but the attempt so to define cardinal number would rock the "Principia" to its foundations. Throughout the work, the procedure is to determine such properties *in extension,* by logically exhibiting the class of all entities *having* the property. Hence if α be a class of five members, the cardinal number of α is the class of entities having the property "fiveness,"—*i. e.,* the class of all classes similar to α.

0 is the class of classes which are similar to the empty or null class. 1 is the class of classes similar to the class whose only member is x. This last proposition seems to be circular, but the circularity is apparent only and due to "translation" of the symbolism. More accurately, 1 is the class of classes which are similar to the class of those entities which are identical with x,—"identity" having been previously defined without the use of the idea "single" or "only" or "one." The advantages of the symbolism are well exemplified by the fact that the above complicated proposition is simply and accurately expressed as $1 = \mathrm{Nc}`\iota`x$ (*101·2). 2 is the class of all classes which are similar to some class α which has a member x and a remainder (α which is not x) whose cardinal number is 1. $[2 = \hat{\alpha}\{(\exists x) . x \in \alpha . \alpha - \iota`x \in 1\}$ (*101·301).] Although the authors do not go into the matter, it is obvious that 3, 4, . . ., might be defined by the same method. A class made up of a member, x, and a remainder whose cardinal number was 2 would have the cardinal number 3, and so on.

The further development of cardinal number requires the theory of types. This theory can not be made clear in brief space,—almost one is persuaded it can not be made clear in any space—but something of what it accomplishes may be explained. The usual discussion of the theory of number makes no question of the existence of cardinals in general. But the extensional method of definition here leads to an interesting consequence. Suppose the number of individual things were anything short of infinite,—say 7, for convenience. If the countable things be individuals, then all classes of eight will be empty classes, and the cardinal 8 will not differ from 0. The theory of cardinals beyond 7 would thus be somewhat

monotonous. Now the "Principia" does not assume an infinity of individuals; in fact, it does not assume the existence of more than one individual. If the class of individuals has one member, the class of classes of individuals has two members,—the class of one and the empty class. By such a method, the existence of classes of any (given) number of members—and the corresponding cardinals—can be proved for some sufficiently high type of entities,—classes of classes, or classes of classes of classes, or . . . . Thus, by its logical rigor, the theory of types frees mathematics from dependence on empirical data and makes arithmetic intelligible to any rational mind possessed originally of one idea. The theory of types also makes explicit the conditions of significance, or range of meaning, of various propositions, and avoids such contradictions as those discussed in the Introduction to Volume I.

The application of the theory of types leads to "homogeneous cardinals," which are never null, and in terms of these the arithmetical operations can be defined. The idea of a cardinal sum is derived from the logical concept, either . . . or. The logical sum of two classes, α and β, is the class of those things which are members of α or members of β (or members of both),—"either α or β." But in order that the logical sum should represent an arithmetical sum, it is necessary that the classes should be mutually exclusive. To secure this the authors have recourse to a device which is worth illustrating. Suppose we confine our attention to four balls, three of which are red. The cardinal number of the class "red balls" is 3; the cardinal number of "round balls" is 4. The logical sum, "balls that are either red or round," also has the cardinal number 4. But the arithmetical sum of the cardinal number of "red balls" (3) and the cardinal number of "round balls" (4) must be 7, regardless of the fact that there are only four balls in all. To this end we may substitute for "red balls" the class of couples, one member of which is a red ball and the other an *imaginary,* or non-existent, round ball. The number of such couples is the number of red balls. For the class "round balls" substitute the class of couples, one member of which is a round ball and the other an imaginary red ball. If α be the class of couples "red ball with imaginary round ball" and β the class of couples "round ball with imaginary red ball," α and β are always mutually exclusive, whether the red balls are also counted as round balls or not. Thus the *arithmetical* sum of "red balls" and "round balls" is the *logical* sum of α and β; and the concept "$+$" is not a new primitive idea, but is defined in terms of "logical constants." If m be the cardinal number of some class α, and n be the cardinal number of some class β, the cardinal $m + n$ is the class of all classes similar to the arithmetical sum of α and β.

The product $\alpha \times \beta$ is defined as the logical sum (aggregate) of couples which can be formed by taking one member of α with one member of β,—the number of combinations of members of α with members of β. If m be the cardinal number of α and n be the cardinal number of β, the cardinal $m \times n$ is defined as the class of all classes similar to $\alpha \times \beta$.

Exponentiation offers certain logical difficulties. If "m exponent n" were defined in the simplest way as the product of n factors each equal to

m, propositions about "m exponent n" would constantly require the "multiplicative axiom,"—that no product is null unless one of its factors is null. This can not be proved for infinite classes. This axiom is not assumed in general, but is inserted as an hypothesis of propositions, proof of which requires it. In order to minimize its use, the authors adopt a different definition of "m exponent n." To this end, the consideration of a new kind of product, "Prod 'κ," is necessary. "Prod 'κ" represents the possible selections from the class of classes κ. A selected class, or selection, of κ, has been previously defined (*80, Vol. I.) as a class formed by taking one "representative" from each of the constituent classes in κ. Thus if κ is made up of α (with 2 members), β (with 3), and γ (with 4), the possible selections from κ will be 24, the products of its members. Products so defined are not restricted to finite cardinals. In terms of this kind of product, "m exponent n" is defined as the product of the class of classes-of-couples which can be formed by taking members of m with a member of n. There are as many such classes-of-couples as there are members of n, and each such class has m members.

The next section (*113) is devoted to "Greater and Less," after which comes the discussion of "Finite and Infinite." The finite cardinals are treated both as "inductive" and as "non-reflexive." Inductive cardinals are those which can be reached by successive additions of 1. A reflexive class (Cantor's infinite) is similar to a proper part of itself. Inductive and non-reflexive, non-inductive and reflexive, have the same properties in general, only if the multiplicative axiom and the "axiom of infinity"—that all the finite cardinals exist—are both assumed. [The theory of types suffices to prove that any (given) finite cardinal exists, but not that *all* exist].

Inductive cardinals are defined by means of the "ancestral relation," due to Frege (See * 90, Vol. I.). The ancestral relation R^* is related to the relation R as "ancestor of" is related to "parent of." If R is the relation of the cardinal n to cardinal $n+1$, the class to which 0 has the relation R^* will be the inductive cardinals. Through the definition of the ancestral relation, the use of mathematical induction is rendered wholly deductive,—though step-by-step definitions and step-by-step proofs are still necessary in some connections.

To avoid the axiom of infinity, $\aleph_0$, the smallest of the reflexive cardinals (Cantor's transfinite cardinals), is not defined as the cardinal of the class of all the inductive cardinals, but as the class of all classes which can be arranged in a progression.

In concluding the subject of cardinal arithmetic, the authors recapitulate certain conventions and the results of applying the theory of types. In the light of the rigorous discussion which has preceded "we can now adopt the standpoint of ordinary arithmetic, and can for the future in arithmetical operations with cardinals ignore differences of type" (p. 293). The reader's joy in this consummation is clouded only by the fact that we now leave the subject of cardinal number and pass to relation arithmetic.

Relation arithmetic is related to cardinal arithmetic as ordinal similarity is related to similarity in general. Cardinal numbers are classes of

similar classes; relation numbers are classes of ordinally similar relations. If ordinal m is the number of a relation, cardinal m is the number of the field (terms) of that relation. The designation "ordinal number" is usually restricted to relations which are serial and well-ordered. Hence relation arithmetic is somewhat more general than ordinal arithmetic and the properties of relation numbers belong to ordinals. The value of this greater generality is something which the reviewer has not yet discovered.

The oddities of extensional definition are nowhere so well displayed as in this part of the work. We hardly think of an ordinal number—"fourth" or "fifth"—as any kind of a relation, though it is an entity determined by its relations. But a relation taken in extension is merely the classes of terms which exhibit that order or relation. Thus "fourth" or "fifth" can be determined in extension only if a fundamental segment which it limits is logically exhibited. Hence a relation number, in "Principia Mathematica," is the number of an aggregate as much as is a cardinal number. A relation number differs from the corresponding cardinal only by requiring the aggregate to have a determined order. Thus the authors depart from the usual conception of ordinal number in ways which they do not remark.

This method of definition also leads to difficulty when we approach the ordinal number one. The "first" (in any ordered set) can not be exhibited in extension unless it have company. The relation "first" must have more than one term. But the ordinal m has cardinal m terms in its field,—ordinal 1, one term. Hence, for the "Principia," there is no ordinal number 1. The nearest approach is the *relation* number of the couple "x with x." But this relation acts like a dyad when added ordinally to another relation. Hence the addition of unity to a relation number is not the addition of the relational 1 and has to be separately treated. Finally the authors *define* the relational sum $1+1$ as 2, and frankly state that they do so in order to avoid troublesome exceptions (p. 482). After the logical niceties of the theory of types, this procedure is something of a joke.

On the whole, the treatment of relation arithmetic is a miracle of patience and ingenuity. In spite of greater complexity, the analogy of operations to those of cardinal arithmetic is preserved by clever devices of symbolism. Problems of order, in products and powers, are solved by the "principle of first differences" (due to Hausdorff), the elaboration of which requires much space.

Part V. is devoted to the treatment of serial relations, which are defined as relations of non-identity which are transitive and "connected." A relation P is connected in case, if any two members of its field, x and y, be taken, either xPy or yPx. The development of series contains less that is novel than preceding sections, and discussion of it may well be deferred to the review of Volume III., since that volume is wholly taken up in completing the subject of series.

Throughout the present volume, the authors make use of previous work in the same field. Without such studies as those of Dedekind, Cantor, Frege, and Peano, their development of the subject must have been

enormously more difficult, if not impossible. But the "Principia" has a logical rigor not previously attained, and the authors can hardly be said to have "followed" earlier treatises save in the most general way.

Although there is much that is novel in result, still the chief value of the work is its method. Proofs are ordinarily abbreviated or merely indicated, in Volume II., but they can readily be reconstructed, and when so reconstructed are identical in character with those of the "mathematical logic" of Part I. The ordinary "operations of thought" are banished. Mathematical operations are reduced to relations. The only operations used in producing proof are substitution and assertion. Expressions which are equivalent, by definition or proof, are substituted for one another, and values of variables (or expressions which may be regarded as values) are substituted for variables. If by such substitution (in a proposition already assumed or proved) there results an expression of the form "*a, b, c* implies *x, y, z*" and "*a, b, c*" is a previous proposition, "*x, y, z*" is now asserted as a new lemma or theorem. Adherence to this method is the demonstration of the assertion, first made by Mr. Russell in "Principles of Mathematics," that mathematics may be developed strictly from the fundamental logical relations.

In attempting any thorough study of the volume or of any portion, the reader will do well to familiarize himself with the operation of this method and, by reading the summaries which precede each section, to get the exact meaning of new symbols as they are introduced. He may then turn to more detailed study with profit.

The book is bound to be difficult. Explanatory passages are so condensed that they require more concentrated attention than the portion in symbols. Often one turns from the English to the symbols in order to find out exactly what is meant. Those who are inclined to object to the symbolic method of proof should defer criticism until they are able to read the symbols with understanding.

Whatever one's opinion of logistic or of the particular treatment here given to mathematics, one must at least pay his respects to the logical rigor of the method and the splendid persistence with which it is maintained. The "Principia" is to intellect what the pyramids are to manual labor. And the "Principia" has the added wonder that the whole structure is balanced on its apex of logical constants.

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JOURNALS AND NEW BOOKS.

REVUE PHILOSOPHIQUE. March, 1914. *Hasard et Déterminisme* (pp. 225–265): M. Darbon. – Chance reigns in the part of physical nature which is deprived of all teleological organization; it affects also those conscious beings who do not know how to coordinate their movements in order to attain an end or are hesitating in the choice of ends to pursue: "in both cases, chance appears as a lack of finality" . . . lack of finality meaning a lacuna in the determinism of phenomena. *Valeurs d'Art*

(*L'Esthétique sociologique*) (pp. 266–282): LUCIEN ARRÉAT. – "Society, in whatever mass, proclaims value, assesses it, but does not create value." General approval does not determine art-values, but only discloses the qualities which are necessary to value. "Sociological value and art-value are expressions which do not necessarily cover the same field." *Études expérimentales. L'Image Mentale d'après les Expériences d'Introspection:* A. SPAIER. *L'Étude de l'Image d'après les Travaux de Pavlov:* MARCELLE DONTCHEF-DEZEUZE. *Analyses et Comptes Rendus.* N. Porsenna et Serge Manolesco, *Interdépendance des Facteurs Sociaux:* J. BOURJADE. G. H. Luquet, *Essai d'une Logique Systématique et Simplifiée:* A. LALANDE. *Notices Bibliographiques. Revue des Périodiques.*

MIND. April, 1914. *Are Meanings Inherited?* (pp. 169–179): C. LLOYD MORGAN. – A review and criticism of Mr. Stout's chapter on Instinct in the new edition of his "Manual of Psychology," containing a brief interpretation of instinctive behavior on the assumption that meanings are not inherited, thus opposing the contrary view of Mr. Stout. *Psychic Function and Psychic Structure* (pp. 180–193): HENRY RUTGERS MARSHALL. – It is the current view that further advance in psychology is to be expected from functional and behavioristic rather than from structural and introspective methods. Facts are adduced to show that structural psychology is of prime importance in the solution of the fundamental problems of consciousness and of the psychical. *Some Problems of Philosophy* (pp. 194–206): F. MELIAN STAWELL. – A criticism of Mr. Russell's "Some Problems of Philosophy," questioning Mr. Russell's treatment of physical space, his Berkeleian alliance, perception and knowledge, induction, universals, hypothetical knowledge *à priori,* self-evidence, and arithmetic and the universe. *James, Bergson, and Traditional Metaphysics* (pp. 207–239): HORACE M. KALLEN. – A comparative exposition of the metaphysical views of James and Bergson, concluding that "the main outlines of Bergson's thought are the main outlines of all transcendentalism. The main outlines of James's thought are not prefigured in the history of philosophy." *Discussions: The Calculus of Strict Implication* (pp. 240–247): C. L. LEWIS. *Is Inversion a Valid Inference?* (pp. 248–250): CHARLES MERCIER. *Mr. Russell on Sense-data and Knowledge* (pp. 251–255): J. E. TURNER. *Critical Notes:* C. Mercier, *A New Logic:* E. E. C. JONES. Ch. Renouvier. *Traité de Logique Générale et de Logique Formelle:* C. D. BROAD. W. Caldwell, *Pragmatism and Idealism:* H. WILDON CARR. T. B. Muller, *De Kennisleer van het Anglo-Amerikaansch Pragmatisme:* R. F. A. HOERNLÉ. *New Books, Philosophical Periodicals. Notes and Correspondence.*

Dontchef-Dezeuze, Marcelle. L'Image et les Reflexes Conditionnels dans les Travaux de Pavlov. Paris: Felix Alcan. 1914. Pp. xvi + 176. 2 F. 50.

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NOTES AND NEWS

At the meeting of the Aristotelian Society on July 13, Mr. H. Wildon Carr read a paper on "The Principle of Relativity and its Importance for Philosophy." The principle of relativity has been formulated in physics to account for the negative results of all experiments contrived to detect the acceleration of a movement from observations made within the moving system. It affirms that it is impossible to discover the motion of a system relatively to other systems by means of experiments performed entirely within the system (for instance, the motion of the earth relatively to sun or stars by means of purely terrestrial experiments), and that the velocity of light is a universal constant, independent of the motion of the source. The consequences of this theory are the abolition of ether, the relativity of space and time to the observer's system of reference, the impossibility of conceiving absolute position or absolute simultaneity, and that mass is a function of velocity. There were three problems of philosophy that seemed to be closely bound up with the physical problems raised by relativity. These were (1) the problem of continuity, (2) the nature of real duration, and (3) the problem of original movement. The doctrine that movement or change is original, and things are a derivation from it or views of it, was curiously in accordance with the principle that mass is a function of velocity. A discussion followed the paper, opened by Professor T. P. Nunn, who thought that Dr. Carr had over-emphasized the importance of the principle of relativity for philosophy. It represented a great mathematical advance, threw light on things badly illuminated before, but had not destroyed old views. It had, he agreed, influenced Mr. Russell, but it had not altered his old view of space so much as to make him recognize the equal reality of private space. By private space was not meant psychological space, but the real space to which each individual has access at each of his moments. Mr. Sheldon also thought the importance of the principle of relativity greatly exaggerated, and held that the experiments were explicable in many other ways. All of these were purely scientific, and had no more relation to philosophy than problems of metageometry. Dr. Wolf developed the view that the whole argument about relativity had originated in Kant's conception of time and space as modes of apprehension. He thought that the paradoxes were really due to a confusion of two different things, namely, the nature of time and space, and the difficulties of measuring time and space. Miss Constance Jones and Miss Oakeley were among the other speakers.—*Athenæum.*

We have received the fourth volume of "Die Philosophie der Gegenwart" containing an index and analysis of the philosophical literature for 1912. The work is marked by the same painstaking care, industry, and competence which have been characteristic of the previous volumes.

Dr. Harold Chapman Brown, instructor in philosophy at Columbia University, has accepted an assistant professorship in philosophy at Leland Stanford Junior University.

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PSYCHOLOGY AND SCIENTIFIC METHODS

PSYCHOLOGICAL DOCTRINE AND PHILOSOPHICAL TEACHING[1]

ABSTRACT methodology has long seemed to me the dreariest field among all the territories, waste and fertile, occupied by philosophy. That philosophy—which, in the last analysis, means some philosopher—should, by means of a general philosophical position, attempt to catalogue the various provinces in the domain of learning, to set forth their respective boundaries, to locate their capital cities and fix their proper jurisdictions, appears to me an undertaking more likely to reveal the limitations of the philosopher's experience, interests, and intelligence than to throw light upon the subject. In discussing the relations of philosophy and psychology, I therefore disavow any attempt to pass upon what psychology must be or ought to be; I am content that psychology should be whatever competent investigators in that field *make* it to be in the successful pursuit of their inquiries. But a teacher and student of philosophy is within his scope when he reflects upon what philosophy in its own past has done in fixing the standpoints, ruling conceptions, and procedures of present psychology, and in raising questions as to the after-effects of this influence—its bearing, namely, upon present philosophical study and teaching.

From this point of view, I say without more ado that, so far as I can observe, the larger part of the time and energy of teachers of philosophy is taken up in the discussion of problems which owe their existence—at least in the way in which they are currently formulated—to the influence of psychology. In its dominant conceptions and professed methods, this psychology is a survival of a philosophy which is daily becoming more incredible and more irrelevant to our present intellectual and social situation. Grant that philosophy has no more to do, intrinsically, with psychology than it has with any other positive science, the fact remains that philosophy is neither taught nor studied, neither written nor read, by discarnate logical essences, but by human beings whose intellectual interests, problems, and attitudes,

[1] A paper prepared for the joint discussion of the American Philosophical and Psychological Associations, on the Standpoint and Method of Psychology, New Haven, December 30, 1913.

to say nothing of their vocabulary, are determined by what they already know or think they know in cognate fields. Let a man be as persuaded as you please that the relation between psychology and philosophy is lacking in any peculiar intimacy, and yet let him believe that psychology has for its subject-matter a field antithetical to that of the physical sciences, and his problems are henceforth the problems of adjusting the two opposed subject-matters: the problems of how one such field can know or be truly known by another; of the bearing of the principles of substantiality and causality within and between the two fields. Or let him be persuaded that the antithesis is an unreal one, and yet let his students come to him with beliefs about consciousness and internal observation, the existence of sensations, images, and emotions as states of pure consciousness, the independence of the organs of action in both observation and movement from "consciousness" (since the organs are physical), and he will still be obliged to discuss the type of epistemological and metaphysical problems that inevitably follow from such beliefs. The beliefs do not cease to operate as intellectual habits because one gravely hangs the sign "philosophy" over the shop whence one dispenses one's philosophical wares.

More specifically: The student of philosophy comes to his philosophical work with a firmly established belief in the existence of two distinct realms of existence, one purely physical and the other purely psychical. The belief is established not as speculative, not as a part of or incident to the philosophy he is about to study, but because he has already studied two *sciences*. For every science at once assumes and guarantees the genuineness of its own appropriate subject-matter. *That* much of naïve realism even the later study of epistemology hardly succeeds in displacing.

Given this established "scientific" background, it does not require much reflection to effect a recognition of problems of peculiar difficulty. To formulate and deal with these difficulties, then, becomes the chief work of philosophical teaching and writing. If it is asked what are the nature and scope of these difficulties, the simplest way of answering is to point to the whole industry of "epistemology." There are many ways of formulating them with technical specificality, no one of which, however, is likely, within the limits of space I can afford, to receive general assent, even as a bare statement of difficulties. But I venture upon the following: The physical world is, by received conception, something with which we become acquainted by external observation and active experiment. But the true nature of perception and action, as means of knowing, is to be got at only by introspection, for they are, by received theory, purely mental or psychical. The organ, the instrument, and the method of knowing

the external world thus fall within the internal world; it is psychology that tells us about them in telling us about sensations, images, and the various associated complexes that form the psychical apparatus of knowing. But now how can these psychical states, these phenomena of consciousness, get outside of themselves and even know that there is a "real" or "external" world at all, much less whether what is known in any particular case is the "real" object, or is a real object modified by a mental contribution or a mental translation, or whether the sensation or image, as the only object immediately "known," is not itself the real object? And yet since sense-perception, observation of things, and reflective inquiry about these things, are among the data that psychological introspection studies, how can it study them unless there are such things to study? In this simple dialectic situation one may find implicit the endless circle of *epistemological* realism and idealism in their many varieties. And, one may also search not in vain for traces of attempts to solve these same problems in philosophies that professedly are purely empirical and pragmatic.

Let me attempt, in the interests of clearness, another statement that is not quite so formal. The student of philosophy comes to his work having already learned that there is a separate psychic realm; that it is composed of its unique entities; that these are connected and compounded by their own unique principles, thereby building up their own characteristic systematizations; that the psychic entities are by nature in constant flux, transient and transitory, antithetical to abiding spatial things; that they are purely private; that they are open to internal inspection and to that only; that they constitute the whole scope of the "immediately" given and hence the things that are directly—non-inferentially—"known," and thus supply the sole certainties and the grounds of all other beliefs and knowings; that in spite of their transient and surface character, these psychic entities somehow form the self or ego, which, in turn, is identical with the mind or knower. The summary of the whole matter is that with states of consciousness and with them alone to be and to appear, to appear and to be certain, to be truly known, are equivalents.

Can any one, I ask, ponder these conceptions and not admit that they contain in germ (and in actively flourishing germ) the substance of the questions most acutely discussed in contemporary philosophy? If such be the case, then the statement that philosophy has no more connection with psychology than with any other science, expresses not a fact, but a revolution to be accomplished, a task to be undertaken. One has, I think, either to admit that his philosophizing is infected with psychology beyond all cure, or else challenge the prevailing conceptions about the province, scope, and procedure of psychology itself.

One who has already denied to himself the right to undertake in the name of philosophy the revision and reinterpretation of the work of a special science may well seem to be precluded from making any such challenge. In setting forth such a self-denying ordinance, I also made, however, the statement that a philosopher is within his scope when he looks in a science for survivals of past philosophies and reflects upon their worth in the light of subsequent advance in science and art. The right to undertake *such* a critical revision can be queried only by those who measure the worth of a philosophical problem by the number of centuries in which it has been unsuccessfully discussed.

There is, then, at least *prima-facie* ground for holding that the orthodox psychological tradition has not arisen within the actual pursuit of specific inquiries into matters of fact, but within the philosophies of Locke and Descartes, modified perhaps in some regards by the philosophy of Kant. With all due respect to the scientific findings of any group of inquiries, I can not find it in my heart to extend this disposition of acquiescence to the first tentative escapes from medieval science. I have not the time or the disposition herewith to prove that the notion of psychic states immediately given, forming the sole incontrovertible basis of "knowledge,"—*i. e.*, certainty—and having their own laws and systematizations, was bequeathed by seventeenth-century philosophy to psychology, instead of originating independently within psychology. That is another story, and yet a story whose materials are easily accessible to all. My present purpose is the more restricted one of pointing out that in so far as there are grounds for thinking that the traditional presuppositions of psychology were wished upon it by philosophy when it was as yet too immature to defend itself, a philosopher is within his own jurisdiction in submitting them to critical examination.

The prospects for success in such a critical undertaking are increased, if I mistake not, by the present situation within the science of psychology as that is actually carried on. On the one hand, there are many developments (as in clinical psychology, in animal, educational, and social psychology) that decline to lend themselves to the traditional rubrics; on the other hand, a certain discrepancy between the researches actually carried on by experimentalists and the language in which alone it is supposed to be proper to formulate them is worrying an increasing number of psychologists, and is increasingly seeming to impose upon them the restrictions of an irritating and cumbersome artificiality. If one went over the full output of the laboratories of the last five years, how much of that output would seem to call, on its own behalf and in its own specific terms, for formulation in the Cartesian-Lockean terms? Supposing the slate

were cleared of historic traditions, what would be the natural way of stating the object, method, and results of the inquiries? When psychologists themselves are breaking away, in at least a considerable portion of their undertakings, from *exclusive* preoccupation with their inherited apparatus, the philosopher is not called upon to assume the whole burden of piety.

As a specific illustration, one may point to the change that will come over the spirit and tenor of philosophic discussion if the activities and methods of behaviorist psychologists grow at the expense of the introspectionist school. The change could hardly fail to be radical, as soon as there was a generation of teachers and students trained in the behaviorist point of view. It would be radical because the change effected would not be an affair of different ways of dealing with old problems, but of relegation of the problems to the attic in which are kept the relics of former intellectual bad taste.

Even a well-wisher (from the philosophic side), to the behaviorist movement must, however, express a certain fear and a certain hope. To sum them up in a single statement, it is possible to interpret the notion of "behavior" in a way that reflects interests and ideas that are appropriate only to the context of the type of psychology against which the behaviorist movement is professedly a protest. The limitation of behavior, for example, to the activities of the nervous system seems to me to express a by-product of the older problem of the relations of mind and body which, in turn, was an outcome of the notion of the mental (or psychical) as constituting a distinct realm of existence. Behavior, taken in its own terms and not as translated into the terms of some theoretical preconception, would seem to be as wide as the doings and sufferings of a human being. The distinction between routine and whimsical and intelligent—or aimful—behavior would seem to describe a genuine distinction in ways of behaving. To throw overboard "consciousness" as a realm of existences immediately given as private and open only to private inspection (or introspection) is one thing; to deny, on the basis of a behavior of the nervous system, the genuineness of the difference between conscious (or deliberate) behavior and impulsive and routine behavior is another thing. The obliteration of the conscious in its adjectival sense (as a quality of some types of response) because it is not discoverable by inspection of the operation of neurones or muscles seems to be the product of ways of thinking congenial only to a separation of physical and purposive action. And this separation would surely not arise if one *began* with behavior, for the separation implies an ascription of independent existence to the mental, on the basis of which alone some acts may be termed purely physical.

There is certainly every reason to think that the behavior of the

nervous system is an important element in human behavior; there is reason to think that it is the crucial element in the mechanism of human behavior. But unless we start with behavior as more than physical, as meaning the sum total of life-attitudes and responses of a living being, and take these attitudes and responses at their face value, we shall never be able to discover the existence and importance of the nervous system as the mechanism of behavior. There must be genuine functions of which it is the operative mechanism, if it is to be identified as a mechanism.

Perhaps one example will make clearer what I am driving at. The psychology of immediately given conscious existence was compelled to treat meanings as simply aggregates of elementary states of consciousness, whose existence and aggregation as conscious things are open to immediate introspection. The behaviorist, in reaction from the artificiality and inadequacy of such a view, looks for some fact of ostensible, overt movement, that may be identified with thought, *i. e.*, meaning-functions. Quite naturally he fastens upon physical changes in the vocal apparatus. These movements open to objective detection and registration *are* what the other school had termed thought—consciousness as meanings, concepts, judgments, reasonings, or whatever. For my own part, I do not doubt that vocalization, including overt laryngeal changes, furnishes the mechanism of the greater part (possibly the whole) of thought-behavior. But to say that we can tell what speech or meaningful behavior *is* by examining this mechanism is putting the cart before the horse; the fact of speech behavior must be given as a primary fact before we can identify any particular set of structures as concerned in its exercise. The behavior standpoint means, unless it is sheared down in behalf of some unexpressed preconception, that speech is just what men *do* when they communicate with others or with themselves. Knowing the apparatus through which this doing is carried on, we doubtless know more about it than we should otherwise know; by this discovery we bring the doing under better control. But to say that physical movements, when the concrete empirical qualities of language are eliminated, *are* language is to begin by mutilating the facts. Exactly the same considerations apply to purposive behavior—that is, conscious behavior, the event from which "consciousness" is derived by making an adjective into a noun. Purposive behavior exists and is given as a fact of behavior; not as a psychical thing to be got at by introspection, nor as physical movement to be got at by physical instruments. It *is* and it *exists* as movements having specific qualities characteristic of them. We may distinguish between the movement and the quality, and thereby make a distinction between the physical and the mental. The distinction may serve to bring the performance of the func-

tion under greater control. But to ascribe independent complete existence to the movement, to say that *is* deliberate behavior, behavior having meaningful or conscious quality, is a fallacy of precisely the same kind as ascribing complete and independent existence to purpose as a merely psychical state. And it is a fallacy that flourishes only in an atmosphere already created by the belief in "consciousness"—just as the latter belief could hardly have arisen save in an atmosphere where all concrete behavior, all achievable action, was regarded as degraded and insignificant in comparison with religious contemplation that related men to a truly spiritual world, which was wholly extra-worldly, supernatural, and hence wholly non-physical.

I am only suggesting a continuation of the same line of thought when I say that in so far as behaviorists tend to ignore the social qualities of behavior, they are perpetuating exactly the tradition against which they are nominally protesting. To conceive behavior exclusively in terms of the changes going on within an organism physically separate in space from other organisms is to continue that conception of mind which Professor Perry has well termed "subcutaneous." This conception is appropriate to the theory of the existence of a field or stream of consciousness that is private by its very nature; it is the essence of such a theory. But when one breaks loose from such a theory he is authorized to take behavior as he finds it; if he finds attitudes and responses toward others which can not be located under the skin, they still have the full claim to recognition.

The teacher of philosophy has, therefore, at the present time a deep concern with the way in which psychology is developing. In the degree in which he feels that current philosophy is entangled in epistemological questions that are artificial and that divert energy away from the logical and social fields in which the really vital opportunities for philosophy now lie, he will welcome every sign of the truning away by psychologists from subjective immediatism; every sign of a disposition to take a more objective, public, and out-door attitude. The future of the teaching of philosophy for the next generation seems to be intimately bound up with the crisis psychology is passing through. Anything that tends to make psychology a theory of human nature as it concretely exists and of human life as it is actually lived can be only an instrument of emancipation of philosophy.

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THE HIGHEST GOOD

MANY systems of ethics—perhaps most systems of ethics—begin with a theory of the nature of the highest good. It is on the basis of their treatment of this problem that most ethicists can be classed either as hedonists or as perfectionists. Considered as expositions of the *nature* of the *summum bonum,* hedonism and perfectionism are diametrically opposed to one another, but hedonists and perfectionists agree in maintaining that some sort of a *summum bonum* exists, and that the true task of ethics is to inquire into its nature. They believe, that is, that there is one fixed, immutable ideal of all moral conduct, and that the rightness or wrongness of our human actions is to be measured by the degree of completeness with which this ideal is attained.

That there is such a fixed, immutable ideal of morality is usually taken for granted by those ethicists who maintain it without any explicit argument. They usually proceed to treat the question of the nature of this ideal as if it were not distinguishable from the more general question as to the nature of morality *überhaupt.* But one should note that *prima facie,* at any rate, the hypothesis that a highest good exists may well be doubted without involving us in a scepticism as to the existence and validity of moral distinctions. It would seem at first sight that the existence of the relation between one object of a moral judgment and a better one does not entail the existence of an object of a moral judgment to which every other such object bears this relation, any more than the existence of the relation between one number and a greater one demands that there should exist some number greater than all other numbers. The notion of a hierarchy of values does not in itself demand that this hierarchy should contain a highest value. The hypothesis that there is no *summum bonum* is, thus, at least worthy of consideration.

Perhaps one of the grounds which leads ethicists to believe in the existence of a *summum bonum* is that they consider that disbelief in its existence, since it demands that we should deny the existence of any single goal of moral conduct, forces us to regard morality as vain and purposeless, and drives us to a pessimistic view of ethics. This is simply false. For to deny that moral conduct has any ultimate ideal is not to say that there are no moral ideals at all. Though we may doubt the existence of an ultimate ideal, we may say that our ideals grow with our attainments, that the better a man becomes, the broader are the vistas of righteousness that open out before him, that to reach the goal which our ideals point out to us does not close our moral development, but simply shows us further and greater goals to strive for and to attain. Surely this is not pessimism! In-

deed, it is difficult for me to conceive how even those who believe in the existence of a highest good can regard its attainment as the motivating ideal of human moral conduct, without taking a pessimistic view of morality, for if our highest ideal is capable of definitive attainment, then on its attainment moral progress ceases and morality culminates in becoming a state of repose rather than a way of acting, while if the sole ideal of moral conduct can not be attained, then, in the last analysis, morality is a perpetual failure. Any *partial* attainment of the highest good, if it is to possess any value at all, must possess it by virtue of being the *complete* attainment of something good in itself, though less in value than the *summum bonum,* and hence by virtue of the plurality of possible ideals of moral action. Now it seems to me, at any rate, though, I acknowledge, not to everybody, that any view which either admits the possibility of a cessation of moral progress or the inability of morality to attain its ideals is essentially pessimistic.

Any valid arguments in favor of the existence of a highest good must start, then, not from the mere existence of moral distinctions and moral ideals, but from the particular nature of these distinctions and ideals. We must ask ourselves, what is it that constitutes the goodness of this act and the badness of that one? Is it that this act chimes in with certain abstract moral laws of which we are conscious, and that one does not, or does it mean that a certain non-intellectual faculty within us sets on the one and not on the other the stamp of its approval, or, if neither of these, what does it mean?

There is one thing on which all ethicists will agree: our sole mode of access to the good is through what we call our conscience, though hardly any two ethicists are in precise accord as to just what this "conscience" is. A being without what might in some sense be called a conscience would never arrive at the notions of "right" and "wrong" at all, though he might easily learn to use the *terms* "right" and "wrong" as conventional names for two different sorts of actions. And in fact we mean by saying that a certain act is right or wrong simply that it would be approved or disapproved by some conscience: either by our own, or by the consensus of the consciences of society, or by the conscience of some ideal impartial observer. If there existed no consciences to censure or to approve, there would be no right and wrong nor good and evil.

Moreover, our conscience is not a mere intellectual awareness that certain acts conform to the moral law and others do not. It is one thing to realize in cold blood that a certain act is among those which possess a given formal property—namely, that of satisfying a certain abstract moral law—and quite another thing to feel that *we* ought not to do it. As James says, "When an idea *stings* us in a

certain way, makes as it were a certain electric connection with our self, we believe that it *is* a reality. When it stings us in another way, makes another connection with our self, we say, *let it be* a reality. To the word 'is' and to the words 'let it be' there correspond peculiar attitudes of consciousness which it is vain to seek to explain." A mere intellectual awareness that a given act is one of those referred to in a certain manner by the moral law is a different thing from the command, "Let it be performed." Just as one's knowledge of the rules of grammar can only render his speech grammatical when coupled with a *desire* to obey these rules, so one's awareness of the moral law can only issue in action when conjoined with some impulse within which urges one to obey this law. Conscience does not speak in the indicative, but in the imperative mood, and, as James tells us, the indicative and the imperative moods represent radically distinct categories of thinking.

Conscience resembles our "feelings" in speaking in the imperative mood. Now, our feelings may be divided more or less sharply into two classes, according as to whether or not they can, if I may put it so, speak in the conditional as well as in the imperative mood. Certain of our feelings, such as hunger, thirst, etc., apply at the present moment to no past objects. We feel no hunger for a dinner we have eaten, nor for one we have missed. On the other hand, those of our feelings which we call prejudices apply to what has gone by as well as to what exists at present. When we read a book of history, we find in it, among other things, many expressions of the author's prejudices in regard to past forms of civilization, society, and government. Similarly our prejudices apply to hypothetical conditions which we know are impossible: for example, many people will feel strongly prejudiced against the state of affairs pictured in Bellamy's "Looking Backwards," or other similar Utopias, though they fully realize that such conditions can never exist. Our mere bodily feelings, however, such as hunger, thirst, etc., can never apply to any but an immediately present object. Our consciences, we can clearly see, are more closely allied to our prejudices than to our bodily impulses in this respect: we make moral judgments about, and have conscientious attitudes toward things that are no more and things that do not exist, have not existed, and never will exist. We conscientiously approve or disapprove of the actions of the characters of history and the characters in a novel. Both our consciences and our prejudices are feelings which may apply to ideal objects.

But this is not the only respect in which conscience and prejudice resemble one another. As a matter of fact, often one person will call a given sentiment of approval of ideal objects a prejudice, whereas another will call it a conscientious sentiment. For example,

the Stoic would say that motives of the nature of conscience led him to justify suicide, while we should say that it was a prejudice. And indeed, even if it was a prejudice, there can be no real doubt that the way it felt to him was just like the way our conscience feels to us. It will be clear, if we reflect on this and other similar cases, that the distinction between our conscience and our prejudices can not be one of emotional quality. Feelings which bear every qualitative mark of being conscience are often the most extravagant prejudices, while the feelings which we regard as conscientious will frequently be considered the most outlandish prejudices by people of other races or times. To take an extreme instance, any civilized man would instantly call the feeling of many cannibal tribes that cannibalism is the most respectful way of disposing of the dead a low and detestable prejudice, but I have no doubt that the cannibal would raise up his hands in horror at the prejudices which lead the civilized man both to insult his dead and to waste a valuable source of food by burying the bodies of his dead in the earth. Again, one may regard one of his own emotions now as a conscientious emotion and now as a prejudice; for example, the religious convert is likely to say that the feelings which urged him to observe the ritual of his previous religion were mere prejudices, whereas before he regarded them as due to conscience, while in his attitude to the feelings which urge him to observe the ritual of his present religion, exactly the opposite change may take place.

Nor is it primarily in the nature of the objects of their approval that the difference between conscience and prejudice rests. No mere difference in their objects is sufficient to account for the discrepancy in the obligatory force which we consider them to possess. Moreover, it would really involve a vicious circle to say that conscience differs from prejudice in approving those courses of action which satisfy the moral law, for the sole sources of our knowledge of the moral law are the *dicta* of our conscience. It might be urged that our conscience is the feeling which leads us to approve those courses of action which an impartial observer would approve, but then the question arises, what sort of a person would an impartial observer be? By an "impartial observer" we may mean (1) an observer with no prejudices, but with a conscience, or (2) an observer with neither prejudices nor conscience. To say that our conscience is the feeling which leads us to approve those courses of action which an impartial observer of the first sort—*i. e.*, an observer with no prejudices, but with a conscience—would approve, is clearly circular, whereas an impartial observer of the second kind could neither approve nor disapprove of any sort of action whatsoever. A being with neither prejudices nor conscience would be an utterly unmoral being, to whom good and bad

would be alike without value. He would be an unmoved spectator both of the basest crime and the noblest act of benevolence. So, unless some third precise meaning is given to the notion of the "impartial observer," it is of no avail whatsoever in distinguishing prejudice from conscience. In general, we may conclude that the difference between prejudice and conscience is more deeply seated than it would be were it a difference in the nature of their objects alone.

There is one respect, however, in which it is easy to see that our prejudices and our conscience are different, and that is indicated by the fact that we speak of our conscience in the singular number, but of our prejudices in the plural. Those feelings which collectively form our conscience in general strengthen the effect of one another upon our action by urging us in the same direction, while our prejudices are in accord, as a rule, neither with one another nor with our conscience. Indeed, when we find various feelings within us at cross-purposes with one another, and can find no method by which to bring them into mutual harmony, we come to the conclusion that perhaps all, and certainly some of them, are not motives of conscience. When I now deem a mere prejudice what I once considered to be a moral emotion, I mean to say that although I once regarded it as harmonizing with the system of my other feelings, I realize in the light of my present knowledge that it conflicts with the most powerful coherent group of feelings within me of such a sort that they may be directed towards ideal objects. Similarly, I approve or condemn the motives of another in accordance as they would respectively cooperate or conflict with that group of feelings capable of ideal objects which, I believe, would be preponderant in me as I am now constituted were I in his place.

But there is no valid *a priori* reason why our entirely different system of feelings capable of ideal direction may not preponderate in another from that which would preponderate in me were I in his place. As a matter of fact, it is clear that when other individuals are put in situations highly analogous to the one in which we find ourselves, their actions, though they bear every external mark of having been motived by conscience, are very different from our own. One might say, it is true, that this discrepancy is due to the fact that they see the situation otherwise than we do, but I doubt whether this difference is always sufficient to account for the difference between their actions and ours. You would find, for example, if you should select a representative group of Englishmen and a representative group of Hindus, each embracing individuals of every stage of intellectual training and development, that there would be a great similarity between the things which one Englishman feels most strongly that he ought to do and the things another Englishman feels

most strongly that *he* ought to do, whereas on many points there will not be so marked an agreement between Hindu and Englishman of the same degree of intelligence and breadth of information. Since my conscience at this present moment is simply the most powerful group of feelings within me capable of ideal direction, the word "conscience" may have a different meaning for every one of us.

But if the only way we can arrive at our notions of moral distinctions is through our conscience, and if there is no *a priori* reason why the conscience of one person should agree with that of another, nor even the conscience of a person at one time with the conscience of the same person at another, why is it that morality is not a purely personal matter? What meaning is there in speaking of the objectively good, or even of that which is permanently good with respect to any one individual? The answer to this question can best be reached by looking at mankind from the biological point of view. Biologically considered, the impulses, instincts, and instinctive motives of an animal are means for the preservation of its race. The impulse of the rabbit to run from its enemy, the instinct of the cat to creep up behind its prey and then spring upon it, the instinct of the sheep to follow the leader of its herd—all these are perpetuated from generation to generation because they are essential to the survival of the race, and the progeny of those members of the race which do not possess these impulses, inheriting the deficiency of their ancestors, rapidly become extinct. The instinctive motives of the human race may be looked at in this light. The feelings into which these motives enter must, therefore, possess a certain inherent stability. As such feelings form an important, if not a dominant part of our conscience, they ensure that our conscience at one moment will have much in common with our conscience at another—that our conscience will usually urge us to perform certain sorts of actions. The commands which our conscience normally makes we may call the commands of our *stable conscience.* It is to this conscience that we refer when we say, for example, " At that moment my prejudices overcame my conscience," etc.

Not only does the instinctive element in our motives explain the existence of a stable individual conscience, but it explains the existence of the social conscience. Among animals, some are gregarious in their habits and some are not; some, that is, are physiologically and mentally fitted for cooperative, and some for independent action. Among those that are fitted primarily for independent action, those instincts which concern their behavior towards their fellows, play on the whole a secondary part in their impulsive life, which consists chiefly in those instincts which urge them to seek and to consume prey, to avoid enemies, etc. But since a race of gregarious animals

has, so to speak, staked its whole chance for survival upon its capacity for concerted action, it is absolutely essential that its members should develop instincts and hereditary emotional tendencies which urge them to cooperate with one another in such a manner as to render concerted action possible; that the herd should, so to speak, act like a larger animal, the resultant of the cooperation of its individual members much as the animal body itself is the resultant of myriads of cooperating cells. Now, man is the gregarious animal *par excellence,* and by the process of the survival of the fittest has evolved such instincts and hereditary emotional tendencies as are essential to the concerted action of mankind. These instincts and tendencies form an important part of the framework on which the moral nature of all of us is built. It is the fact that we possess these motives in common which ensures that there shall be a large measure of agreement between the conscience of one man and that of another. In this common basis of innate (though not necessarily congenital) sentiment which all human beings possess in common the so-called social conscience is rooted. And it is what is approved by this basis of innate sentiment, trained and directed by habit and education, that constitutes the objective good.

It is clear, then, that the social conscience and the objective good are not absolutely fixed. The impulses and tendencies common to all members of the human race have been modified, are being modified, and will be still further modified by the gradual process of organic evolution, which remodels our instincts, and the rapid process of social evolution, which remodels our habits. And among those impulses which seem to be the most subject to evolutionary change are those which speak with a "should" instead of with a "must." The primaeval man in all probability felt the commands of hunger and thirst just as we of to-day do, but he would be at a complete loss to understand our moral scruples, and, I believe, we should be equally at a loss to understand his. The impulses capable of ideal direction are among the latest to appear in the scale of evolution, and it is extremely doubtful, indeed, whether they are to be found at all except in man. They vary enormously from race to race and from age to age. They are influenced by training far more than our cruder bodily impulses. And so we are forced to say that even the objective good is by no means unchanging.

What is more, it is difficult to determine what, strictly speaking, is the objective good of humanity at any one moment. The human race is subdivided into many not strictly definable parts, each of which differs much from every other in its traditions, and considerably in its hereditary equipment of instincts. Each one of these has a more or less distinct objective good of its own, and these objective goods often directly antagonize one another. To the members of one

race, a certain course of action may not only seem, but be objectively right, and to the members of another, objectively wrong. Yet, though the various objective ethical standards of different races or peoples do not harmonize in the valuation they give to particular courses of action, we have no way of placing ourselves over and above the differences of these standards, and calling one of them absolutely correct, and the rest absolutely wrong:—just as according to the theory of relativity, though the numerical magnitude of the velocity of a body is dependent, among other things, on the *Bezugssystem* to which we refer it, there is no definitive *Bezugssystem* which can be picked out from all the others, and called the right one. And just as in physics, we choose as our *Bezugssystem* that in which some body that interests us—such as some point on the earth's surface, or the center of gravity of the earth, or the center of gravity of the solar system—is approximately at rest, so in ethics we treat that objective good as if it were definitive in which our permanent conscience, or that of our family, our class, or our nation is justified. A person of another race may use a different ethical *Bezugssystem* just as a person on another planet would use a different physical *Bezugssystem*. The ethical standard which it is natural for us to use, though it is not *a priori* superior to that which is natural to another, may drive me to actions which conflict with his. Two races may come into a war in which each is, from its own standpoint, absolutely right, and from that of the other, absolutely wrong. In fact, it is only the instinctive feeling within which urges us to respect the consciences and prejudices of other human beings which ever prevents us from overriding the consciences and prejudices of others when they conflict with our own. And this feeling, though we unquestionably all possess it, is frequently overwhelmed by the force of the rest of our conscientious feelings opposing its application in a given instance.

Again, even within the race and the nation, the consciences of certain individuals run counter to the social conscience. There are so-called moral imbeciles, whose conscientious feelings are aborted, and morally insane people, whose consciences are malformed, and persons of these two classes often commit actions which the social conscience disapproves. Now, since we have said that a person's private good is what his conscience approves, and since the consciences of these individuals, such as they are, either approve or do not disapprove of their actions, it might be asked, by what right does the social conscience demand that they should be punished, or at any rate restricted in their opportunities for opposing and injuring society? Have we not said that there is no impartial observer of two consciences, and hence no impartial way of comparing the criminal's conscience with that of society? Then how is the social conscience any better than the conscience which it condemns? The answer here

is clear: the social conscience need finally consider only one good—the good to which it itself urges society. Except in so far as this good happens *de facto* to involve the respecting of the prejudices of another, even though they lead to anti-social acts, the social conscience may utterly disregard that of the criminal—and similarly the criminal that of society. *If the conflict between the criminal and society, or that between two peoples having moral standards which irreconcilably antagonize one another, can not be settled by altering the outlook of those who are on one side of the controversy so that their consciences are changed in such a manner as no longer to conflict with those of the members of the other side, and if no third view of the situation can be developed on which the consciences of the disputants on both sides will agree, the conflict can be settled, if at all, only by the suppression by brute force of the disputant or disputants on one side.*

This view may seem a return to the position of Hobbes, since we regard force as a final arbiter of moral disputes, but it differs radically from Hobbes's view in that it does not consider man fundamentally selfish, nor morality as based upon a purely external contract between the naturally discordant members of a nation. As Hobbes claims, objective morality is of the nature of a compromise, but this compromise between the actions demanded by the feelings of the various members of society is only possible because of the immense common ground of sentiment which all normal human beings possess in common. Among the individual feelings of a human being, which are the bases of all morality, are other-regarding as well as self-regarding feelings.

Objective morality is, then, the end-product of a double conflict: the conflict among the various feelings capable of ideal objects within each individual human being, and the conflict between the private consciences of the various members of mankind. And these struggles were not finished in the distant past, but are going on at the present moment. Objective morality is changing continuously, and this change is not merely in what we *call* the objective good, but in the objective good itself, if the phrase "the objective good" is to have any meaning for us. What *is* good one moment may be bad when looked back on from the next. The ideal of morality to-day may be attained, or displaced from its position as an ideal. There is no single universal ideal of morality the same for all time and all humanity; morality is human and mutable. Though it may be that our morality approaches some limit as it develops, such a limit is recognized as absolutely good from no stage in the process of moral development, and, indeed, *is* not absolutely good at any stage of that process. There is no highest good.

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TIME AND PURE ACTIVITY

BERGSON has raised the question of the relation between time and pure activity and, if I understand him, has ended by identifying the two. He has done this, however, by discrediting the metaphysical worth of the physicist's notion of space and time; and he has relied overwhelmingly for his proofs upon the methods and material of introspective psychology. This is all very disconcerting to the present writer; for to me the result of Bergson's inquiry is excellent, while the entire method is exceedingly bad. I am persuaded that, in some sense, time is pure activity. But I am no less strongly convinced that nobody can prove it by any introspective device or discovery. This successful failure of Bergson's argument prompts me to ask whether the fact at which he is driving can not be exhibited clearly in terms of common-sense—particularly in terms of space and time, as these are ordinarily understood. The following account appears to accomplish this. It is deliberately couched in the most unphilosophical language and employs a frivolous example drawn from contemporary fiction. My aim in choosing this is simple. I wish to avoid every possible refinement of thought in my premises. I wish to keep as close to the normal man's ideas of space and time as I can. If, from such naïve opinions, all of which are, according to Bergson, the products of practical conceptual thinking, I can draw the implication that time is pure activity, I shall, at least, have shown that Bergson's psychology and his method can be wholly divorced from his metaphysical conclusions. Incidentally, I hope to clear the way for reinvestigating the relation of time to consciousness.

1. *Unfree Mobility in Time.*—The sharpest possible contrast between space and time appears in the nature of the mobility occurring in each. In space there is some kind of free mobility. In time there is not. We need not here digress into the field of pure geometry for a glance at the extreme sort of free mobility which is there postulated. We need only consider the simple and apparent variety encountered everywhere in nature. An object can move from the position P to the position P'; it can move back again to P; and in doing this the spatial conformation of the object need not be altered. Or, more precisely, *if* it is altered, it is not by virtue of simple displacement, but through some special physical force, such as electrical tension, heat, or the like. Stated in its most generalized form, this free mobility means that the space characters of a figure are not functions of the figure's position with reference to the rest of space.

In time all is otherwise. You can not leap back into the thirteenth century, nor can a man of that period hop into our own. Even though you allow yourself to be changed by the leap, you can not take it; and thus time shows itself to be different from space in two

respects. In it there is no free mobility; *in it there is, moreover, no mobility of the individual entity distinct from the mobility of the total field.* To phrase this last statement differently, a thing moves in time only by moving with all other things; if all are at the moment t, it can not move with respect to them in such a manner that it enters a moment t' which they will enter at some other moment t''.

2. *Is Unfree Mobility in Time a Mere Physical Accident, Like Our Inability to Fly to the Moon?*—History has repeatedly shown how easy it is for the sagest persons to declare that a certain thing is impossible "by the very nature of things." It was held impossible "by the very nature of things" that the earth should be a sphere, with people on the other side walking, heads downward. It was held impossible "by the very nature of things" that a man could exist without the innate idea of "God." And yet men later found that the world was round, and that nobody has an innate idea of "God," and many South American Indians have no such idea, innate or otherwise. Now, may it not be that our inability to leap into the fiftieth century, A.D., seems impossible to us, merely because of certain prejudices we entertain or certain facts and tricks of which we are still hopelessly ignorant? Assuredly, this is not a foolish query. Its answer, whatever that may be, carries immeasurable consequences for metaphysics.

Now, we are safe in declaring a thing impossible only when we can prove it to be self-contradictory.[1] And this, I think, can be shown in the case of free motion through time. To make the proof as simple as possible, I shall present it in the form of a sober criticism of one of the wildest flights of literary fancy which that specialist in wild flights, H. G. Wells, has indulged in. I refer, of course, to his amusing skit, "The Time Machine."

3. *The Time Machine: Where It Breaks Down.*—The time machine, like all products of supreme inventive genius, was a remarkably simple affair. A few rods, wires, some odd glass knobs,—nothing more! The inventor mounted it, turned a lever, and the machine started to move—but not in space. It remained in the little room where it had been built; but it moved through the hours and days and years, now fast, now slow, according to the traveler's whim at the lever. At last the traveler stopped its mysterious mechanism, and the car came to rest in an era many hundred thousands of years in the future. And the tourist of aeons experienced many strange things.

[1] Please note that I am not saying that only self-contradictory things are impossible! Many things may, for all I know, be impossible through some other circumstance. I believe, though, that, whenever we do not know all the circumstances influencing an event, we do rashly to pronounce the latter impossible on any other grounds than pure self-contradiction.

But the strangest of all things which he must have experienced are not even mentioned by the ingenious Mr. Wells. What happened to the traveler after reaching the future were vastly less odd than what must have befallen him *en route.* As you follow the account I shall give of his trip, please bear in mind that Mr. Wells's hero is a real traveler; he goes to the future, he does not merely have a vision of it. The distinction between traveler and seer is crucial, not only for Mr. Wells's story, but in even greater measure for the metaphysician who studies the serious under side of the fantasy.

4. *Some Hardships of Travel on the Road to To-morrow.*—The time traveler passes through the years as a man would ordinarily pass through space; that is, he traverses the stretches, he goes from "next" to "next." But, when he arrives at the far-off geological epoch when the sun is growing cold, he is still the same man in all his personal history. He is not a day older. His clothes are the same, his thoughts are the same, his own private past is the same as at the outset. How is this possible? If he has passed through a hundred thousand generations, why isn't he a hundred thousand generations old?

The answer to this question is clearly given in the story. The centuries flicker past like fence posts as seen from a swift express train. *In other words, it takes the tourist a very little time to traverse a great deal of time.* And here we come upon the first contradiction in the whole proceeding. Time must be regarded as moving at a certain rate in time: and this is indispensable to the time machine, inasmuch as forward or backward motion in time is possible only if at least two objects or systems may have different rates of displacement or change in time. Let us put this case quite directly. *If the tourist spent a million years in reaching an hour a million years from his starting-point, he would not be leaping the centuries. And his time machine would not be doing anything. The achievement becomes genuine and noteworthy only when he manages to reach a date sooner than it will be reached in the natural course of events. But to do this time itself must have a time-velocity which the time machine can exceed. And this is a pure contradiction: for velocity is a ratio within the time continuum.*

Perhaps a simpler way of describing this situation would be to press the analogy between the traversing of time and the traversing of space. To traverse a million years in a few days is exactly like traveling a thousand miles in one inch. Let us suppose the time-traveler sets out at midnight of New Year's Eve, 1914, journeys to January 1, 2914, stays there a few hours, and then returns in time to attend a play in New York on January 10, 1914. What does this mean, precisely? It means that the whole 2,000 years (1,000 forward

plus 1,000 backward years) is no greater than its own part, 10 days. The 2,000 years "stretch out" and endure no longer than does a small fraction of them. Now, is not this a pure self-contradiction, on a par with the proposition that you or I can go from New York to Pekin without moving farther than our own front door?

There remains another hardship which travelers into the morrow would encounter on the time machine. But this one, I confess, is not easily reduced to a pure self-contradiction. Nevertheless, I shall state it as precisely as I can, for I believe that there is a genuine absurdity in it.

The traveler remains motionless in space while he races across the centuries. This, of course, is meant to be analogous to motion in one dimension, but not in another. Thus, a point is motionless with respect to all other points in a given plane, but the plane as a whole may be in motion. Mr. Wells would have us imagine a man at rest in the space dimensions, but moving with respect to the time of that space field. Very well! Let us do our noblest to play the game. What do we find? Something very disconcerting indeed. Something which, I fear, will make time-touring very unpopular among sedate people. The traveler flies, not through an abstract time (like the "pure space" of the geometer). *He flies through real time. But real time is history: and history is the course of physical events. It is the sequence of activities, physical, physiological, political, and otherwise.*

Proof? Why! At the journey's end, our traveler looks upon strange races, listens to incomprehensible speeches, contemplates a sadly transformed world. The hills have suffered a change, under the beatings of innumberable gales and floods. The leisure classes show the effects of a million years of pampering, while the laborers have lapsed into a strange brutishness that only a million years of oppression could bring. In brief, a million years have truly passed; the world and all the things in it are by that much older, that much wiser, that much sadder, that much different.

But now appears the hardship in time-travel. If real time is the course of natural events, then the tourist who traverses that time traverses history; and that means that he traverses a world of change, a world in which nations rise and fall, tempests leap up, destroy, and subside, houses are built with toil and burned in the frenzy of sudden war, and so on. *Now we must suppose that all these physical changes take place in the tourist's surroundings: and we must assume that the tourist retains his own body. But how can he? For these future changes will take place in the spot his body occupies: and if his body is projected into the time of those changes, it will be affected by those changes profoundly.*

That this is far from being a whimsical objection will appear if we allude to a concrete situation. The traveler sets forth January 1, 1914. He is in his workshop at home, and there he will remain.[2] But he will move forward in time. He starts. Soon he reaches January 1, 1920. By this time, his wife has decided that he has been killed; so she sells the house and goes back to her mother's. The buyer of the house tears it down; on April 1, the wreckers have ripped off the plaster and are over-throwing the brick walls with long crowbars. A ton of bricks is heaped up on the spot where once the vanished traveler's workshop stood. But where, oh where, is the traveler? If he remains in the same place, he is surely beneath the ton of bricks and so is his precious machine. If he is truly traversing time, he must be there at the given instant. Hence his time and place coincide with the time and place of the debris; and this, we aver, is most uncomfortable for the tourist. He is fairly interpenetrated with bricks. And similar inconveniences will occur all along the line of march.

5. *Conclusion.*—All this sounds very foolish; but I think it conceals a very genuine and important fact that must weigh heavily in the great controversy over time which has been going on of late. It is simply this: *Real time is so completely integrated with physical space and physical entities that every transition from a T to a T′ involves a transition from an S system to an S′ system. Motion across space is impossible without motion across time: and, vice versa, motion across time is impossible without motion across space.* If a man wishes to travel a mile, he must travel a mile and in some time. If a man wishes to cross a year, he must cross a year and, in so doing, pass through a number of space forms and systems (of his own and of the environment).

Here, I think, we find the correct meaning of Bergson's theory that time is pure activity. It is not the precise meaning that Bergson himself reads into the words; but it is very close to it. And it is simply verifiable by a common-sense analysis of familiar facts. We find that time is just as truly a "part" of the physical course of events as matter is. It is not a unique, characterless void in which planets spin and iron rusts and grass grows. It *is* the planet, the iron, the grass, and all other physical things. The atom that has volume and mass also *has* time. To say that the atom is "in" time is to obscure a most important fact, namely, that its career is the thing itself.

This view of time and space carries with it a host of peculiar consequences. Not the least of these is one regarding foresight and

[2] Let us waive the embarrassing fact that the traveler who moves only in time and not at all in space would suddenly find himself strangling in the empty ether, while the earth went hurtling away from beneath him.

hindsight. We can not travel into the past and the future on Mr. Wells's time machine. Yet we do somehow deal with past and future, every day of our lives. How, now, must we describe this operation? Past and future circumstances are constantly determining our present conduct. Plainly, they can not do this in precisely the same manner as the heat of the sun now influences the growth of plants. It is a much more elusive process. I hope to consider it soon and to show, in an entirely untechnical manner, that the past-future determinants of the present must be related to one another and to the present in some "medium" or "continuum" other than that of either "space or time."

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REVIEWS AND ABSTRACTS OF LITERATURE

Le Relativisme Philosophique chez Georg Simmel. A. MAMELET. Paris: Félix Alcan. 1913. Pp. ix + 214.

This book by Professor Mamelet, of the Lycée de Belfort, is a republication of a series of articles which first appeared in the *Revue de Metaphysique et de Morale.* Although it "does not pretend to be a complete and definitive *exposé* of the work of M. Simmel," it may well be accounted such. Any review of it has the disadvantage of being a review of a review of an entire philosophic system. It is quite impossible to do justice to Simmel, whatever one may say of the work of Mamelet; and it must be said at once that the latter's work appears to have been done with extreme care, accuracy, and enthusiasm. Indeed, it is a little surprising to find a Frenchman so enthusiastic over the work of a German who, whatever his merits, has not thus far appeared to demand a place among the immortals.

Mamelet divides the writings of Simmel into two periods, the first of which, 1890–1892, saw the publication of "Ueber soziales Differenzierung" and "Einleitung in die Moralwissenshaft." The second period from 1900 to 1910 included the "Philosophie des Geldes," perhaps the best known of his works in America, the "Vorlesungen ueber Kant," "Religion," "Schopenhauer und Nietzsche," the "Probleme der Geschichtsphilosophie," "Soziologie," and the "Hauptprobleme der Philosophie," besides many review articles.

Some kind of key to the book may be given in these words: "Simmel finds in Kant the germ of his relativistic theory which makes knowledge (*connaissance*), like action, move between ideal limits, never attained in fact, *viz.*, pure experience and the pure *a priori,* and which, instead of representing the mind (*esprit*) either as a pure receptivity or as a pure contemplation, makes of it a living, synthetic activity, oscillating between these correlative poles" (p. 90).

The chapters of the book are entitled, "The Philosophic Work of Georg Simmel," "The Relativity of Moral Ideas According to the *Einleitung,*" "The Relativity of Economic Value," "The Relativity of Knowledge in

General," "The Relativity of Historical Knowledge," "Sociological Relativism," "Religious Relativism," "The Relativist Conception of Philosophy and the Unity of Life," "Conclusion." The absence of an index, common to books published in France, is a serious drawback to a work so avowedly comprehensive.

It was in the study of morals, which Simmel treats as a science, that he discovered his relativistic principle. It is a science, but not in the positivistic sense of M. Rauh, who would leave to philosophy only the somewhat ungracious task of criticizing its own categories. Morality is the work of human evolution, this evolution being essentially that of thought directed toward action, for which theoretic concepts are but as the successive rounds of a ladder, purely instrumental. Mamelet calls Simmel a German Bergson and notices the likenesses to pragmatism in his method.

The categories of morality are developed through the contact of the individual with society which, for the individual, is an objective standard; but moral laws, while absolute, are not necessarily changeless. Simmel rightly claims, in opposition to Darwin, *an egoism of the group* which is the basis of altruism. In the opinion of the present reviewer this is the only satisfactory solution of the ancient controversy between egoism and altruism. In the "Philosophie des Geldes" there is an exceedingly acute analysis of the problem of economic value. Value lies between scarcity and abundance and is always relative, but not necessarily relative to the individual. What brings about exchange is not the *objective equality* of things, but their *subjective inequality*. The objective is born of the social, here, as in morality. Subjectivity and objectivity are not, originally, radically different. Immediate enjoyment of a thing is anterior to the subject-object relation; it is a disinterested state. "It is only at a later stage of psychologic development that the enjoyment of a content (*contenu*) appears, on the one hand, as the state of a subject facing the object, and, on the other hand, as the impression produced upon a subject by an object which faces it. From this distance, which henceforth separates subject and object, from this impenetrability of the one by the other, results that *tension* of the first toward the second, which appears in desire. Value then is born of that *distance,* that *separation* of the subject from its content (*contenu*) *qua* object of desire; and, far from desiring things because they have value, they have value only because they provoke our desire" (p. 63).

This last paragraph illustrates a fashion of speaking which reappears throughout the book and is very puzzling to me. What does he mean by *distance, separation,* and *tension?* Are these literal or metaphorical terms? They reappear on page 91 in the discussion of the theory of knowledge. "That which constitutes for us an object is that which appears to us to exist of itself, when qualities and laws are independent of our subjectivity and of our will, that which, in short, as has been shown in the "Philosophie des Geldes" *à propos* of values, *faces us at a certain distance,*[1] a distance the feeling of which is given us by the fact that all the parts which it comprises refer to an interior center which keeps them

[1] Italics mine.

unified." I confess that this is utterly meaningless to me. It may be poetry or it may be a good psychologic account of Professor Simmel's mental processes, but it conveys nothing to my mind; and, unfortunately, it seems to be of very great importance in understanding the very peculiar transformation of Kantism which Simmel professes. He claims to plunge the categories of Kant deep into immediate experience and to make them less rigid, more adapted to life. For him, as for Kant, the ultimate seems to be life and morality rather than knowledge. The categories of the understanding are purely instrumental. In this he is plainly Bergsonian and pragmatic as claimed. Indeed, his work, and Mamelet's interpretation of it, will substantiate the claim that Kant is one of the sources of the pragmatic doctrine, but I fear that it will not add to the glory of pragmatism.

There is a curious mingling of a highly theoretic treatment of general philosophy and an acute study of actual processes in, for example, economics and history. Just how close to experience he comes can not be told from the work of Mamelet which is so condensed. If one were to undertake a careful study of Simmel's whole philosophy Mamelet's book would be of the greatest service as it has sought the unity of doctrine which has been gradually developed during more than twenty years of Simmel's philosophic work. One is inclined to suspect that the latter has followed his master, Kant, in an undue devotion to the symmetry of categories.

The historian (p. 111) is an artist who needs not to have experienced the things which he successfully portrays. The man of genius brings about a sort of auto-suggestion of experiences (*contenu*) which he has never had, unless in unconscious form by inheritance through the race. This seems decidedly fanciful and far-fetched. There is in it small guarantee of objectivity.

What makes of sociology a distinct science is less the discovery of a new object of scientific research than the determination of a new point of view. "A sociology properly so called will study only that which is specifically social, the forms of association as such, apart from the particular interests and objects which are realized in and by association" (p. 142).

Mamelet contrasts unfavorably the French school of sociology (Durkheim and others), which studies the social *macrocorm* (*des phénomènes sociaux massifs, cristallisés, formations synthétiques et derivées, isolables de l'interaction humaine*) with that of Simmel who studies the microscopic structure of society to show how states, churches, corporations, etc., come to be. Following Auguste Comte, Simmel shows that the idea of the utility of society is subsequent, not anterior, to its formation.

With regard to esthetic relativism he says: "The self contemplates, in the beautiful, one of its own forms, one of its destinies, crystallized in some sort, detached from the self. It recognizes itself in the beautiful. In still other terms, the work of art always expresses one of the ways in which the life of the soul is possible" (p. 160). "What gives a work of art its tone, its accent of truth, is not its correspondence with a real

object, but rather the harmonious unity of its totality, realizing, for him who appreciates it, the promises spontaneously made by one of its parts" (p. 161).

Religion, in turn, is solely a subjective attitude of man. It is a fashion of living one's life, of creating one's world, of expressing in a particular mode, the totality of the real. Religion grows out of the social: and society may well stand for many in the place of God without destroying the religious attitude. "Religious faith is an immediate fact, a real event, it is sufficient unto itself. It is the act of giving one's self to God and of receiving Him;" but the God of Simmel's philosophy is less personal, if possible, than that of the pantheistic ideal which he rejects.

I have said that this is a review of a review. As such, within the narrow limits necessarily imposed, it is most unsatisfactory to me. It tells little or nothing of the charm and profundity of Simmel's thought and does not indicate the beauty of M. Mamelet's presentation, a presentation which gives all of Simmel which he can give and too little of Mamelet.

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G. Stanley Hall: A Sketch. LOUIS N. WILSON. New York: G. E. Stechert and Company. 1914. Pp. 144.

The little volume by Dr. Wilson is a model sketch of a living man. President G. Stanley Hall, of Clark University, occupies a commanding place as a scientist; he is the recognized leader of the child-study movement, and his writings have been translated into German, French, Russian, Bohemian, and other modern European tongues. Certainly no American has so greatly shaped the development of educational psychology as Dr. Hall. For a third of a century he has occupied prominent posts in higher institutions of learning in our country. For these reasons a sketch of the man and his activities is desirable at this time. Dr. Wilson has wisely avoided any effort at evaluation of the services of the subject of his book. In a clear and straightforward manner he has told of the boyhood and early years of G. Stanley Hall, his life as collegian at Williams College and Union Theological Seminary, the years of study and travel in Europe, the work as an instructor and professor at Antioch College, Harvard University, and Johns Hopkins University, his work as organizer and for twenty-five years president of Clark University, and an added chapter gives some of the personal traits of the subject. There is appended a bibliography of the published writings of Dr. Hall, which contains 328 references.

In this admirable little book we get an excellent account of the diverse activities of Dr. Hall, as university teacher and administrator, public lecturer, author of many books and articles, and editor of no less than four important reviews. It is known to most American students of science that the first laboratory for experimental psychology in this country was organized by Dr. Hall at John Hopkins University in 1882. He was called to Worcester, Massachusetts, to organize a new university for graduate work in 1888, and he celebrated his twenty-fifth anniversary as

president of Clark University March 28, 1914. In the fields of child psychology, adolescence, and education Dr. Hall has made notable contributions; and through his numerous public addresses, as well as by his writings, he has influenced profoundly educational practises in elementary and secondary schools. He founded and still edits the *American Journal of Psychology,* the *Pedagogical Seminary,* the *Journal of Religious Education and Psychology,* and the *Journal of Race Psychology.*

The chapter on personal traits is an interesting picture of the individual interests and personal habits of the subject of the sketch, and there are five portraits that give visual impressions of him at the ages of six, fourteen, twenty-nine, forty, and sixty-five.

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JOURNALS AND NEW BOOKS.

THE AMERICAN JOURNAL OF PSYCHOLOGY. April, 1914. *A Synthetic Genetic Study of Fear* (pp. 149–200): G. STANLEY HALL. – Fear anticipates pain. Suffering must at some time have left its trace. The present is filled with the maximum of conscious content by fear. It is a fundamental factor in all mental development. Hope, the opposite of fear, looks forward to pleasure. It is progressive. A list of morbid fears is given with a discussion of the most generic types, such as shock and *pavor nocturnus. An Experimental Study of Stuttering* (pp. 201–255): JOHN MADISON FLETCHER. – Stuttering is the result of motor complications in breathing, articulation, and vocalization. It seems to be a mental phenomenon arising out of various affective and emotional experiences. Bibliography. Plates. *The Interrelations of Emotions as Suggested by Recent Physiological Researches* (pp. 256–282): W. B. CANNON. – A discussion of the organization of the nervous system is given with the conclusion that the emotions rise out of cerebral reverberations with their psychical components rather than the reverberations from the viscera, trunk, and limbs. *The Articulation of the Concepts of Normal and Abnormal Psychology* (pp. 283–287): JARED S. MOORE. – The beginning student of normal psychology should be given the meaning of such terms as complex, psychosis, etc., so that he can enter advanced studies more easily. *Minor Studies from the Psychological Laboratory of Vassar College. The Speed of Affective Judgments* (pp. 288–290): HELEN M. POTTER, RUTH TUTTLE, and M. F. WASHBURN. – The time for pleasant judgments is the same as the time for unpleasant judgments. The greater the degree of pleasantness and unpleasantness the shorter the judgment time. *A Study of Affective Contrast* (pp. 290–293): MARGARET M. BACON, ESTHER A. ROOD, and M. F. WASHBURN. – A laboratory study of the affective influence of color. *The Correlation between Accuracy of the Visual Memory After-image and Control of Visual Imagery* (pp. 293–295). HELEN ADLER, MYRA WILLIAMS, and M. F. WASHBURN. – No correlation was

found. *Laboratory Notes* (pp. 296–300): E. B. TITCHENER. – I. The Indian Harmonium; II. A Thayer Tiger; III. The Holmgren Worsteds; IV. The Hering Gray Papers; V. The Hering Indirect-vision Colormixer; VI. The Hering Color-blindness Apparatus; VII. Demonstrations of Color-blind Vision; VIII. A Demonstration of "Tied Images." *Notes on Sensation and Sentiment* (pp. 301–307): E. B. TITCHENER. – A discussion of the meaning of the words sensation and sentiment as they are used by various authors. *Book Reviews* (pp. 308–311): Eugenio Rigano, *Qu'est-ce que le raisonnement? Duexième Partie. De l'intuition à la deduction:* THEODATE L. SMITH. *Book Notes:* Joseph Herschel Coffin, *The Socialized Conscience.* D. E. Phillips, *An Elementary Psychology; Suggestions for the Interpretation of Human Life.* Hugo Münsterberg, *Harvard Psychological Studies. Vol. 3. Religio Doctoris: Meditations upon Life and Thought by a Retired College President.* A. J. Storfer, *Marias Jungfrauliche Mutterschaft; ein völkerpsychologisches Fragment über Sexual symbolik.* Alfred Adler und Carl Furtmüller, *Heilen und Bilden; ärztlich-pädagogische Arbeiten des Vereins für Individual-psychologie.* Hellmuth Falkenfeld, *Wort und Seele; eine Untersuchung über die Gesetze der Dichtung.* Johnston Estep Walter, *Nature and Cognition of Space and Time.* Bertram Brewster, *The Philosophy of Faith; an Enquiry.* Geo. H. Blakeslee, *Recent Developments in China.* Semi Meyer, *Probleme der Entwicklung des Geistes. Die Geistesformen.* K. Th. Preuss, *Die geistige Kultur der Naturvölker.* Sigm. Freud, *Totem und Tabu; einige Ubereinstimmungen im Seelenleben der Wilden und der Neurotiker.* Ernest Jones, *Papers on psychoanalysis.* Harry Miles Johnson, *Audition and Habit Formation in the Dog.* Alfred Gordon, *Diseases of the Nervous System.* Paul Gaulthier, *Les Maladies Sociales.* Cyril Bruyn Andrews, *Life, Emotion and Intellect.* William Brown, *Are the Intensity Differences of Sensation Quantitative?* William Brown, *The Effects of Observational Errors and other Factors upon Correlation Coefficients in Psychology.* J. E. Wallace Wallin, *Psychological Aspects of the Problem of Atmospheric Smoke Pollution.* H. Gutznmann, *Über Gewöhnung und Gewohnheit, Ubung und Fertigkeit, und ihre Beziehungen zu Störungen der Stimme und Sprache.* Philip Boswood Ballard, *Obliviscence and Reminiscence.* Wallace E. Baker, *Diary of a Suicide.* Agostino Gemelli, *Il Metodo degli Equivalenti; Contributo allo Studio dei Processi di Confronto.* E. Stanley Abbot, *Psychology and the Medical School.* F. L. Wells, *Dynamic Psychology.* Th. Rybakow, *Travaux de la Clinique Psychiatrique de l'Université Impériale de Moscou.* Theodore Rybakow, *La Cyclophrénie.* Brief Sketches of the Lives of: *Georg Ernst Durr, Edmund Burke Huey, Arthur Henry Pierce,* and *Theodate L. Smith.*

ARCHIVES DE NEUROLOGIE. April, 1914. *L'Application de la Réaction d'Abderhalden an Diagnostic et à l'Étude des Maladies Nervenses et Mentales* (pp. 205–219): S. MUTERMILCH. – Abderhalden's method of protective ferments, although in its infancy, promises to be of the greatest importance in the diagnosis, prognosis, and therapy of psychic conditions. *Dégénérescence et Démence Précoce* (pp. 219–228): N. BAGENOFF. – Dementia præcox which, in the opinion of the new generation of psychia-

trists, seems to be about to swallow up the whole field of mental diseases, had been described and carefully studied by Magnan and his school under the name of "follie des dégénérés." *La Cyclophrénie* (pp. 229–237): T. Rybakow. – Cyclophrenia consists in a tendency to periodic, acute attacks of psychosis, the patient's mind being apparently normal in the intervals between the attacks. *Revue des congrès et des sociétés. Analyses bibliographiques.*

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NOTES AND NEWS

A joint meeting of the British Psychological Society, the Aristotelian Society, and the Mind Association was held at Durham on July 3–6. A discussion of considerable interest to psychology took place on the rôle of repression in forgetting. In it was considered Freud's view that in forgetting, even among normal people, an important part is played by the factor which he terms "repression." There appeared to be distinct agreement among the speakers that forgetting, both of the ordinary and the pathological kind, while sometimes attributable to defects of retention, is frequently incapable of explanation without the assumption of positive factors which prevent recall of the retained matter. The nature of these positive forces, as they are treated by Freud, was discussed at length. Mr. Pear held that two kinds of forgetting should be distinguished, one due to failure to retain (the conditions for which may be purely physiological in character), the other to failure to recall. The latter condition may be due to psychological factors, some of which are possibly of the kind described by Freud. Dr. Wolf's paper criticized the use of the term "repression." Dr. Mitchell expounded in detail Freud's theory of hysterical amnesia, while Professor Loveday criticized Freud's general conceptions, especially that of unconscious thought, pointing out the defects which were entailed by an adherence to the old doctrine of associationism. Dr. Ernest Jones and Dr. Crichton Miller supported Freud's theory by facts from clinical experience. Among other speakers were Mr. W. McDougall, Professor T. P. Nunn, Professor G. F. Stout, and Dr. H. Wildon Carr.—*Nature.*

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THE FUNCTION AND SCOPE OF SOCIAL PHILOSOPHY

I

MODERN philosophy in its regnant aspect is, for all its pride of universality, an exceedingly one-sided affair. It is essentially the outcome of the remarkable nineteenth-century development of the mathematical, physical, and biological sciences. Its "philosophical" function has consisted in subjecting the concepts employed by these sciences to an inspection more penetrating than could be given by the workers in the special fields. Thus where the physicist swiftly marshaled atoms and electrons, energies and matters, spaces and motions without critical thought of their wider implications, the philosopher, free of the stress of immediate experimental necessity, examined these concepts for the more far-reaching meaning which they held. For several generations now philosophy has concerned itself almost wholly with such concepts as cause, action, matter, mind, truth, mechanism, organism, number, class, infinity, objective, subjective. One need not doubt the true philosophical character of such concern; yet one may not escape the conviction that in restricting itself to these interests philosophy has fallen short of its adequate task. Indeed, among philosophers themselves there has been manifest of late the feeling that philosophy has lost much of its proper reach and power, that it has relinquished in somewhat woeful manner its ancient prerogative of "spectator of all time and all existence."

Yet it would be unfair to blame philosophy or philosophers for this restriction of the scope of inquiry. Philosophy, like every other human enterprise, is, in main degree, the product of its time. Nay, more, if it is to be true to its scientific spirit, if it is to make no proud effort to build itself out of its own imaginings, but is to hold itself to the task of faithful, searching criticism of the dominant concepts of its day, philosophy may never depart very far from the spirit and interest of its particular age. Contemporary philosophy, in short, has, without blame to itself, been one-sided because the scientific age just closing was itself one-sided. The natural and the mathematical

sciences were all-important. The social sciences were scarcely in evidence.

The present, however, already wears a different aspect. Science to-day shows widely and powerfully the effect of a generation and more of intense and growing social concern. The change to a new type of economy, the vast and intricate expansion of industrial and business methods, the growth of new types of congregate life, the application of the telegraph and the telephone, the development of newspapers, the linking of cities and nations by steamship and rail, the swift readjustments of economic wealth, the marshaling of men into new tasks and new relations,—all these have brought problems stimulating in their immensity. The result has been a new and wholly unprecedented grappling of thought with social issues. The science of economics, for example, possesses a magnitude and intricacy such as it has never had before. Sociology is wholly a child of our own day, still unformed, to be sure, and even yet scarce witting of its way, but vital with possibilities and quenchless with enthusiasm. Social biology, social psychology, social medicine, the science of charity, political science, jurisprudence, the psychology of religion, social ethics, social statistics, ethnology, ethnography, demography,—all of these, in the vigor of their promise, are really products of our own day.

It needs no prophet's eye, then, to see that for philosophy a new direction is imminent. As philosophy enters upon this new way, the same type of circumstances which gave it its task during the period of the mathematical-natural sciences will give it its task in the period of the social sciences. Each social science will employ its characteristic concepts. Philosophy must be the comprehensive critic of these.

To make this position clear let us take an example from economics. To most persons economics is the science which holds the more or less decisive word as to the organization of the processes of production and distribution. It is assumed that economics knows, or aims to know, the conditions under which things ought to be produced and the manner in which such products ought to be distributed. This assumption has given to the science of economics a commanding position in our social and business life, a position indicated by the fact that if a theory of social reform is condemned by the greater body of economists, there is in this very fact, for most scientific-minded persons, reason for its rejection. Such power of social authority, however, may not be lightly granted any science save upon the assurance that its concepts and methods are adequate to its commanding pretensions. Economics, therefore, invites inspection as to its fundamental point of view and procedure.

Let us examine a recent definition of economics.[1] "Economics, or

[1] Seager, H. R., "Principles of Economics," page 1.

political economy, is the social science which treats of that portion of human activity which is concerned with earning a living." An ambiguity at once discloses itself. Does "earning a living" mean earning a reputable living, a living worth while to the individual and to society; or does it mean earning any kind of living, performing any kind of work or service that keeps one alive? Evidently, if it means the former, economics must be a fundamentally evaluating science, determining what ways of life are "good" ways and what are "bad." It must, in short, make use of ethical categories and conclusions. The writer continues: "It deals, on the one hand, with man's wants and, on the other, with the goods (*i. e.,* the commodities and services) upon which the gratification of his wants depends." Again an ambiguity discloses itself,—two, in fact. Does "goods" mean "good things," things *good* for a man, or has the word the neutral meaning which it assumes in such a word as "dry-goods"? Again, in dealing with man's "wants," is economics dealing with his fundamental wants, *i. e.,* his needs, or with anything he wants, irrespective of whether it is worth his while or "good" for him to want these things? Obviously, if the science of economics holds to the former of these two pairs of meanings—goods in the neutral sense and wants meaning any desires whatever—it can not serve as a sure guide for determining how and what we *ought* to produce and how and what wants ought to be satisfied.

The issue, therefore, is crucial. Either economics is a non-evaluating science, in which case it should not hold the peculiarly commanding position of social guidance which apparently it does; or it is an evaluating science, in which case any avowed separation on its part from the ethical sciences is wholly without point or justification. The writer above quoted is not long in taking his stand on this issue. On a succeeding page of his book (p. 52) he writes: "The material commodities and personal services which are objects of human desire are conveniently designated as *goods,* while the capacity or quality in goods which makes them desirable is called *utility.* As used in economics these terms are stripped of the moral implications that sometimes attach to them in ordinary speech. Thus, *anything that is an object of desire has utility and is a good,*[2] whether it be the hymn-book of the missionary or the whiskey of the trader. This usage is designed to give greater precision to discussions involving these concepts and also to avoid the mistake of substituting the approval or condemnation of the actions of business men for the explanation of their action—the primary task of economics."

Economics, in short, if this writer is correct, *has nothing whatever to do* with the question what *ought* to be the organization of our

[2] Italics mine.

processes of production, distribution, and consumption. *It is a science wholly descriptive (explanatory) of actual processes.* If this is true, then obviously the economist goes outside his province when, without a modification of his own purely descriptive attitude, he criticizes the social ethicist. The latter points to what he believes to be a more adequate type of business organization. Upon the question of value here involved the economist and the social ethicist have no secure meeting-ground. For the one, everything that satisfies a desire has utility, is a "good"; for the other, only those things or services that satisfy desires which ought to be satisfied have utility, are "goods"; all others are disutilities, "bads." The difference in point of view is crucial. What makes for a perfectly successful economic organization under the one meaning may, under the other, make for fundamental individual and social failure.[3]

I take this as a typical illustration of the situation with which the social philosopher is confronted. Obviously, in the cases cited, the concepts "earning a living," "goods," "utility" are used in a carefully restricted sense (or broad sense, as the reader may view it) which makes them unavailable for precise human valuation. Economics, as we have remarked, seems, however, to have served as an evaluating authority, and this not only to the laymen who read, but to many of the experts who write the conclusions. Hence the need for a broader and more critical inspection of the point of view and function of this science. What, for example, does the science mean by such a fundamental concept as "wealth"? Does wealth mean

[3] *Cf.* Nicholson, "Principles of Political Economy," page 14: "In my opinion one of the greatest merits of the old English school is the sharp distinction drawn between economic laws and moral ideals. Political economy on this view classifies and explains certain social facts, and discovers their laws and relations, just as the natural sciences deal with phenomena of a different order. Thus, starting with private property and freedom of competition as existing facts, we may discover certain laws of rent, profits, and wages; but whether this distribution of the nation's wealth is morally just or unjust is relegated, together with the question wherein justice consists, to ethics." *Cf.*, too, the different point of view of Cunningham, in "Politics and Economics," page 12: "Economic science is wholly practical, it has no *raison d'être* except as directing conduct towards a given end: it studies the means leading towards that end not merely for the sake of knowledge, but in the hope of guiding men so that they may pursue that end in the most appropriate way: it is not content to describe the principles that have actuated human conduct, but desires to look at these principles in the light of after events, and thus to put forward the means that are best adapted for attaining the end in view." *Cf.*, too, the ambiguous statement of Hewins, in "Encyclopedia Brittanica," 11th ed., art. *Economics:* "Economics . . . includes the discussion of all the numerous factors which make life profitable, whether to the nation or to the business, or to the individual man. It may be conceived either as an historical science (What principles have in fact paid?), or as an abstract science (What are the true principles which must pay, presupposing an ideal?)."

weal-th, or does it mean simply the sum of "goods," as above described?[4] Has wealth reference simply to the quantity of goods produced, or also to the manner of their distribution? Has it, more broadly and deeply, reference also to the manner of their consumption? What are business "efficiency," industrial "efficiency"? Has the first reference to the power to accumulate surplus, the second to the power to produce goods? Or have both a broader meaning? What is meant by a "living" wage, by industrial "health," industrial "progress," industrial "stimulus"? What is "good business"? What, in deeper fact, is "saving"? What are the real "costs" of business and industry?

Here is a wealth of concepts which needs critical inspection. It is not unfair to say that even by economists they are still used with vague and shifting meanings. The case is analogous to the unprecise use of such terms as matter, energy, cause, etc., by the physical scientists. Social philosophy, therefore, in relation to economics has its task clearly defined: it is to examine, first, the intended scope of the concepts employed; second, it is to determine whether or not in the actual elaboration of these concepts the science passes imperceptibly beyond the intended use; and, third, it is to determine what relation the special meanings assigned bear to the meanings which these concepts yield when they are regarded from a point of view that is thoroughly comprehensive.

The third is, of course, the peculiarly distinctive task of social philosophy. The aim of the social philosopher is to get a *whole* view of social life. Economics at its best can not yield such a whole view; nor can political science, nor jurisprudence, nor social psychology, nor social medicine. Each of these is obviously and avowedly restricted in outlook. Each in a sense is disorganic. Political science, for example, treats of government; but its interest is in only one type of government, the kind that operates through votes and legislatures, judges and executives. Its conception of citizenship is then framed in view of this restricted interest, so that citizenship comes to mean, in this science, a certain relation which persons bear to votes and legislatures, judges and executives. But, as a matter of fact, social government passes widely beyond these. The biologist in his laboratory, the chemist at his retorts, the research physician, the practising physician, the teacher of social or physical or mathematical truth, the director of newspaper policies, the organizer of business, the controller of credit, the bearer and rearer of children,—all these

[4] *Cf.* Marshall, "Economics of Industry," pages 51–53: "All wealth consists of things that satisfy wants, directly or indirectly. . . . It includes all those things, external to a man which (i) belong to him, and do not equally belong to his neighbors, and therefore are distinctly his; and (ii) which are directly capable of a money measure."

are social governors. Government, in short, exists wherever there is power to organize and direct life destinies. Preeminently the *truth finders* and the *truth appliers* are the *government*. But if this is so, citizenship takes on a far wider meaning, being related now not simply to the secondary functions of voting and legislating, but to the primary functions of truth discovery and application.

Yet it would be folly to ask of political science that it take this broader view of government and citizenship. Its special task is to study *political* government, a task which is a wholly possible and valuable one. Mischief arises only when, by the reader of political science, or sometimes by the scientist himself, the special task is not recognized as special; when government and citizenship, for example, are supposed to have their final and most comprehensive meaning discovered by this avowedly restricted science. That the mischief is not imaginary is shown by the misconceptions that are rife in the contemporary discussion whether women shall participate in the government of society. When the essence of government is held to reside in purely political acts and relations, the granting of a vote means a momentous change from non-participation to participation in social government. When, however, more broadly, it is held to reside in all those activities that organize and direct life activities, the granting of a vote is seen but to complete and clarify a participation long since a fact. Again, the mischief discloses itself in the teaching of so-called "civics" to our children. "Civics," as taught, consists very largely in an analysis of the structure and functions of *political* government. Good citizenship, therefore, comes preeminently to mean good voting. Thus a serious divorce is made between civic life on the one hand and business or scientific or literary or domestic life on the other.

The task of the social philosopher, in all these matters, is to find the broader, the organic view. The same situation is exemplified in law. It is a notorious fact, particularly in America, that something very mysterious and distressing has happened to the concept of justice. Our high judicial experts are men of probity and sincerity; our law is a carefully elaborated system reaching far back into human history; our procedure is conducted with intricate and painstaking attention; and yet justice somehow makes but a sorry showing in the hands of our scientific legalists. The same typical difficulty confronts us here. Justice, from the legalist's point of view, is, very often, not justice at all. Why? Precisely because it is understood from the legalists' point of view. An analysis of the cases before our American courts would easily prove that the courts in large measure have suffered from the "special scientist's fallacy," the fallacy, namely, of accepting the interpretation of a concept given by

the special science as an interpretation thoroughly comprehensive and capable of unmodified application to the concrete human situation.

In this case, as in the others, a more organic view is necessary. Justice is an economic concept as well as a legal. It has its roots in biology and psychology, in sociology and ethics, in education and religion. It is, therefore, not to be defined by legalists, but by philosophers. Obviously, to borrow from Plato, until our judges are philosophers—philosophers of law, not merely legal scientists—there can be little hope of an interpretation and administration of justice that shall be largely and humanly social.

II

The cases adduced will be sufficient to make clear the function of social philosophy. Social philosophy is the critique of social categories. The question now arises how social philosophy is to proceed most systematically and effectively in the pursuit of its peculiar task. The social categories lie all about us in haphazard disarray. One of the relevant criticisms passed upon sociology is that, for all its assumption of scientific spirit and procedure, its results are in large measure unorganized. Its concepts hang loosely together. One passes from an analysis of the mob spirit to a discussion of the social psychology of leisure, and from an elaboration of charitable methods to an analysis of the class structure of society. In the case of sociology, however, the material is so vast and so heterogeneous, all kinds of problems crowd so upon the investigator, that there is little blame to the science if it has not yet set its house in order. Again, the social sciences themselves (whether we regard them as component parts of sociology or as coordinate with it) hang together but loosely. One of the sharp modern criticisms of history, for example, is that it has severed itself quite to its own hurt from economics. A like criticism is passed upon economics, that it has severed itself from social history and ethics; while jurisprudence is accused of holding a position of magnificent separation from all the sciences. One is reminded of the mutual backbitings of the natural scientists. The biologist was warned by the chemist that he must pay more heed to chemical truth; the chemist by the physicist that chemistry must be more alive to physics. All of which is indication to the philosopher—metaphysical or social—that the *organization* of concepts, which is his desideratum, does not lie ready to hand, but is one which he must himself effect.

The first task of social philosophy, then, is to make an inventory of the master concepts employed by the social sciences and to arrange these in some manner of organic relationship. Such a preliminary

organization will, of course, be but tentative, since it is impossible to foretell what changes will be wrought by the process of philosophic inspection and interpretation. But it will serve to give a working view of the field to be covered.

The social sciences deal with those relations and activities which are the outcome of the fundamental social powers of human life. It is not difficult to see that all of these powers have their root in appetite, positive and negative. Appetite in its positive aspect is a seeking-after, a being-drawn-to certain objects and situations. In its negative aspect, it is aversion, disgust, a seeking-to-escape certain objects and situations. Primarily, to be sure, appetites are individual in their reference; but human life is so constituted that appetites "lap over" from individual to individual and so constitute a true social nexus. This will be obvious when we name the two elemental forms of appetite: (1) the appetite for food and shelter, and (2) the appetite for sex. The food- and shelter-getting activities bring the individual very quickly into relation with other individuals; while the sexual activities are in their very essence social.

It is obvious that social science is, in the first place, and fundamentally, concerned with the two great types of relationship that are the outgrowth of these primary appetites; namely, work and sex-life. The latter, then, are the initial master concepts of the social sciences. Out of them develops a vast and complex system of derivative concepts. Work, for example, involves the concept of utility, which in turn bespeaks the concept of end or purpose. Again, it implies such various concepts as skill, productiveness, abundance, scarcity, application, industry, self-control, and, in more social reference, exchange, distribution, fairness, cooperation, competition, price, market, money, interest, rent, etc. In one direction the concept of work opens out into the science of economics; in another, into ethics; and again, in a third direction, into technology and art. In its more elaborated forms, as we shall later see, it develops into government and religion.

The concept of sex-life likewise opens out variously; on the one hand into the life relations made possible by sex, on the other hand into the different qualities of character developed through sex-life. Thus sex-life involves such concepts as promiscuity, marriage, polygamy, monogamy, blood-relationship, illegitimacy, divorce, etc., and again such concepts as chastity, lust, licentiousness, marital affection, parental care, etc. The concept asks toll of and makes its specific contribution to the sciences pertinent to social relations,—biology (heredity, sex hygiene, etc.), economics (family support, division of labor, etc.), psychology (adolescence, abnormality, etc.), sociology (laws of family, etc.), and ethics (purity, parental obligation, etc.). Here, too, as in the case of work, the concept opens out into art, government, and religion.

Almost as fundamental as the nutritive and sex appetites—perhaps as fundamental—is that peculiar appetite for colors, sounds, etc., which, in its developed form, we call the esthetic sense. Primarily a form of individual enjoyment, it manifests itself more and more widely and intricately in outer forms, and so becomes a power of large social significance. In one sense the esthetic power is independent; in another sense it is intimately related to the other powers of human life. In its independence, it develops its own laws and standards; in its relation to other human interests, it subjects itself to laws and standards more comprehensive. Thus a conflict tends always to disclose itself between the special claims of beauty and the more organic claims of life. Esthetic enjoyment (the third master concept) develops, too, its elaborate system of derivative concepts which lend themselves both to organization and to inspection as to their wider significance,—harmony, discord, order, symmetry, balance, proportion, composition, "softness," "sweetness," "vigor," melody, etc.

To pass now to the fourth fundamental concept. Life in all its forms is orientative. "Adaptation" is, in increasing measure, discovery. In its developed form such discovery becomes systematized as knowledge. The processes of knowledge-seeking and knowledge-imparting become systematized as science and education. It is unnecessary to dilate upon the profound social importance of this fourth master concept, knowledge. It need simply be pointed out here that knowledge—both the seeking and the imparting—develops its system of concepts,—truth, error, science, faith, law, uniformity, chance, development, nurture, education, creation, vocation, culture, etc., which offer themselves in peculiar measure to critical inspection.

Neither work, nor sex-life, nor the life of esthetic enjoyment, nor knowledge-seeking and imparting, however, can proceed far in their development without some organization of the life relations other than instinctive. Thus the elaboration of the life of work and sex and beauty and knowledge involves the development of government. Hence the fifth master concept. This concept, like the others, yields its increasingly intricate body of subordinate concepts,—justice, law, politics, citizenship, rights, property, liberty, etc., which, on the one hand, develop into the specific sciences of politics and jurisprudence, and on the other hand call into service the mathematical and natural sciences and such allied social sciences as history, economics, sociology, ethics, etc.

There is still a sixth master concept not so easy to define, yet far-reaching in its social effects. In one sense it is nothing more than the concept of appetite itself; and yet it extends so far beyond appetite in its primitive form that it not only demands a recognition for itself as

an independent concept, but forms sciences and disciplines in its own behoof. Appetite is a seeking, a seeking to attain the yet unattained, to avoid what may be escaped. It has, therefore, in its very essence an element prophetic of ideality, of aspiration. In this sense the concept of appetite already is, in a sense, the concept of which we are now to speak.

Life is primarily an adaptation (and therefore an attending) to physical things. But as life develops, it learns increasingly to attend not only to physical things, but also to its own attitudes toward these things, to the quality of its own seeking, and avoidances. It learns, in short, to detect certain directions, principles, ends in the seekings and avoidances. As a result, after long growth in conscious life, it formulates its concept of a new object to be pursued, an immaterial, ideal object,—the good. Thus consciously it aspires; it looks to an ideal of life; and it develops sciences and disciplines in the service of the ideal. These sciences, however, from the outset are not independent sciences, but are avowedly directive of all the other sciences. They indicate to work, sex-life, esthetic enjoyment, knowledge, and government what, in principle, their ends should be, what fundamentally they are *for*. Thus the sixth master concept of social science is the fundamentally evaluative concept of the good, the concept primarily of ethics and religion.

Work, sex-life, esthetic enjoyment, knowledge, government, the good,—it is with these that the social sciences are essentially concerned. A social philosophy, then, properly begins as a philosophy of work, or, to adopt the more specific modern terminology, as a philosophy of economics. It is noteworthy that while philosophical speculations upon economic matters are taking place all about us, from socialist treatises and utopias to detailed discussions of the wider human bearing of trusts and tariffs and taxes, no systematic *philosophy of economics* has yet been attempted. One may safely predict, however, that just as the fermentation in religious thought brought forth its resultant philosophies of religion, so the widespread contemporary discussion of all aspects of the economic situation will bring forth its appropriate philosophies of economics. At any rate, social philosophy has as its primary task the elaboration of such a philosophy.[5]

Sex-life has not yet developed its specific science. Here, too, however, discussion is rife,—discussion, likewise, that is distinctly philosophical in its quality. A second task, then, of social philosophy will be the careful systematization of the now haphazard sex discussion and an organization of it into a philosophy of sex-life.

[5] An important step in this direction has been taken by the English economist, Mr. J. A. Hobson, in his recently published book, "Work and Wealth: A Human Valuation" (Macmillan).

The esthetic sense has had its expression in all manner of concrete forms. It has had, too, its philosophies. But it awaits to-day a philosophy consonant with the deeper psychological and physical insights of the modern age. Hence the third task of social philosophy will be the development of a philosophy of esthetics.

In the field of knowledge-seeking (science), philosophy has been particularly active. It has made vigorous and careful inspection of such concepts as truth, law, cause, etc., and has, therefore, in various directions developed its philosophies of science. Social philosophy will press these largely metaphysical and logical inquiries into the service of social understanding. It will also, however, be interested in the other, the educational, aspect of knowledge. Thus the social philosophy of knowledge will at once be a social philosophy of science and of education.

Government has indeed long since had its philosophies. Here it will be the new aspects of government—political, juridical, and more widely social—that will of necessity demand a new philosophy of government. And in this case, too, the social philosopher will find material already richly at hand. For while there has been developed no systematic modern philosophy of government, books and essays without number treat constantly of the wider reach of politics and law. It is noteworthy that in America the movement for a systematic development of a philosophy of law is already well begun.[6] For the social philosopher, then, there is a clear pointing to the next important task of developing a philosophy of government.

And finally, crowning and commanding all these, must come the philosophy of highest human values,—the philosophy of the good; in short, an ethics and religion adequate to the new insights of our modern age.

Such, tentatively, is the plan of work for the social philosopher of to-day. It is not difficult to see that he enters a region not wholly unexplored, for adventurous ones, singly and in groups, have long since been mapping and occupying its wilds and fastnesses. The need of the time now, however, is for a more careful occupation and for a cultivation more systematic and entire. It is to this large task of vital organization that the social philosopher of to-day is called.

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[6] See the General Introduction to the Modern Legal Philosophy Series. The Boston Book Company.

JUDGMENTS ON HANDWRITING SIMILARITY AND DIFFERENCE

HOLLINGWORTH in a recent article[1] on "Judgments of Similarity and Difference" has reviewed certain references to the general topic, and has, in particular, emphasized two points of criticism: (1) the assumption that categories logically opposite are necessarily psychological opposites; and (2) the statement that in certain instances a judgment of unlikeness is more easily passed than a judgment of likeness. Hollingworth would prove that "a judgment of unlikeness is not merely the reverse of a judgment of likeness, but a new kind of judgment," by exhibiting for a given group of reagents a higher coefficient of correlation for two arrangements of handwriting specimens on the basis of their resemblance to a given model than is found when a resemblance arrangement is correlated with an inverted order for difference. He would prove his second point, the greater ease of the likeness judgment, by showing an average higher correlation between two such arrangements for a number of reagents than that found for two difference arrangements.

First, a few words relative to the general merits of the question. Hollingworth is, of course, right in challenging the uncritical assumption of Downey[2] that when handwriting samples are arranged in the order of similarity to a standard the judgments become toward the close of the series judgments of dissimilarity. He asserts, "The 'least similar' is not therefore the 'most unlike,'" a statement which his experiments are thought to prove. The evidence[3] upon which the statement under criticism was based was (1) the much greater constancy of certain reagents toward the end of the scale than at the beginning, and (2) the procedure of certain reagents in utilizing as they arranged their samples a method of elimination of—which? The "most unlike" or the "least similar"? The instructions were definitely given to arrange the specimens in the order of their likeness to a given standard. The inverse method of procedure points to an interesting problem, some quality—"least likeness"?—seems to have been more insistent than "most likeness." If there is evidence for Hollingworth's assertion that a positive category is more easily utilized than a negative one, there may be justification for assuming that towards the close of an arrangement the criterion "least like" would be converted into the "most unlike," for surely the latter terms represent the more positive category of the two. In the absence of facts

[1] *Psychological Review*, Vol. XX., pages 271–289.

[2] *Loc. cit.*, page 273.

[3] Downey, J. E., "Preliminary Study of Family Resemblance in Handwriting," *Bull. No. 1, Dept. of Psychol., Univ. of Wyoming.*

a quibble over words is, however, of little value. Hollingworth's resort to experiment is the proper thing. Apart from experiment one would have no justification in asserting the psychological identity of any two categories. Furthermore, we have ample evidence that any difference in instruction operates to induce some difference in the mental set of reagents.

Again, Hollingworth questions the inference that difference is more easily seen than likeness. Here also he criticizes Downey, who, on account of the lower average variability toward the close of the scale in the placing of handwriting specimens in the order of their resemblance to a certain standard, had concluded that for the *material utilized in the test* difference was *on the average* more easily seen than likeness. A more accurate statement would have been that a group of given reagents agreed more closely upon the specimens least like than upon the specimens most like a given sample, and that many individual reagents were more constant toward the close of the scale than at the beginning. The interpretation of such difference in variability at different points in the scale is at yet unsettled.[4]

Because of the individual differences in the method of procedure, as well as individual differences in the positions where repeated arrangements showed least variability, it seemed to the writer of the report under criticism that, possibly, the results pointed to an individual variation of some significance; that, possibly, some reagents concentrated spontaneously on difference, others on likeness.

Hollingworth in reviewing several opinions as to the relative ease with which likeness or difference is perceived seems to assume that either the one or the other category must be that which, apart from specific training, is the more easily applied. A third point of view is possible; ease with which difference or likeness is perceived may be a matter of individual organization.

It would not be difficult to find in literature statements of such a belief. To quote one only. Bacon writes, "There is one principal and as it were radical distinction between different minds, in respect

[4] Hollingworth in discussing this point ("Experimental Studies in Judgment," Archives of Psychology, No. 29, page 102) writes: "In fact one might expect the difficulty to increase regularly toward one end of the series, unless the material were deliberately chosen so as to afford items on both sides of the zero-point of the quality being judged." I am inclined to think that in such arrangements as those based on resemblance in handwriting, just the thing suggested occurs, that is, certain reagents in order to diminish the strain on attention shift after some neutral point to the antithetic category. They have difficulty in understanding their error in technique even when it is explained to them. In my series of judgments on poetry where the arrangement passed, by instructions, from pleasantness to unpleasantness through a neutral point, a lower variability at the lower end of the scale than in the middle occurred. ("The Imaginal Reaction to Poetry," *Bull. No. 2, Dept. of Psychol., Univ. of Wyoming.*)

of philosophy and the sciences; which is this: that some minds are stronger and apter to mark the differences of things, others to mark their resemblances. The steady and acute mind can fix its contemplations and dwell and fasten on the subtlest distinctions: the lofty and discursive mind recognizes and puts together the finest and most general resemblances. Both kinds, however, easily err in excess, by catching the one at gradations, the other at shadows."[5] It is this aphorism closely following the one cited by Hollingworth which leads me to conclude that Bacon would not have sanctioned the substitution in it of "similarities" for "affirmatives" nor of "differences" for "negatives."

Can one doubt that difference may be as positive a quality as likeness? In any case the material upon which judgment is passed must be very influential in determining the relative facility with which the categories are applied, as Hollingworth recognizes in his explanation of Dearborn's report of greater ease in dissimilarity choices. In order to put the question to a test, judgments of similarity and dissimilarity must, of course, be passed on the same material, but if slight variation in the material introduces a shift in the relative ease of the two forms of judgment, there is little evidence of any practical distinction as to the facility with which they are applied.

In order to test the matter further I adopted provisionally the conclusion that relative ease in the perception of handwriting similarity or difference is a matter of individual organization, and that a repetition of Hollingworth's experiment might *with selected subjects* bring somewhat different results. Accordingly, reagents to be utilized in such an experiment were chosen on the basis of the experimenter's observation of their mode of reaction and their accuracy in a test on matching pairs of handwriting.[6]

Twelve reagents were selected. For perception of similarity there were chosen, first, three very rapid and accurate reagents in the pairing of hands, namely, Mfr., Eda., and Jan.; and, secondly, three subjects who reacted very quickly and, apparently, in impressionistic manner, namely, Ado., Awi., and Msm. Ado. and Msm., less accurate in their pairings than the first three reagents, made, however, only errors of exchange, a kind of error that appears to indicate a very general perception of similarity. Msm. and Awi. found it very much easier to pair addresses than to pair single words, a result that seemed also to point to an impressionistic reaction. For perception of difference six reagents were chosen as follows: Fmc. and Ssh., who showed extraordinary preoccupation with details; Tfo., who was accurate in her pairings, but reacted with excessive slowness and

[5] Nov. Org., Bk. I., LV.

[6] A report on this experiment will appear elsewhere.

caution; Gab., who, very unsuccessful in finding matches, proceeded very definitely by a process of elimination of the specimens that *did not match;* Lth. and Meb., who were both slow and inaccurate. Of these twelve reagents, six were men, six women; all were seniors or juniors in college. Only one, Jan., was aware of the purpose of the experiment.

It was, of course, recognized that selection of reagents on such slight observation was precarious, even granting the truth of the assumption that the tendency to maintain a likeness or difference set is an individual variant of some significance. The interpretation of the varying reactions is open to question. Logically, it would seem that success in pairing hands might result from ease in the perception of difference as readily as from perception of likeness, so that the choice of rapid and accurate reagents as those concentrating on likeness might well be subject to error. Furthermore, while an impressionistic method of reaction might possibly stand in opposition to a preoccupation with details, both might be open to an interpretation as a perception of either likeness or difference. The choice of slow and inaccurate subjects as those relying upon perception of difference also seemed questionable. The experimenter felt most confidence in the selection of Msm., Awi., and Ado. for perception of likeness; and of Gab., Ssh., and Fmc. for perception of difference.

The experiment was carried out according to Hollingworth's instructions except that no reagents were tested in the mixed order, an order which, according to Hollingworth's interpretation of his records, gives less clear-cut results than when the similarity and difference judgments are kept separate.

Two series of tests were tried. In the first series the material consisted of thirty-six specimens of handwriting, the address of the experimenter, five words cut out and pasted upon uniform cards. More than half of these samples were written by persons of various degrees of kinship. A duplicate of one of the hands was used as standard. There were two groups of six reagents each. In each group were placed three of the reagents chosen for perception of likeness and three of those chosen for perception of difference. The first group (similarity first) arranged the cards twice in the order of resemblance to the standard at week-intervals, and after that, also at week-intervals, arranged the cards twice in the order of difference from the standard. The second group (difference first) made the first two arrangements on the basis of difference from the standard and the last two on the basis of resemblance. The instructions (quoted from Hollingworth)[7] were typed and placed before each reagent during the test. For resemblance they read as follows:

[7] *Loc. cit.*, page 277.

"Arrange the specimens of handwriting in an order of *resemblance to the standard.* Place the most similar specimens at the top, the *next most similar* in the second place, and the *least similar* at the bottom, with the remaining cards in their appropriate intermediate positions." For the difference arrangements the instructions read: "Arrange the specimens of handwriting in an order of *difference from* or *unlikeness* to the standard. Place at the top the card most different, the *next most different* in the second place, and the *least different* at the bottom, with the remaining cards in their appropriate intermediate positions."

In the second series, sixteen specimens of writing, the address of the experimenter, the same instructions were used. An attempt was made in this case to test the effect of material on the judgment. The test on the pairing of hands had shown that sample 15 of the duplicate series resembled a number of other hands in the first series, but that sample 6 was highly individualistic. Accordingly, six of the chosen reagents made four arrangements each of the sixteen samples as described above, three similarity first, three difference first with duplicate 15 as standard; and the six other reagents did the same with duplicate 6 as a standard. In each group were three reagents chosen for perception of likeness; three chosen for perception of difference.

It has been said that, in general, week-intervals separated each two groupings. The following irregularities occurred. For Ado. two weeks intervened between the first and second and between the third and fourth arrangements; for Eda. two weeks intervened between the first and second arrangements; for Lth. two weeks intervened between the first and second arrangement and ten days between the third and fourth. Two weeks intervened between Awi.'s second and third arrangement.

The coefficients of correlation were calculated by the formula

$$r = 1 - \frac{6\Sigma d^2}{n(n^2-1)}.$$

Table I. gives the positive coefficients of correlation for each two arrangements of the thirty-six cards by each of the twelve reagents. The results are presented in two groups in accordance with the experimenter's anticipations. Hollingworth's abbreviations are adopted in order to make comparison of our results with his an easy matter. S1 and D1 refer to the first trial for similarity and difference respectively; S2 and D2 to the second trials. The inverted order of difference was used for the correlation between the similarity and difference arrangement. In Table II. the results from the shorter series are tabulated.

We may survey the tables with the following questions in mind: (1) To what extent were the anticipations of the experimenter confirmed and the relative ease of perception of likeness and difference shown to be a matter of individual variation? (2) What evidence is there that the similarity judgment is more easily given than the difference judgment? Do more reagents give a higher correlation for the similarity arrangements? Or is the average correlation of the similarity arrangements higher than the average for the difference arrangements?

First, an attempt to answer these questions on the face of the returns, although, as will appear later, my own interpretation of the results gives such weight to practise effects as to make any answer to these questions on the basis of the present data very uncertain.

With reference to the first question it is evident that in the longer series the experimenter's anticipations were confirmed only five out of twelve times; in the shorter series eight out of twelve times. Selection might, then, have been made nearly as well at random, assuming that in a random selection we are as apt to strike a preoccupation with difference as one with likeness. Of the present reagents, Msm. and Jan. were well selected for perception of likeness; Meb., Gab., and Fmc. for perception of difference. The experimenter's confident selections were confirmed only in the case of Msm., Gab., and Fmc.

TABLE I

36 CARDS

Correlations between the Various Arrangements by the same Reagent

Chosen for Similarity Judgment						Chosen for Difference Judgment					
Reagent	*S*1 with *S*2	*D*1 with *D*2	*S*1 with *D*1	*S*2 with *D*2	*S*2 with *D*1	Reagent	*S*1 with *S*2	*D*1 with *D*2	*S*1 with *D*1	*S*2 with *D*2	*S*2 with *D*1
Msm., *S* 1st...	.818	.460	.484	.675	.455	Gab., *S* 1st....	.634	.773	.690	.708	.828
Eda., *S* 1st....	.740	.884	.645	.747	.764	Meb., *S* 1st ...	.582	.848	.606	.806	.743
Ado., *S* 1st....	.665	.716	.608	.661	.630	Lth., *S* 1st	.701	.689	.656	.706	.779
Jan., *D* 1st....	.881	.842	.777	.838	.785	Fmc., *D* 1st...	.687	.702	.653	.514	.511
Mfr., *D* 1st....	.657	.731	.615	.806	.706	Tfo., *D* 1st....	.790	.692	.586	.626	.541
Awi., *D* 1st ...	.666	.677	.687	.772	.790	Ssh., *D* 1st....	.877	.629	.718	.780	.647
Average.....	.737	.718	.636	.749	.688	Average.....	.711	.722	.653	.690	.674
Mean variation.....	.075	.10	.067	.055	.097	Mean variation.....	.081	.056	.038	.080	.108

It is true that if we consider the average coefficients for the two groups of reagents (longer series) we find that the group chosen for judgment of similarity gave a higher correlation for similarity than for difference, and the group chosen for difference gave a higher correlation for difference than for likeness. The difference between the averages is, however, so very slight and so obviously determined

TABLE II

16 CARDS

Correlations between the Various Arrangements by the same Reagent

Standard 15					Standard 6				
Reagents	*S*1 with *S*2	*D*1 with *D*2	*S*1 with *D*1	*S*2 with *D*2	Reagents	*S*1 with *S*2	*D*1 with *D*2	*S*1 with *D*1	*S*2 with *D*2
Msm., *S* 1st	.858	.847	.767	.860	Ado., *S* 1st	.788	.900	.782	.761
Eda., *S* 1st	.805	.950	.770	.868	Lth., *S* 1st	.514	.735	.773	.720
Gab., *S* 1st	.591	.805	.758	.688	Meb., *S* 1st	.535	.667	.658	.658
Jan., *D* 1st	.935	.702	.782	.732	Awi., *D* 1st	.685	.947	.914	.879
Fmc., *D* 1st	.929	.941	.929	.814	Tfo., *D* 1st	.937	.791	.902	.914
Ssh., *D* 1st	.847	.921	.802	.884	Mfr., *D* 1st	.905	.658	.544	.914
Average	.827	.861	.801	.807	Average	.727	.783	.762	.807
Mean variation	.086	.076	.042	.065	Mean variation	.149	.096	.107	.094

by the reactions of one or two reagents that these averages have little significance.

With reference to the second question, we find that seven out of the twelve reagents, longer series (eight in the shorter series), gave a higher correlation between the two difference arrangements than between the two arrangements for similarity, a preponderance in the direction opposite to that found by Hollingworth. The difference is pronounced in only five cases, and of these, three are in favor of the difference correlation, two in favor of the similarity correlation. The average of coefficients was for likeness .724 and for unlikeness .720, too slight a difference to justify any interpretation.

My study of the figures and my observation of the reactions of the subjects convinced me that the practise effect growing out of familiarity with the material gave such an advantage to whichever grouping was made second as to introduce great uncertainty in the interpretation of results. Only in those cases, it seemed, where the second pair of arrangements gave a lower coefficient of correlation than the first was there evidence of individual variation in the ease with which the categories could be applied. There were only four cases in which the first two arrangements gave a higher correlation than the second two. Msm.'s record shows, apparently, a great preoccupation with similarity; we may conclude that Mfr. and Fmc. are, to a less degree, predisposed to see difference and Lth. to see likeness.

It is, of course, impossible to determine how much influence practise effect may have had upon the figures. In the eight cases (longer series) where the last two arrangements gave a higher correlation than the first two, the increase ranges from .039 to .279. The practise effect for different reagents might well have varied if we

may judge at all by the amount of time required for the work. This time in the case of every arrangement was kept by a stop-watch. Meb., who spent most time in making the four arrangements, something over two hours, showed the greatest difference between the two pairs of arrangements in favor of the second, .279. Ssh. spent the next longest time and shows the next highest increase in favor of the second, .248. Jan. and Ado. spent, respectively, only twenty-one and twenty-eight minutes on the whole four arrangements, and gave an increased correlation amounting to only .039 and .051.

A practise effect was apparent not only in a tendency for the third and fourth arrangements to correlate more closely than the first and second, but also in a reduction of the time needed for making the later arrangements. It took Ssh., for instance, thirty minutes to make the first arrangement and thirteen minutes to make the fourth. Except for the very quick reagents (Eda., Ado., Jan.) there is continuous decrease in time for the successive arrangements. General habituation in handling such material is shown, further, by the results of a second test on pairing of hands tried at the close of this experiment on the judgment of similarity and difference; there is great increase in speed and accuracy on the part of certain reagents. The practise effect was particularly evident for Ssh., Gab., and Lth., the first two being particularly painstaking in their arrangements for similarity and difference and showing great increase in the correlation of the third and fourth arrangements.

Let us consider also how far the judgments of similarity and difference seem to represent two distinct mental sets as shown by the correlation between reciprocal arrangements. For one reagent, Awi., the reciprocal correlations are all higher than the direct correlations (long series) and, as his introspections indicate, this subject had very great difficulty in maintaining any distinct set. For other reagents there are cases where the correlation between reciprocal arrangements is higher than that between one or the other of the direct arrangements. There are examples of some very high reciprocal correlations.

The correlation of the reciprocal of the second difference arrangement with the second likeness arrangement is higher than the correlation of the reciprocal of the first difference arrangement with the first likeness arrangement. Hollingworth also found this to be true and accounts for it by the approximation of the two categories "with repetition, adaptation, and familiarity with the material."[8]

Self-consistency certainly increases as the reagent grows more familiar with the material and better adapted to the conditions of the test, but such increasing self-consistency may *raise the second*

[8] *Loc. cit.*, page 288.

direct correlation as well as the correlation between a direct arrangement and the reciprocal of the inverse arrangement. The effect of practise is not confined to bringing together the opposite categories—an assertion which needs explanation if the opposite categories represent diverse psychological operations,—but is evident also in the ease with which the reagent handles the whole situation. The practise effect must be kept in mind if we would determine the bearing of the results of any such test as the present upon the problems under consideration.

Our general conclusions are as follows: First, the method utilized by Hollingworth requires certain modifications in order to justify the drawing of any conclusions. A long time-interval should intervene between the two arrangements for likeness and the two arrangements for difference in order to minimize the practise effect. Moreover, the object of the test should be carefully explained to each reagent in order to insure his keeping very definitely in mind the mental set required. The introspections of the present subjects indicate considerable difficulty in discriminating between the "least like" and "most unlike." Careful explanation of the purpose of the test would have put them on guard.

Secondly, the outcome of the present test does not indicate that the likeness judgment is given with greater ease than the difference judgment; a greater number of reagents were more self-consistent in giving the latter. The introspective reports assert, also, the relative greater ease of the likeness judgment less frequently than did Hollingworth's subjects. Msm., Tfo., Awi., Ssh., and Jan. report that the similarity arrangement was the easier to make. Lth. and Mfr. found no difference in the ease of the two. Ado. and Meb. asserted that they had more confidence in the difference arrangement, although Meb. adds, "The practise effect of repeated arrangements may have something to do with this feeling." Fmc. found the difference arrangement the easier to give, but was inclined to ascribe this increased ease to practise rather than to purpose or method. So, too, Gab. reported of the difference arrangement, "No easier than the preceding arrangement except so far as familiarity is concerned."

Thirdly, there is some indication of a psychological difference in mental set for logically opposite categories for *certain reagents* and a tendency toward definite preoccupation with likeness or difference. Ado., Jan., and Tfo., the reagents of the most psychological training, speak of distinct sets for the different judgments and were alert to inhibit the wrong one. Ado. and Jan. report sudden peculiar shifts at times from one attitude to another. It required considerable effort of attention to inhibit a shift to the opposite set when ease in manipulation seemed to justify such a shift.

A further bit of evidence as to the difference between a similarity and dissimilarity set occurs in the correlation found between a ranking for self-consistency in giving the likeness judgment and the accuracy with which hands could be paired. The ranking for consistency in giving the likeness judgment is subject to error in that six of the reagents made the two arrangements for likeness before the two for difference, while the six other reagents made the similarity arrangements second. This latter group had the practise advantage. The coefficient of correlation is probably reduced; it amounts to .515 for a first test of pairing handwritings, and .565 for a second test on pairing hands. A ranking for consistency in giving the difference judgment and accuracy in pairing of hands shows no correlation; .02 for the first test in pairing, and — .281 for the second test.

The relation of ease of judgment to material has already been mentioned. To test this specifically the shorter series of samples of writing was used. Two standards were employed, sample 15, a conventional hand, and sample 6, a highly individualized hand. With both standards the average correlation for the difference arrangements is higher than that for the likeness arrangements, but the relative increase in favor of the difference correlation is slightly higher in favor of the individualized writing. On the whole, however, the correlations are much higher for standard 15. Is this due to the choice of the standard or to the chance grouping of subjects? The group arranging the samples with reference to standard 15 had perhaps slightly the advantage with respect to subjects. Mostly, however, the situation seems to be operative in determining the results. The situation also operates, in the case of certain reagents (Ssh., Lth., Mfr.), in causing a shift in the kind of judgment showing the greater consistency. Obviously, the material utilized has so much to do with the outcome that it is desirable to evaluate it in some way.

In any case the problem of the perception of likeness and difference is so important that we should welcome any attempt such as Hollingworth's to break ground.

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REVIEWS AND ABSTRACTS OF LITERATURE

Il Metodo degli Equivalenti. AGOSTINO GEMELLI. Florence: Libreria Editrice Fiorentina. 1914. Pp. 344.

"It is a little surprising that the method of equivalents has not made more impression upon the practise and literature of experimental psychology. . . . The reason for its neglect is, in all probability, the fact that it has no direct bearing upon Weber's Law." This is Titchener's

comment on the history of the method of equivalents. Besides the fact that this method does not give a measure of sensitivity, at least two more reasons may be advanced for its fate. The result of a determination by this method usually is expressed in the form of the ratio of the value of subjective equality to the objective value of the standard stimulus. The inventors of this method expected that this ratio would be fairly constant and not depend on the intensity of the standard, but this hope was not realized. To this must be added the theoretical difficulty to define the result of the method of equivalents in the terms of the method of constant stimuli. The method of constant stimuli certainly is the simplest of all psychophysical methods, and there is a general tendency among the investigators of to-day not to consider a procedure of experimentation and calculation as well understood so long as its relation to the method of constant stimuli is unexplained. This seems to be particularly hopeless in the present case, for while the method of equivalents gives the subjective equivalent, but no measure of sensitivity, the latter procedure gives a measure of sensitivity, but no value of subjective equality. Not until recent years has the problem been attacked to define the point of subjective equality in terms of the method of constant stimuli.

Gemelli undertakes an experimental investigation of the first point. Using an esthesiometer of his own invention, he determines by the procedure of minimal variations in the methods of equivalents the subjective equivalents of cutaneous distances presented on the forehead, the chest, the forearm, and the back. The standard distances varied from threshold values to 12 cm. The ratios of the subjective equivalents to the objective values of the standards set in with very high values and decrease with increasing standard. For standards of about 8 cm. this ratio is smallest, and from this point on they increase again. Some of the values found by Gemelli are almost as high as those obtained by Miss Washburn, but it seems that this agreement is closest for very large and very small standards. The value of this ratio also depends on the sensitivity of the parts of the skin to which the stimulus is applied, and it is the larger the greater the difference in sensitivity of the two points stimulated. This indicates that this ratio increases with the difficulties the subject encounters in comparing the two distances.

The next point investigated is the influence of the pressure exerted by the points of the esthesiometer, which was constructed in such a way as to control the pressure. It is found that a higher pressure increases the sensitivity, since the greater the sensitivity, the more the ratio approaches unity. The ratio of the subjective equivalents to the objective value of the standards differs less from unity, as the pressure is increased. This result is in agreement with the observations of Miss Cook and v. Frey.

One of the most interesting problems which lends itself to an investigation by the method of equivalents is the influence of optical images on our estimation of cutaneous distances. Gemelli tries to analyze this by determining the equivalents of distances given on the forehead and on the arm, and on the chest and on the arm. In one group of experiments the arm was kept stretched out along the body, while in the other

group it was abducted as far as possible. The distance on the arm in the distal position is underestimated compared with the impression which is received when in its normal position. In other words, when a part of our body is removed from the median line, distances on this member are underestimated. Gemelli believes that this underestimation is due to the influence of optical images, and tries to prove this assertion by a series of similar experiments on two blind subjects who show no such underestimation. Without going into the details of this subtle argument we like to remark that it is not quite on the level of the investigations in which the subject is asked in one group of experiments to produce these images as vividly as possible, while in another group he is asked to suppress them. This is a typical case of psychological experimentation, in which systematic use is made of introspection, while Gemelli's method is not quite so decisive and rather reminds one of behaviorist investigations.

The third part of the book, in which an introspective analysis of the process of comparison of cutaneous distances is given, is of particular interest. The process by which the subject arrives at a judgment as to the relative size of the standard and comparison lengths is regarded as a thought process, and the customary methods for its analysis are applied. This is a step in the right direction, for psychophysics is just as much in need of a qualitative analysis of the process of comparison as of an exact understanding of the methods for evaluating the results obtained. Gemelli's merit on this point is undisputed, although his originality is not quite as great as he believes. Several authors before him have emphasized the necessity of an introspective analysis of the process by which we arrive at a judgment about the relation of the stimuli presented.

The experiments reported in this book were made under the direction of Külpe and Kiesow and one can easily see the influence of their ideas. The results are given in great detail and always convey the impression of careful and conscientious work. There is no doubt that the author has advanced our knowledge materially on several points, and nothing of what shall be said is intended to retract anything from this praise. The book has the appearance of a German "Habilitationsschrift," of which it shares the good and bad points. The references are very numerous—so numerous, in fact, that one sometimes gets the impression that the purpose of the quotations is not so much to impart information to the reader as to show off the erudition of the writer. It is hardly possible that Gemelli really mastered all the publications he cites, and as a matter of fact one may doubt whether anybody in his place could have done so, since the literature on the method of equivalents is not yet properly worked over. Some of the references are incorrect. I was slightly chagrined to discover that in Italy one of the publications of which I have the weakness to regard myself as the author is attributed to one of the psychophysical Browns—Warner Brown, presumably. On the other hand, a paper is credited to me of which I have a rather superficial knowledge only. Mistakes of this kind are almost unavoidable, if the references are as numerous as in Gemelli's book.

A fundamental shortcoming of the book lies in the very formulation of the problem: Gemelli does not analyze the formal character of the method. This is due to the fact that he is not acquainted with the recent investigations on the value of subjective equality and on the method of just perceptible differences. This is peculiar, since he quotes some of my papers as well as Wirth's book, in which a long chapter is devoted to the exposition of these ideas. The first important point in an analysis of this method is to lay down a definition of the subjective equivalent in terms of the probabilities of the different judgments. The next point is the analysis of what Gemelli calls the procedure of minimal variations in the method of equivalents. This does not offer any great difficulties, since the formulæ for the method of just perceptible differences could be easily adapted so as to fit this case.

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Das Wissen der Gegenwart in Mathematik und Naturwissenschaft. Wissenschaft und Hypothese, XVI. E. PICARD. Leipzig: B. G. Teubner. 1913. Pp. 292.

"Das Wissen der Gegenwart" gives a concise and valuable history of the development of mathematics and natural science in recent years, and is concerned not only with mathematics and natural science, but also with the relation between the two. Each science has its "pre-mathematical period." For example, biology has not yet reached a point where its laws may be expressed in mathematical form, while physics is farther advanced toward such a point. And yet, as Fresnel said to Laplace, "Nature does not bother herself about analytic difficulties," so it often happens that a natural law may be expressed in mathematical form only with the greatest difficulty, and, once formulated, may need to be revised and extended.

The scientist does not object to this, but rather rejoices in it, since he regards science as growing and would have no interest in it otherwise. He aims to find a "theory" which will first order and explain known phenomena, and will then prove "fruitful" in bringing about the discovery of new phenomena. If these, in their turn, require a revision of his theory, so much the better. According to Picard's view, scientists differ essentially from two other classes of men—from certain philosophers, who aim at a fixed set of laws to explain all phenomena that are to come and who are apt to be dogmatic, fitting facts to theories; and from those who have interest only in things commercial, not realizing that "the scientific dreamers who seem buried in their theories are really men of affairs." Experiment suggests theory and theory experiment, and each is dependent on the other. But the value of a theoretical investigation is not always recognized at once; for example, "the researches of Gibbs remained for fifteen years almost wholly unknown, until one day van der Waals acquainted the Dutch chemists with their importance;" and the careful study of conic sections by the Greek geometers remained "useless" for two thousand years.

The present tendency to break down the walls between sciences presents the problem of extending the laws of physics so as to apply to phenomena in chemistry and biology. The field thus opened demands of the scholar knowledge so extensive that in future the most important results will be reached through the combined efforts of scientists in different fields, say, a physicist or chemist working with a mathematician.

Mathematical concepts (function, infinity, the continuum, etc.) are clearly brought out in their historical setting. Classing mathematicians as physicists or logicians, Picard is a physicist. "True rigor," he says, "is fruitful, and differs from that other rigor—tiresome and purely formal—which only obscures the problems that it touches."

The author announces that his book will have nothing to do with philosophy "in the ordinary sense." A scientist in his laboratory is not concerned with doubts as to the existence of phenomena whose laws he is investigating; Galileo was the father of modern science because he asked not *why* but *how* bodies fall. But a student of philosophy in the broad sense will find the book full of interest. The author suggests, for example, that we owe the idea of cardinal number (number pertaining to a group) to our sense of sight, and the idea of ordinal number to our sense of hearing. And throughout the treatment of non-Euclidean geometries and the "new physics" it is evident that the author has a keen philosophical interest. In fact, his general attitude toward science is itself a philosophy. The notes by F. Lindemann are rich in references for further study.

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The Mental Capacity of the American Negro. MARION J. MAYO. New York: The Science Press. Pp. 70.

Marion J. Mayo has made a study of the class standing of 150 colored students in the high schools of New York during a space of about three years. From this study the author concludes, "that as regards the mental heredity of the Negro and white races as represented in our Northern States, the average mental ability of the white race, so far as this ability is exercised in school studies, is higher, but not a great deal higher, than that of the colored race; and that as regards the mental variability, the white race is more variable, but not a great deal more variable, than is the Negro race."

To base conclusions as to ten and one quarter millions people on a study of 150 would seem to be a little rash. It is, however, especially questionable when the measurements relied on are the class marks given in a public school system. Further than this, Miss Mayo had no means of knowing how "colored" these students were; that is whether they were seven-eighths white or seven-eighths black, whether they represent Bantu or Hottentot Negroes, Songhay or Pygmies. To assume then that these 150 pupils represent a "race" was going far beyond the evidence.

The author says, that, "if we admit that white pupils on the whole surpass colored pupils in school ability, we may well ask whether this is

due to causes that are accidental, temporary, and removable, or to causes that are fundamental and ineradicable. In other words, is this difference a matter of opportunity, or of heredity?".

The answer is not certain, the author admits, but concludes that the main factor is to be found in "race heredity," because "everything in the power of educator, philanthropist, and lawgiver has been done for the equalization of opportunity."

It will occur to every person who knows anything about the race problem in America that this is a monstrous conclusion. As a matter of fact the colored children in the high schools of New York suffer:

1. From poor training in southern schools, whence the majority of them come;

2. From the necessity of working their way through school, thus having little time for study or recreation;

3. From home surroundings, which do not encourage study and do not afford the kind of help which high-school home study calls for;

4. From a lack of that general social contact out of which the ordinary white boy in the big city gets so much of his education.

Other groups of students of all races suffer to some extent from similar difficulties, but it can easily be proven that the colored student suffers a little more from the causes enumerated. Is it not then reasonable to assume that lack of opportunity rather than "race heredity" fully accounts for the comparatively small differences which the author finds?

Beyond this, the reader of a study like Miss Mayo's feels impelled to criticize the underlying method. The material relied upon is so small and so questionable that no author would dare to use it for any conclusion except one of which the public approves.

Suppose, for instance, that the native-born American in this study had been compared with Russian Jews in the high schools, or that persons of Irish descent had been compared with Germans. Before any author would have dared to come to conclusions he would have built up a body of facts extending over long periods. Undoubtedly, the statistical method is going to be used in psychology more and more in the future, but it is going to call for a system of enumeration and a weighing of probable evidence and a definition of terms of which this author shows no adequate conception.

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JOURNALS AND NEW BOOKS.

RIVISTA DI FILOSOFIA NEO-SCOLASTICA. June, 1914. *Il problema criteriologico o il problema ontologico?* (pp. 189–195): A. Cuschieri. – The so-called problem of criteriology is nothing but the old problem of universals in a new form; and it is time to do away with this old-new question, of which nobody has yet been able to determine the nature and the limits. *Francesco Suarez. In margine della storia della filosofia* (pp. 196–218): M. Brusadelli. – An analysis of Scoraille's recent

work, "François Suarez, de la Compagnie de Jésus." *La Filosofia di Benedetto Croce* (pp. 219–239): E. CHIOCCHETTI. – Croce's philosophy is a modified Hegelianism, in which the Hegelian principles of becoming and of the identity of the real with the rational are corrected. *Compiti e metodi della moderna psicologia della religione* (pp. 240–255): G. WUNDERLE. – The psychology of religion furnishes material to the philosophy of religion and to theology, and opens to pedagogy the most direct way to reach the human heart. *Note e discussioni. Analisi d' opere.* R. Bizzarri, *Studi sull' Estetica:* C. OLIVIERI. P. Stoppani, *La concezione della materia secondo A. Rosmini:* E. CHIOCCHETTI. G. Mattiussi, *Il Veleno kantiano:* F. OLGIATI. G. Saitta, *La personalità di Dio e la filosofia dell' immanenza:* F. OLGIATI. G. Chiarella, *Problemi odierni:* A. QUEIROLO. P. Carus, *Il buddismo e i suoi critici cristiani:* R. FUSARI. M. Horten, *Die speculative und positive Theologie des Islam nach Razi und ihre Kritik durch Tusi:* L. BIANCHI. *Notiziario.*

REVUE DE METAPHYSIQUE ET DE MORALE. May, 1914. *La Morale de Rauh* (pp. 293–333): D. ROUSTAN. – Rauh's tenets often show a striking similarity to those of the Chicago school. His theory of moral experience emphasizes the inventive and creative character of moral activity. Moral belief may be said to be successful when, after impartial trial, it is strengthened as faith. *La Nature des Lois Biologiques* (pp. 334–360): M. CAULLERY. – The vitalists' error is mainly due to their exclusively considering the relatively small number of organisms and functions which have proved successful in the course of evolution. Mechanism is able to explain all the biological processes in function of the elementary properties of protoplasm, although it is as yet unable to explain the latter. But vitalism, which implies indeterminism, is still less equal to the task. *Philosophie et Mythe* (pp. 361–381): E. BRÉHIER. – A process akin to day-dreaming, mythic thought strives to conceive a universe in which human action is real and significant. Essentially a historical view of things, it always accompanies and supplements purely static speculation and is responsible for the present-day conception of immortality, destiny, progress, etc. *Études Critiques. Les Transformations du Droit au XIX^e Siècle* (concluded): E. LASKINE. *Questions Pratiques. Le Droit de l'Électeur:* CH. DUNAN. *Livres Nouveaux. Revues et Périodiques. Informations.*

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Cohn, Jonas. Der Sinn der Gegenwärtigen Kultur. Leipzig: Verlag von Felix Meiner. 1914. Pp. xi + 297. 8 M.

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NOTES AND NEWS

On August 26, the Philosophical Union of the University of California celebrated its twenty-fifth anniversary. The address of the occasion was delivered by Professor Josiah Royce on the subject "The Spirit of the Community." The Union was founded in 1889 by Professor George Holmes Howison, then Mills Professor of Philosophy in the University of California; and to his inspiration and guidance, the University and the Pacific Coast are chiefly indebted for that persistent cultivation of philosophic interests for which the Union has stood. The conviction expressed at its founding was that philosophical studies had a supreme interest for human life in all its aspects; and the members banded themselves together to increase philosophy's control over their own aims and conduct, to awaken its interest in others, and in particular to maintain at the seat of the University, a central association for philosophical study. The annual addresses have been notable features of the Union's life. Usually when the programme for the year's study was based upon some recent book, these addresses have been delivered by the author's themselves. The invitations to such men has given occasion for some of the important philosophical utterances of the time. Among the Union's published lectures may be mentioned "The Conception of God," Josiah Royce; "Christianity and Idealism,'" John Watson; "Philosophical Conceptions and Practical Results," William James; "Psychology and Philosophic Method," John Dewey; "The Heart of Ethics," G. H. Palmer; "Philosophical Orientation and Scientific Standpoints," James Ward; "The Relation of Time and Eternity," John Ellis McTaggart; and "The Genteel Tradition in American Philosophy," George Santayana. The annual lecture of last year, by Canon Hastings Rashdall, and Professor Royce's anniversary address remain to be published.

The Prussian Academy of Sciences has offered a prize of 5,000 marks for the best study of "Experience as a Factor in Perception." The articles may be in German, Latin, French, English, or Italian, and must reach the Academy by December 31, 1915.

Dr Robert M. Ogden, Secretary of the American Psychological Association, has resigned his position as professor of philosophy and psychology at the University of Tennessee to accept the professorship of psychology at the University of Kansas.

Dean A. Worcester, B.A. (Colorado, '11), has been appointed associate professor of psychology in the University of New Mexico.

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RELATIVISM

IT is a tenet of many philosophers that there is some object of experience for whose existence the existence of anything else is not a necessary condition:[1] that, in other words, some substance can be known. Descartes regarded the self as a substance; Spinoza thought that God, and God alone, is conditioned by nothing outside himself; Leibniz believed that each monad is a self-determining substance. Locke and Berkeley took over the notion of substance from Descartes; and even Hume, though it is true he no longer considered the self and matter as substances, regarded each sense-datum as entirely independent of everything else. Hegel and the absolutist school of philosophers, while firmly denying that any particular thing is independent for its existence of all other things, assert that the universe knows itself as a complete whole, conditioned by nothing outside itself. At the present day, there is a very influential school of philosophers, embracing, among others, the authors of the "New Realism," in America, and Mr. G. E. Moore, in England, who hold that we have *knowledge by acquaintance* of certain sense-data and objects of introspection, and that these objects of acquaintance are entirely independent of anything else for their existence.

It will be noticed that those views which hold that self-sufficient experience exists divide themselves naturally into two classes, according as to whether or not they hold that any object less in range than the whole object of an experience can be experienced self-sufficiently. Those who hold views of the first class believe that we experience certain particular objects, such as the self or certain sense-data, whose existence is conditioned by nothing outside themselves; those who hold views of the second class believe that there is only one substance—the universe. Descartes, Leibniz, the English empiricists, and Mr. Moore hold positions of the former type; Spinoza, Hegel, and the absolutists are adherents of the latter doctrine.

[1] Throughout this paper I shall speak of the knowledge or experience of an object which does not depend for its existence on the existence of anything else as a *self-sufficient* knowledge or experience.

It is an argument often used by philosophers of the second type against those of the first that in so far as we are experiencing something whose existence is independent of that of anything else, we can only get information from the experience which is independent of the existence of anything else, and hence irrelevant to everything else. Whatsoever self-sufficient experience I may have must float down the stream of my consciousness as passively as a chip of wood on a mill-stream. If the particular patch of red I am perceiving at this present moment could be exactly the same patch of red whatever the context in which it occurs might be, then my sensation of this particular patch of red can throw no light on the context in which it occurs: it would not in itself be an experience of red as distinct from green, nor an experience of a color having certain physical and psychological properties, nor an experience of the color known as "red," nor even of the thing before me at the present moment. Even "this" is far too descriptive a name for it. Such an experience can not be used as the ground of explanation of any other experience: for all the part it plays in my consciousness, it might be known by some one else instead of by myself. Indeed, the only meaning which I can attach to the statement that a certain item of experience belongs to me is that it belongs to a system of experiences internally relevant to one another which I call myself. At any rate, any self-sufficient experience I may have is a mere excrescence on the rest of my consciousness, and nothing in the rest of my consciousness can give the slightest evidence of the existence of self-sufficient experience.

This argument only tends to prove the uselessness of self-sufficient knowledge of particular things for explanatory purposes, and those who believe in its existence might still retort that they are intuitively certain of the existence of self-sufficient knowledge of particular things, entirely apart from the usefulness such knowledge might have for explanatory purposes. But there is a far more vital difficulty which Mr. Moore and those who hold similar views encounter. To say that something exists whose existence has no necessary condition other than itself is equivalent to saying that something exists which can exist in isolation, for the only meaning of, "a is not a necessary condition of b," is, "in some cases b exists and a does not." Now, to say that a can be isolated from everything else, and yet be the same thing as the a that now exists in the context of our experience, is self-contradictory. For, if it were completely isolated, *it would be isolated from its identity with the* a *which now exists in the context of our experience, and would not be the same* a *which now exists in the context of our experience.* Even if the whole world, except the particular patch of red I am looking at, should be abolished at this present moment, it is only by virtue of the *relation it would*

have to the world which had been abolished that this patch would still remain the same patch of red as the one at which I am now looking. To say that x is in some relation to y, and that z is in no relation to y, and that z has some sort of sameness with x, is clearly self-contradictory, for in this proposition we assert a very definite relation between z and y.

In fact, the very hypothesis, "If a were isolated," refutes itself, for a is in a context if it is a possible argument to the propositional function, "a is isolated." It is true that one may argue that the definition of the proposition, "a is isolated," may still be determined in such a manner that even under this condition a would be isolated,[2] but this argument only carries weight if one believes that the proposition, "a is isolated," can have some sort of existence with nobody to assert it. If this is not the case, "a is isolated," will contradict itself, because, in order for this proposition to be a proposition at all, it is necessary for a to be in relation to some knowing subject. This is *a fortiori* necessary if it is to be a *true* proposition. And it is extremely hard to see what meaning there can be in saying that a proposition exists without reference to the possibility of its being asserted by some subject.

At any rate, it is not true in any significant sense that the objects of experience would be exactly what they are now if they were in isolation. If a sense-datum is to enter into the system of our experiences, it must be in relation to this system from the beginning. Moreover, the introduction of self-sufficiently given relations between the self-sufficiently given terms of our experience would in no way render it a coherent experience, as Bradley has so well pointed out. If I know "black" and "darker" and "white," I do not, *eo ipso,* know "black is darker than white," nor any objective situation these words may represent. These terms and this relation would give me just as readily, "white is darker than black." It may be retorted, "No. It is true that the terms and their relation alone do not give us the required proposition, but the terms, their relation, *and their order* do." It is easy to see the futility of this answer. Let B and W stand for "black" and "white," respectively, $D(x, y)$ for "X and Y are in the relation, 'darker than,'" and XPY for "X precedes Y in the relation, 'darker than.'" "Black is darker than white" will then be represented by the symbols $D(B, W)$ and BPW, while "white is darker than black" will be represented by the symbols $D(B, W)$ and WPB. In both of these, B, W, D, and P may be found. It is clear that this method of proceeding will give us no results: from the terms *and* their relation we can never get to the

[2] One may say, *e. g.*, that a is isolated when it is in relation to no particulars except facts of which it forms a component.

terms *in* their relation. To be brought into connection by a given relation, the terms of that relation must be known initially as related, and hence our knowledge of each of them by itself can not be mere knowledge by acquaintance.

It thus becomes clear that in addition to any self-sufficient knowledge we may be supposed to have of items of experience less than the whole of our present experience, we must experience in relation from the very beginning everything we ever know in relation. Our experience, if given at all, must be given as a system. Moreover, no property of this system can give the slightest evidence in favor of the existence of various items of self-sufficient experience, in addition to our experience of this system, since, as we have shown, we can never proceed from a self-sufficient item of knowledge to any further knowledge. Our experience must be coherent in cross-section.

But it is not enough that our experience should be coherent in cross-section: it must also be coherent in sagittal section. If each moment of our experience would be precisely what it is if neither past nor future existed, then the experience of a moment would, to all intents and purposes, constitute my whole personality at that moment, and I would be undergoing a continual alteration of personality. It is indeed a logical possibility that our present is entirely dissociated from our past: that the I which writes this word is an entirely different person from the I that crosses this t. It is, however, a view which nobody will hold, for if it were true, our memory would be but an illusion, and our expectation a vain self-deception. Though at each moment we might have an illusion of the permanence of our experience, that illusion would have no permanence. Our ideas would spring into being full formed, like Athene from the head of Zeus. That this may not be the case, that our experience may possess longitudinal coherence, it is necessary that the successive instants of time should be known in relation to one another, and hence that each moment should not constitute a self-sufficient object of experience.

It does not render our experience temporarily coherent, moreover, to regard it as made up of a series of self-sufficient experiences, each of finite duration. For, suppose that the maximum duration of such an experience is t seconds. Let A, B, C, and D be a sequence of instants of physical time following one another in the order given. Let the durations of the intervals AC and BD each be t seconds. Then the experience of all those moments between A and C preceding C by an interval less than t seconds will form our self-sufficient experience at C. Nowhere else will we experience the interval AC immediately: at any moment before C, C will be as yet unexperienced, while at any moment after C, the lapse of time between A and

that moment being greater than t seconds, A will have passed forever beyond our present self-sufficient experience. Similarly, the only moment when the whole interval between B and D is experienced in one self-sufficient experience is D. Though AC and BD have BC in common, it can never be learned from any of our self-sufficient experiences that they possess this in common: this can never be known before D, for then BD is as yet unknown as a whole, nor after C, for then, since the experience of A no longer forms a part of the self-sufficient experience of the moment, AC has passed beyond any self-sufficient experience. Even though the duration of the *objects* of our self-sufficient experience would thus be more than momentary, we would have at each moment one self-sufficient experience, and one only, and no self-sufficient experience would have any duration.

So far, the arguments we have been using are such as the absolutists use to prove absolutism. The absolutist of the type of Bradley starts with the presumption that the completely real must be that which as an object of knowledge is completely self-sufficient, and, by arguments such as those we have used above, shows that if any part of an experience be self-sufficient, it will not in any significant sense be part of that experience. So far I agree with the absolutist, but when he confidently asserts that there *must be* some completely real and self-sufficient experience, I must part company with him. For his absolute experience is not experienced in its self-sufficiency by any human being. Human experiences possess too many lacunæ for any one to hold that view. Our mind is continually stretching out tentacles to the past and the future: here we search for a memory forgotten, there for the verification of a prediction. It is only in its "relative manifestations" that the absolute can be an object to us, and in its relative manifestations, as an object of our consciousness, the absolute fails to attain perfect self-sufficiency. The absolute, *qua* absolute, is a mere name to us, and must from its very nature be entirely irrelevant to anything we can ever know. As has been often said, if the absolute is self-sufficient, then no appearances can emanate from it, for if it enters into relation with any appearances outside itself, it fails to attain self-sufficiency. And though it be said that the appearances are contained in the absolute, not even the absolutist will admit that the *partiality,* the *relativity* of these appearances is so contained. But the moment anything can be found which may in any way be contrasted with reality, then reality becomes a mere partial reality, and any experiences which we may have of it are on the same plane as other partial self-sufficient experiences, so that absolutism is open to precisely the same objections it raises against other philosophical views.

It is no answer for the absolutist to retort that the absolute has a completely self-sufficient knowledge of itself. The absolutist believes in the existence of the completely real because he considers it the true object of *his own* thought. But he finds that it is never the object of his thought, in its complete reality. What should his conclusion be, then? That the completely real exists in its complete reality independently of his thought? It may have such an existence or it may not; which alternative is the true one no argument on the basis of human knowledge can indicate. But what is clear is this: the true object of our human thought is *not* the completely real, and all reality that we know is relative and partial. The absolutist quite correctly shows that the world of knowable particulars does not contain his reality, as such, but he fails to make the obvious inference that it is his notion of reality, and not the world of knowable particulars, which is at fault and should be regarded as mere appearance. The real conclusion to which the absolutist argument should lead us is that in no significant sense can we assert the existence of self-sufficient knowledge.

But if no knowledge is self-sufficient, none is absolutely certain. For if we are not sure that any experience would be what it is in entire isolation from everything else, we can know no propositions in such a manner that our mere awareness of them guarantees our knowledge of their truth, for the simple reason that we can never have, in any significant sense, a *mere* awareness of them unrelated to the other objects of our consciousness. We can, that is, have no knowledge which is certain *a priori*. Now, every proposition known with absolute certainty must be obvious *a priori,* or deducible by infallible means from a set of propositions known with absolute certainty. In the latter case, we may know *a priori* when we have exhausted the presuppositions of the given proposition, or this may be discovered by an infallible deduction from a set of presuppositions known with absolute certainty; and so on indefinitely. But since, as we have seen, we have no knowledge certain *a priori,* we are driven to the conclusion that there is no absolutely certain knowledge at all, for to any given set of presuppositions for a given proposition which is to be proved with absolute rigor, there must be adjoined other propositions from which it can be deduced that the original set of presuppositions contains everything that is necessary for us to know in order to deduce with absolute rigor the desired proposition, and so *in infinitum*. Without self-sufficient knowledge at some point or other, we can never arrive at *all* the presuppositions of any proposition.

Since we can never arrive at *all* the premises of any proposition, although no knowledge is self-sufficient, no knowledge is merely

derived; that is, more is said in any proposition than in any set of premises we can assign to it. Even the propositions of geometry do not follow merely from the axioms of geometry. The axioms of geometry are stated in some language, either of words, or of symbolism, but it is not merely so many queer marks on paper, so many sounds, that go to make up the axioms of geometry. No! These marks or sounds must be interpreted according to certain rules which collectively constitute the *grammar* of the language of words or symbolism in question, and these rules, as well as the axioms of geometry, themselves, condition the propositions of geometry. But these rules, too, must be applied, and we need further rules by which to apply these, and so on indefinitely. At some stage or other we come to rules which are not written or spoken, but only thought,[3] but in so far as they are definitely formulated rules, they must be applied in accordance with further rules. The so-called "laws of thought" are no exception: to make use of the law of contradiction, you must have some criterion which will enable you to identify a proposition. As Mr. Russell has pointed out, no law can cover itself as a special case of its field of validity, so that the "laws of thought" can not themselves dictate the mode of their application.

The views I have stated above—that no experience is self-sufficient, that no knowledge is absolutely certain, and that no knowledge is merely derived—I call collectively "relativism." It is obvious on the face of it that relativism is closely related to two great tendencies in modern philosophy: pragmatism and the metaphysics of Bergson. Like both these theories, it is a protest against mere formalism in metaphysics. Pragmatism insists that every philosophical theory should be judged by the value of its consequences for action; Bergson holds that the intellect alone gives us but a superficial account of the universe—that it is by intuition, by that species of thought which allows the mutual interpenetration of idea with idea, and does not insist that concept shall be separated from concept by rigid formal definitions, that we really grasp the inner meaning of reality; relativism insists that the supposed absolute rigidity of the definitions used in metaphysics is but a fiction, that no concept can mean what it does entirely independently of everything else.

[3] It is our inability to give any exhaustive set of rules for any language of words or of symbolism which makes every grammar contain *idioms* (*i. e.*, words or phrases or symbols whose use is not adequately explained by the rules of grammar). Since any set of rules is inadequate to express all the usages of any language, to understand any language of words or of symbols, we must enter into its *spirit*. This "spirit of the language" consists in the rules which are thought, but not formulated in words, and the still greater body of usages which are rather felt than formally thought. Even in mathematical symbolism, it is necessary for the student to "enter into the spirit of" the symbolism.

To all these theories the universe is, to all intents and purposes, infinitely complex: at any rate, they all regard the infinite complexity of the universe as an object of knowledge, as a hypothesis incapable of ultimate disproof. For pragmatism regards the universe as just as complex as it is profitable to regard it, and does not consider it possible to determine this in advance; Bergson considers all analysis of the universe, from the very nature of analysis, inadequate; while relativism shows that we are unable to find any notions themselves independent of all analysis (*i. e.,* self-sufficient) in terms of which we can analyze the universe. Pragmatism, Bergsonianism, and relativism are three forms of anti-intellectualism.

Moreover, relativism agrees with pragmatism in the manner in which it criticizes intellectualism. Why is it that we have condemned absolutism or the philosophy of acquaintance? Not because it is necessarily *false,* but because its truth is *unverifiable;* because the existence or non-existence of the absolute, or knowable by acquaintance, would not be distinguishable from its presence—its presence would lead to no *significant* results. But the cardinal notions of pragmatism are that the truth of a theory consists in its verifiability, that only that which is distinguishable from something else is distinct from it, and that no theory is either true or false except in so far as its consequences are significant for human action. That is, our dialectic showed that the views we criticized are not true by proving that they are unpragmatic.

But the fact that we have made use of the pragmatic method in criticizing other views does not necessarily commit us to the acceptance of the pragmatic criterion of truth as an ultimate criterion. We are not compelled by anything we have said above to make the unqualified assertion that the whole meaning of a conception expresses itself in its practical consequences. Indeed, taking the words as they stand, we can not accept this as final, for in no significant sense has a conception a "whole meaning," nor are we able to give a *perfectly* adequate account of what we mean by its "practical consequences." As the pragmatist is the first to urge, no conception has a meaning except in some particular context or other, and in no significant sense can we ever arrive at the *total* context of any concept. Every concept we can mention is particular and partial. Moreover, the notion of the "practical consequences" of a view is extremely vague and indeterminate, and can not possibly be regarded as an ultimate. Does the phrase mean those consequences which satisfy or fail to satisfy some of our particular purposes, or any of our purposes, or all of our purposes? Just when is a mental state a purpose, after all? These questions and many more must be answered once for all before we can accept the pragmatic criterion

as an ultimate. Pragmatism can claim only to be a better *relative* standard of truth and falisity than the views it opposes: as an absolute standard, it is open to the objections we have raised against all views which claim to have attained complete truth. And even as a relative standard, whatever our individual opinions on the subject may be, there is nothing in relativism *per se* which compels us to admit that pragmatism has any advantages over any other theory of the nature of truth. The fact that the relativist denies the existence of the *pure* reason does not in itself demand that he should believe in the primacy of the *practical* reason, in the Kantian sense of the latter term. As Mr. Russell has emphasized in his essay on "Pragmatism" in his "Philosophical Essays," open-mindedness is not the exclusive prerogative of the pragmatist.

I do not think, however, that James would have claimed seriously that pragmatism has attained any absolute truth: James was too open-minded a man ever to become quite dogmatic. But the humanism of Schiller claims to be nothing if not final. Schiller treats his fundamental proposition, "Man is the measure of all things," as though it were an ultimate truth. Now, it is easy to see that, taken in any absolute sense, this is either a tautology or an error. For what constitutes a man? It is not as subject that our self can be made the measure of all or of any things; it is only the self as known, as object, that can be made such a measure. But what is the self as known, the empirical ego? As James pointed out, we have many empirical egos: we have a social, a professional, a business, a religious self, etc. No one of these is the measure of *all* things: our religious self is the measure of religion, our business self of business, etc. But, it will be said, it is our empirical ego taken in its widest sense, embracing all these, that is the measure of all things. But is this not a mere tautology? Is not the empirical ego but another name for that which is central in our experience, for that to which other experiences are related? Is not the sole reason that man is the measure of all things, that "man," taken in this sense, is a mere synonym for "the measure of all things"? If one define "man" by naming the body, or the body and certain particular experiences closely related to it, one will only get a relatively imperfect measure of all things: just as the inch is no longer the length of the royal thumb, nor the ell the length of the royal arm, so most of our criteria become progressively dehumanized, though, of course, since no two things are completely out of relation, they never completely lose their connection with the self. But it is only in this relative sense, where "man" stands for certain central aspects of our experience, which can not be delimited with absolute rigor, that "Man is the measure of all things" is significantly true. And even here it would be better to

say, "Man is a factor entering into the measurement of all things, and the most significant factor in the measurement of many, perhaps most things," than merely, "Man is the measure of all things." Humanism is partial in precisely the same sense that the humanists accuse naturalism of being partial, though perhaps not to the same degree.

But, all things considered, relativism is far nearer to pragmatism than to Bergsonianism. Relativism only objects to pragmatism in so far as it seems to claim to have said the last word in philosophy: a relativistic pragmatism is quite possible. But Bergsonianism contains elements which are essentially non-relativistic. Bergson postulates gulfs which can not be bridged between homogeneous duration and mathematical time, between purposes and mechanism, between life and matter, between language and thought, between that intuitive thought which allows the mutual interpenetration of idea with idea, and intellectual thought,—that thought which deals in absolutely hard-and-fast concepts and clear-cut distinctions. The world is for Bergson divided by a set of fundamental dichotomies, which are made with absolute sharpness. Though he believes that the opposing sides of these dichotomies are found everywhere intertwined and interrelated with one another, their opposition is for him a fundamental and irreducible fact. Now, to suppose the existence of absolutely sharp distinctions runs directly counter to the spirit of relativism, and, I believe, of Bergsonianism itself. For Bergson, in a quite relativistic way, believes that our only way of attaining a true insight into the inmost nature of the world is by a sort of thought which does not admit absolutely rigid distinctions or clean-cut concepts—the kind of thought he calls intuitive. Intellectual thought he regards as giving us only a surface view of the universe. Therefore, judged both by its own criteria and by those of relativism, Bergsonianism fails to give us an adequate insight into the true nature of things, for it treats the world as made up of two absolutely separate, irreconcilable halves. Bergsonianism gives a highly intellectualistic account of the universe, tending to show the inadequacy of intellectualism. It is true, M. Bergson states that the intellectualistic form of his presentation of metaphysics is only the hull in which a really intuitive treatment is concealed, yet it seems to me that his unbridgable antitheses are in spirit even more intellectualistic than in form. Certainly, they satisfy all the criteria he gives of intellectual in contradistinction to intuitive thought.

It seems to me that Bergson's error arises as follows: Bergson believes that the physical sciences and mathematics deal with notions that are absolutely rigid. He thinks that there is a more or less independent, purely intellectual world, within which these disciplines

move, though he regards this world as of derived and secondary importance. Though the world of space and matter is for him but a surface-world, but the external manifestation of the true world of time and life, it is a world of pure space and pure matter and *pure forms,* uncontaminated by any taint of time or of life or of the "mutual interpenetration" of idea with idea. Whether this world is or is not ever found in entire separation from time, life, and intuitive thought is of no essential importance: Bergson supposes that this world has *some sort* of an independent existence. But we have seen that such a world is a mere nonentity; that natural science, like every other intellectual discipline, must deal with imperfectly defined concepts, and hence must permit a certain amount of the interpenetration of idea with idea. Even in the case of mathematics, the most abstract and most formal of all disciplines, we have seen that no assignable set of rules will ever exhaust the conditions of the validity of a single deduction; we have seen how the very use of a symbolism is conditioned by our thinking according to the *spirit of the symbolism,* which can never itself be exhaustively and adequately symbolized. No! Bergson's dualism is a false one: pure formal thought exists only as a misinterpretation of mathematics by Bergson and certain formalistic philosophers of mathematics. Only the realm of the mutual interpenetration of idea with idea really exists.

But even this realm does not exist quite as Bergson conceives it. Since Bergson regards mathematics and the allied sciences as purely formal disciplines, and puts them in a world by themselves, he is forced to consider the realm of the mutual interpenetration of idea with idea as free from all taint of mathematics. In our true insight into the world, he believes, we cast aside the shackles of formal reasoning, and with a sort of a systematical intuition perceive immediately the inmost nature of reality. Scientific reasoning, though perhaps necessary as a propædeutic to our final appreciation of reality, is entirely transcended by it. This mysticism is the necessary result of a belief in the purely formal character of mathematics and physical science. But, if we do not believe that mathematics and physical science are purely formal, if we believe that these disciplines admit of and even demand the "mutual interpenetration" of idea with idea, then there is no ground for thinking that they, too, do not play their part in our true insight into the universe. Indeed, there is no metaphysical reason why the extremest claims ever made for the value of mathematics and science as factors in the explanation of the universe (provided that these claims do not demand that mathematics or science should be ultimate) should not be true. Bergson sets up a windmill, calls it physical science, and then charges it most valiantly. But it is only because it is a windmill, and not true science, that he attacks, that he comes off victorious.

We have explained what we mean by relativism, and wherein it differs from other philosophical beliefs, and we have given certain reasons which seem to justify our preference for it. But before we close this paper we must consider certain objections which have been raised against some of the views which go to make up the relativistic position. Bradley raises an objection against our position which might seem at first sight fatal. He says,[4] "In theory you can not indulge with consistency in an ultimate doubt. You are forced, willingly or not, at a certain point to assume infallibility. For, otherwise, how could you proceed to judge at all? The intellect . . . in the intellectual world . . . must remain supreme. And, if it attempts to abdicate, its empire is forthwith broken up. . . . Even the extreme of theoretical skepticism is based on some accepted idea of truth and fact. It is because you are sure as to some main feature of truth and reality, that you are compelled to doubt or to reject special truths which are offered to you. But, if so, you stand on an absolute principle, and, with regard to this, you claim, tacitly or openly, to be infallible. And to start from our general fallibility, and to argue from this to the uncertainty of every possible result, is in the end irrational. For the assertion, 'I am *sure* I am everywhere fallible,' contradicts itself, and would revive a familiar Greek dilemma."

Bradley's argument here is vitiated by the ambiguity of the term, "doubt." "Doubt" may mean (1) the absence of certainty, or (2) disbelief, or (3) an attitude of active questioning. In the first sense, I may be said to have doubts of the law of the conservation of energy, because no proofs which may be given of it are adequate to establish it as more than an approximation, but that does not mean that I disbelieve it, nor even that I actively question it. Bradley is right in saying that an ultimate disbelief in every proposition, or even an ultimate questioning of every proposition, is impossible, for every disbelief or question is possible only on the basis of some belief which is not at the same time questioned. If I disbelieve that $2+2=4$, I believe that $2+2\neq 4$, and if I question whether $2+2=4$, I do so on the basis of some further mathematical notions of mine which I leave unquestioned for the time being. But an ultimate uncertainty is not by any means impossible. The fact that any uncertainty must have a ground does not lay upon us an eternal injunction never to be uncertain of this ground—in fact, my very uncertainty whether there is a ground for doubting a given proposition or not is a sufficient ground for my uncertainty of its truth. The principle on which I stand in any doubt I need not regard as infallible: I may simply consider it extremely plausible. True, if we

[4] "Appearance and Reality," page 512.

had the bare alternative before us of criticizing the principles of our doubt while we are doubting, or not criticizing it at all, Bradley's argument would hold, and I would need an absolute principle as the ground of my doubt. But this is not so: the fact that I have once considered a proposition without questioning it does not mean that I have thereby relinquished forever my right to question it. Moreover, the true doubter would not say, "I am sure I am everywhere fallible;" or, if he said it, he would not regard the certainty asserted as absolute. For to say with absolute confidence, "I am sure I am everywhere fallible," you must have an absolutely adequate knowledge of wherein fallibility consists, and what constitutes sureness. And these concepts, like all concepts, can only be defined in terms of concepts themselves requiring further definition, and so *ad infinitum*. So, in a very significant sense the relativist may be said to regard his very uncertainty as uncertain. Relativism only claims to be relatively true.

But the moment we take this view of relativism, the dialectical refutations we have made of other views take on a new aspect. For if we admit the correctness of these refutations is only relatively certain, the views refuted may still retain something of relative truth. Absolutism, Bergsonianism, the philosophy of Mr. Moore, and all the views we have opposed will, looked at from this new standpoint, have a certain amount of truth in them. In what sense, then, has our refutation been a refutation at all? If these views, when crushed to earth, rise again, why should we not regard them as true? Should we not rather regard what we have considered a refutation a dialectical corroboration of these positions, showing that their very denial involves their assertion?

No! for although all propositions are relatively true, not all relative truths are of the same value. Though no absolute refutation of any view is possible, a relative refutation is. And what we have really shown concerning the views we criticize is this: any sort of truth they may have is very different in character from what we ordinarily call truth. We have attempted to discuss the views we oppose, and see what consequences they would lead to if they meant anything at all similar to what they appear to mean, and we have seen that these conclusions are very paradoxical, to say the least. Perhaps by some distortion of language they may be made to represent some significant reality, but such a distortion would have to be very far-fetched. Though the views we have criticized are only relatively uncertain, their degree of certainty, if taken as they stand, is much lower than that of relativism. This does not necessarily mean, however, that they are not perversions of views of a high degree of certainty, couched in relative terms.

But those who hold the views I criticize may answer, "Yes, *relatively* speaking, our views may be of a low degree of truth, but *absolutely* speaking, they are known with absolute certainty. You yourself admit that the validity of your arguments is only relatively certain, and that you only prove the relative dubiousness of other views. Hence, your arguments do not at all concern our claims to have reached absolutely certain conclusions." This argument is, strictly speaking, unanswerable, for the same reason that mysticism, and all philosophical views which claim to be supported by some brand of knowledge essentially different from the sort of knowledge we recognize ourselves to possess, are unanswerable. If my opponents actually meant by absolute knowledge something generically different from relative knowledge, then no arguments on the basis of relative knowledge could overthrow their faith in absolute knowledge. If one believes that, for example, in the contemplation of the absolute we have an insight into the nature of the universe different, not in degree, but in kind from the knowledge we have of "appearances," no argument can refute him. But I do not personally experience any different sort of knowledge than the relative knowledge of which I have given an account in this paper; and I believe that it is the results of this knowledge that the views I criticize mean to express. I believe that both the experiences of the absolutist, the acquaintance philosopher, the pragmatist, and even the Bergsonian, and the set of notions which they use to analyze their experiences, are radically similar to my own. I believe I am not talking entirely at cross-purposes with every other philosopher. Just as the absolutist thinks that all other philosophical views are incomplete absolutisms, and as the pragmatist thinks that all other philosophical views are inadequate pragmatisms, so I must think that all philosophies are nascent relativisms. This may seem a tremendous act both of faith and of presumption, but it is the sort of act of faith and presumption that every one who holds a philosophical position must perform before his view can enter the lists against other philosophies.

We have seen, then, the bearing on relativism of the objection to it on the score that a universal doubt is impossible. There is another ground on which it might seem that valid criticisms of relativism could be based. It is clear, as we have shown, that relativism demands that experience should be, at least potentially, infinitely complex. For since no knowledge is self-sufficient, each item of knowledge means what it does only in relation to the objects of other items of knowledge, which, in turn, are what they are only in relation to the objects of still other items of knowledge, and so on indefinitely. To some people the notion of infinite complexity seems repugnant. "What!" they will say, "Does each item of knowledge demand reference to

other items of knowledge? Is no experience simple? In the first place, this would make all knowledge absolutely, not relatively, uncertain, for it would demand a detailed knowledge of the universe before we could have any knowledge of any part of it. In the second place, the human mind rebels against the notion of infinite complexity."

Such criticisms of relativism, plausible as they may seem, are not really valid. For, in the first place, relativism does not say that in order to have any comprehension of any item of knowledge we must refer it consciously to all or any other items of knowledge. Relativism does not deny that we may have "innate ideas," or other forms of instinctive knowledge. It is not the temporal, but the logical *a priori* that it questions. It merely says that any new knowledge we acquire must be internally *relevant* to our previous knowledge: that only in proportion as it is thus relevant is it knowledge at all. It does *not* impose upon us the psychological task of experiencing each item of experience in conscious proximity to every other item, but simply cautions us that we are never sure that we are done with our labor of comparing one concept with another, of criticizing each notion and theory of ours on the basis of our other theories and notions. The former task can indeed never be accomplished, and if relativism claimed to be a psychological theory of what actually occurs in our minds, we would have to regard knowledge as not relatively, but absolutely impossible. The latter task, though, from the nature of the case, it can never be finished, is by no means futile. Is the physicist discouraged because he knows that neither he nor any one else will ever be able to verify a single law of physics with more than approximate accuracy? Indeed, does he not expect with confidence that the next twenty or thirty years will bring new formulations of almost every physical law? The notion of the infinite complexity of experience which relativism demands is none other than that which the scientist has long made use of: it is merely the notion of the infinite *potential* complexity of experience. It is our *right* to analyze every concept, not our *duty* to analyze any concept exhaustively, on which the relativist insists.

In the second place, I doubt whether the human mind feels any great repugnance against the notion of infinite complexity. Against the spread-out infinite complexity which Royce attributes to the absolute experience, I, at least, it is true, feel an instinctive repugnance. But, as we have just been saying, this is not the sort of infinite complexity which relativism holds to exist. The relativist believes that everything, in so far as it is understood adequately, is understood in relation to other things,—that our analysis need never come to a definitive stopping-place. And I think that that critic to

whom all philosophers sooner or later appeal—the common man—will agree with me in this. He is never satisfied when, in answer to some question he asks, the metaphysician says, "This is ultimate, and hence inexplicable." For him, there is a "why" to everything, and everything has a structure, if only trouble is taken to find it. In the same frame of mind in which he expected the atom to be divided and confidently expects the electron to be divided, he distrusts those who tell him that certain of his experiences are simple and unanalyzable. The common man is, as a matter of fact, a thorough relativist: an "instinctive" repugnance against the belief in the infinite complexity of the universe is only to be found among those who, like the White Queen in "Through the Looking-glass," have schooled themselves long and carefully in believing impossibilities.

The scientist too, I repeat, is an out-and-out relativist in all that concerns his science: in all, that is, that he does not take over on faith from the technical philosopher. He realizes full well that his instruments give only approximate readings, that his observations record only approximately the readings of his instruments, that his laws and his formulæ are mere approximations, and that even the margin of probable error which he calculates for his readings and his laws is only approximately determined, so that he never has a completely accurate knowledge of the degree of approximateness of his approximations. It is even only with approximate certainty that he knows that certain approximations are more accurate than certain other ones. In his whole work, presuppositions and conclusions together, he knows that he may search in vain for a single absolutely certain fact. Yet he works on, correcting approximate hypotheses with the aid of others also approximate, wearing them down by a sort of mutual attrition, much as the grinder of mirrors secures for his mirrors a highly accurate plane surface by first grinding two approximately flat pieces of glass together, then grinding each in turn against a third similar piece, then grinding them together again, and so on indefinitely. Our physics of to-day is the product of the imperfect physics of the past, much as the tools of the modern smith were forged in the smithy of yesterday. And just as the imperfection of the tools of the past smith conditions the perfection of the tools of the present day, so the inadequacy of the past determinations of physical constants and laws prevents our present determination of these constants and laws from being completely adequate. As the steam-hammer of to-day is the lineal product of the first stone hammer used by primitive man through many generations of hammers, each used in making the next, and therefore must share, though in an infinitesimal degree, its deficiencies, so modern science is the lineal product of the crude physics of common sense, and partakes to some

slight extent in its inadequacy, because it is obtained from it by a self-criticism which is always incomplete because it is a *self*-criticism. Science begins, remains, and ends in approximations. Yet this does not mean that it ends where it begins: we are as certain as we can be of anything that the approximations of science to-day are, in general, better than those of science yesterday, and not so good as those of science to-morrow. We are quite sure that a new statement of a law of science almost invariably marks an advance on all previous statements. Yet, be it noted, we never judge whether any scientific hypothesis is better or worse than another by any criterion which is itself known to be more than approximately true.

But if, as we have seen, approximate knowledge is recognized to exist in physics without any certain knowledge to back it, while physics is recognized by all to present us with the most certain propositions we can reach, short of pure mathematics, it is clear that relativism can not be accused of denying the existence of all certainty, or of being a mere negation of all belief: it is only when one thrusts upon the relativist a false dilemma between an absolute certainty and an equally absolute ignorance that his view may be made to appear in that light. Relativism is a philosophy of doubt, but it is of a liberating, not an enslaving, doubt that it is the philosophy. To the relativist, the incompleteness of science does not condemn it to deal with mere appearance: the fact that it has given us no perfectly certain results is no index of its failure. Relativism admits the existence of certainty, of any degree of certainty short of absolute certainty. Though it considers that even the best approximation is subject to criticism, it does not regard this as preventing us from giving the *brevet rank* of absolute certainty to items of our knowledge, and using them as a basis for the criticism of other knowledge, without, at the same time, criticizing them. And it will not permit the relative certainty of our scientific knowledge to be degraded to the rank of mere "appearance" at the behest of any metaphysical theory.

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EXPERIMENTS IN JUDGMENT

INVESTIGATIONS have been made as to the laws and behavior of judgments, and the practical importance of such work has been shown in many branches of psychology. No attempt will be made to review the literature of this subject, but attention may be called to the work of Cattell,[1] Barrett,[2] Strong,[3] Thorndike,[4] Walton

[1] Cattell, "Professor Cattell's Studies by the Method of Relative Position," H. L. Hollingworth, *Arch. of Psych.*, No. 30, 1914.

[2] Barrett, "Order of Merit Method and Method of Paired Comparisons," this JOURNAL, Vol. X., pages 382–84. *Psych. Review*, September, 1914.

and Ross,[5] Wells,[6] and especially to Hollingworth's "Experimental Studies in Judgment."[7] In the last-mentioned monograph several problems are suggested and questions raised. To report an attempt to answer some of these questions and to offer further data on several conclusions there tentatively drawn is the purpose of this paper.

Thirty-four subjects, all juniors and seniors in Barnard College were asked to judge, by the order of merit method,—weights, handwriting, photographs (faces), and propositions, for heaviness, legibility, kindliness, and belief, respectively. There were fifteen items of each material, and two arrangements were made by each observer, one week elapsing between the two trials. The weights were all of the same size and shape and varied from 100 grams upward, each being $\frac{1}{20}$ heavier than the next lighter. The specimens of handwriting were those in Thorndike's scale. The photographs were the size of post cards, eight of women and seven of men. The propositions varied: "2 plus 2 equals 4," "2 plus 2 equals 7," "Opals are unlucky," "George Washington was a real person," "Virgil wrote Æneid," etc.

The position assigned to each item by each individual for both arrangements was recorded, and from these data the average position for each item was calculated. The order of these average positions was considered the objective order. Since "the judgments of the same individual at different times are theoretically quite comparable to those of different individuals regardless of the factor of time," this objective or correct order was obtained from sixty-eight arrangements. The order for weights was identical with that determined by actual physical measurements, and that for handwriting corresponded to Thorndike's scale. In the other cases there were no standardized scales available for comparison.

The arrangements of the good judges differed little from the objective order, and those of poorer judges showed less agreement. By means of the formula, $1 - \frac{6\Sigma d^2}{n(n^2-1)}$, a numerical value was calculated for correctness and for the personal consistency of the two trials of each subject in each situation, as shown in Table A. In the formula d equaled the difference between the objective

[3] Strong, "The Relative Merits of Advertisements," *Arch. of Psych.*, No. 17; "Applications of the Order of Merit Method to Advertising," this JOURNAL, Vol. VIII., page 600.

[4] Thorndike, "Scale for Handwriting," *Teachers College Record.*

[5] Walton, and Ross, M. G., "Report of N. Y. Branch of the Amer. Psych. Soc.," this JOURNAL, Vol. XI., page 408.

[6] Wells, "A Statistical Study of Literary Merit," *Arch. of Psych.*, No. 7.

[7] Hollingworth, "Experimental Studies in Judgment," *Arch. of Psych.*, No. 29, 1914.

TABLE A

COEFFICIENTS OF CORRELATION FOR CORRECTNESS AND CONSISTENCY

Subjects	Handwriting		Pictures		Weights		Propositions	
	Cor.	Con.	Cor.	Con.	Cor.	Con.	Cor.	Con.
Fri	.904	.940	.190	−.189	.958	.739	.797	.997
Sch	.922	.990	.929	.890	.940	.904	.758	.962
Lul	.986	.975	−.024	.833	.954	.929	.900	.943
Tot	.986	.990	.868	.797	.958	.943	.786	.897
Sto	.990	.979	.111	.779	.990	.950	.936	.875
Kri	.997	.988	.811	.947	.968	.961	.850	.883
Pul	.987	.979	.533	.461	.915	.797	.900	.843
Gil	.950	.990	.850	.665	.883	.940	.611	.829
Gol	.965	.986	.525	.943	.925	.936	.672	.933
Hil	.958	.943	.283	.604	.893	.847	.808	.925
How	.997	.983	.733	.829	.983	.929	.883	.940
Far	.983	.997	.136	.897	.990	.965	.843	.879
Doo	.986	.992	.915	.936	.943	.950	.815	.983
Hor	.968	.972	.854	.936	.918	.929	.929	.954
Lub	.922	.959	.808	.768	.965	.893	.868	.858
Opp	.961	.990	.798	.922	.979	.958	.933	.679
Poo	.984	.986	.390	.465	.993	.940	.868	.933
Fle	.993	1.000	.668	.697	.986	.947	.850	.933
Fer	.950	.983	.929	.950	.983	.929	.915	.940
Cog	.968	.997	.690	.947	.954	.950	.668	.829
Kem	.961	.983	.661	.761	.972	.943	.893	.940
Bul	.986	.979	.750	.886	.961	.875	.908	.965
Ber	.947	.961	.440	.939	.975	.983	.836	.904
Rho	.963	.993	.733	.975	.983	.968	.922	.922
Con	.979	.961	.815	.975	.947	.890	.790	.940
Har	.928	.968	.658	.822	.983	.961	.893	.854
Wel	.993	.993	.408	.775	.858	.847	.808	.875
Jac	.993	.990	−.082	.658	.993	.954	.958	.986
Pal	.940	.975	.722	.922	.968	.958	.736	.808
Dec	.993	.990	.704	.586	.965	.922	.868	.886
Kel	.997	.997	.078	.525	.968	.865	.736	.915
Gro	.986	.986	.733	.968	.986	.993	.886	.961
Kir	.975	.968	.672	.940	.993	.954	.761	.940
Mos	.978	.979	.329	.897	.986	.979	.954	.983
Average	.97	.92	.58	.77	.96	.92	.84	.91

order and the position to which the individual assigned the item, n was the number of items, fifteen, when the coefficients for correctness was computed. When a numerical value for personal consistency was calculated, d equaled the difference in position on the first and second trials. The coefficient for correctness indicated the judicial capacity of the individual in that situation. In judging for legibility the coefficient of the best judge was .997 and that of the poorest was .904; for kindliness the ratio of the best to poorest was .929 to —.082; for heaviness .993 to .858; for belief .958 to .611. The coefficient of personal consistency afforded a measure of the consistency of the individual in the two trials. The ratio of the coefficient of the most consistent to that of the least consistent in judging for legibility was 1.00 to .940; for kindliness .975 to —.189; for heaviness .993 to .739; for belief .997 to .679.

The problem arises: Is there such a thing as general judicial ca-

pacity?—Is the person who is a good judge in one situation also a good judge in another? By arranging the coefficients for judicial capacity for each material separately in order with the highest at the top and the lowest at the bottom, the relative positions of all observers were established. On the basis of these orders for judicial capacity for each material were computed the coefficients of correlation between each material and every other material (Table B).

TABLE B

COEFFICIENTS FOR CORRECTNESS (JUDICIAL CAPACITY)

	Legibility	Kindliness	Heaviness	Belief
Legibility		−.20	.16	.19
Kindliness	−.20		−.24	−.07
Heaviness	.16	−.24		.44
Belief	.19	−.07	.44	
Average: .05				
P. E.... .11				

The average of these coefficients was .05, or nearly zero. By comparing the observers who rank among the highest five in judicial capacity for each material it was found that there were seventeen individuals represented. Two of the three who were good in two materials were among the worst five in the other cases. It appears from the data that there is no such thing as general judicial capacity, *i. e.*, for one to be a good judge of the heaviness of a weight or the legibility of handwriting does not mean that he will be an equally good judge of the kindliness of a person or the truth of a statement.

Is the individual who is consistent in one situation also consistent in another? The only recorded experiments on this point are those of Hollingworth, in which ten observers gave judgments of the comic and judgments of persuasiveness of appeals. His results suggest "no likelihood that an individual who judges the one sort of material consistently will judge with relatively equal consistency in other situations." From the numerical values assigned to consistency the relative order of the observers was obtained, and by the formula the correlation of consistency of the two trials for the different materials was computed (Table C). The average was .11, or practically zero.

TABLE C

COEFFICIENTS FOR PERSONAL CONSISTENCY

	Legibility	Kindliness	Heaviness	Belief
Legibility		.02	.13	−.14
Kindliness	.02		.51	.07
Heaviness	.13	.51		.09
Belief	−.14	.07	.09	
Average: .11				
P. E.... .11				

It is further true that the position of one of the highest five in one of the four situations was occupied by eighteen different observers. The conclusion may be drawn that there is probably no characteristic personal consistency in the judgments of various materials at different times.

The next question follows these: What is the relation between judicial capacity and personal consistency? Is the most consistent judge the best judge? The judicial capacity and personal consistency were correlated and the coefficients thus obtained showed to what degree personal consistency and judicial capacity were found together (Table D). If the materials are arranged in order, heaviness, with the highest coefficient, stands at the top and belief, with the lowest, at the bottom. Judgments for heaviness of a weight are thus seen to be objective, while judgments for the belief of a statement are subjective, and those for kindliness and legibility are less objective and less subjective than judgments for heaviness and belief, respectively. Further experiments are needed, but the data indicate that the correlation between judicial capacity and personal consistency depends upon the objectivity of the judgments, *i. e.*, the more objective, the greater correlation, the more subjective, the less correlation.

TABLE D

COEFFICIENTS SHOWING RELATION BETWEEN JUDICIAL CAPACITY AND PERSONAL CONSISTENCY

		P.E.
Legibility	.46	.09
Kindliness	.49	.09
Heaviness	.63	.07
Belief	.21	.11

The results given in Table E, showing the mean variation of each item from the average, are similar to those of Hollingworth, Wells, Strong, Downey, indicating the smaller variability at the ends of the series. This holds for both trials. It would be interesting to know whether the average variability would be increased or decreased or remain about constant on the several trials, but further experiments are needed before a conclusion may be drawn. The difference, if any, of the end variation as compared with that at the middle, on the various trials, would be seen from further experiments.

SUMMARY

1. There is no such thing as general judicial capacity.

2. Individuals who are consistent in one situation are not necessarily equally consistent in judging another situation.

3. The data suggest that the correlation between judicial capacity

TABLE E

VARIABILITY FROM THE AVERAGE

Final Order:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Av.
Propositions	*H*	*F*	*G*	*E*	*J*	*L*	*I*	*K*	*P*	*M*	*A*	*D*	*B*	*O*	*C*	
M. V. First arrangement	.40	.67	2.63	1.12	2.10	1.57	1.53	1.58	3.20	2.67	2.21	1.35	1.88	2.73	.76	1.76
Second arrangement	.37	.75	2.53	1.23	1.91	1.74	1.55	1.75	3.41	2.56	1.48	1.39	1.32	1.45	.16	1.57
Weights	*A*	*K*	*O*	*B*	*F*	*E*	*D*	*P*	*M*	*I*	*J*	*L*	*G*	*H*	*C*	
M. V. First arrangement	.48	.77	.84	.79	.82	.83	.98	1.10	.68	1.07	.92	.96	1.07	.60	.80	.84
Second arrangement	.51	.46	.99	.87	.85	1.04	.74	.88	1.00	1.16	.75	.94	.76	.93	.90	.85
Photographs	*F*	*O*	*E*	*D*	*I*	*J*	*C*	*G*	*B*	*H*	*M*	*A*	*L*	*K*	*P*	
M. V. First arrangement	1.92	2.52	3.28	2.46	3.15	3.05	2.99	3.38	2.50	2.51	3.11	3.07	2.51	2.69	3.23	2.81
Second arrangement	2.95	3.08	3.44	2.34	3.84	2.96	2.98	3.59	2.97	2.61	3.13	3.43	2.31	3.13	3.21	3.07
Handwriting	*I*	*M*	*A*	*D*	*L*	*H*	*K*	*B*	*E*	*F*	*G*	*P*	*O*	*J*	*C*	
M. V. First arrangement	.48	.50	.86	1.62	.92	.82	1.07	.69	.72	.74	.38	.05	.15	.03	.18	.61
Second arrangement	.45	.92	.79	1.44	.94	.96	.80	.73	.66	.51	.09	.06	.25	.22	.15	.60

and personal consistency varies with the objectivity of the judgments.

4. The results confirm the statements of others that the variability is less at the ends of the series. This is true for both trials.

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REVIEWS AND ABSTRACTS OF LITERATURE

Jahrbuch der Philosophischen Gesellschaft an der Universität zu Wien. Leipzig: Verlag von Ambrosius Barth. 1913. Pp. 108.

Die Sittenlehre des Zarathustra in Rahmen der Geschichte der Sittlichkeit. WOLFGANG SCHULTZ.

This paper purports to examine, in the light of its historical connections, the essential doctrines of Mazdaism, the foundations of which are ascribed to Zarathustra. To Nietzsche is due the first general cognizance of the name of Zarathustra. Employed by him as the catchword for his own world view, the article maintains that this position is exactly the contrary of the teachings of Mazdaism. It is owing to the general ignorance on this subject that such a comparison could pass unnoticed. Thus it is maintained that while Nietzsche is interested in expounding a doctrine which transcends good and evil and thereby establishing new values in the realm of morality, Mazdaism holds fast to these conceptions, the significance of which are comprehensible in their relation to the sentiments and needs of the Irenians. For Nietzsche, true and false are insane values; for Mazdaism, truth is the essential thing in the world, falsity is absolutely an evil. Again, for Nietzsche, the individual is the only object of concern, while Mazdaism demands public-spiritedness as an approach to the good.

The above conclusions with respect to the tenets of Mazdaism are derived first by means of a comparison of the views of the Irenians (as exposed in Mazdaism) with non-Aryan ideas. Then the points of similarity and difference between the Aryan and Semitic views, more particularly those of the Sumarians, Egyptians, and Babylonians, are developed. In this way that which is novel in Mazdaism is brought to light, thereby permitting a better understanding of these teachings. It appears from examination of inscriptions that the Sumarians, Babylonians, and Egyptians give no evidence of a conception of a world order raised to clear consciousness, but rather these nations seemed to possess a more or less rich mass of detached teachings. In contrast with this, common to both Indians and Irenians (both Arayan nations), there appears the idea of a world order which is identical with a moral order. The course of the world, the doings of man, the gods themselves are subject to this order. Piety is a correspondence with this order.

Die Verirrten des Cartesius und das Auxiliarmotiv. (Zur Psychologie des Enschlusses). OTTO NEURATH.

This paper may be welcomed as a timely caution to those who are of the opinion that at the present time all decisions may be the result of rational choice. At the same time the reviewer may question the tenet of rationalism that such a position is even a possible ideal. Descartes formulated provisional rules for action in cases where insight into the reasons for choice are denied. He believed that eventually all human actions could have a rational basis. The author asserts that Descartes committed a fundamental error in failing to include theoretical considerations among the above activities. To create a world theory or a scientific system involves working with doubtful premises, choice between equally probable hypotheses.

But Descartes was concerned only with the manner in which one should carry out a resolution made upon a basis of insufficient knowledge. This paper considers the question of how empirically such a resolution is reached. The expression, "auxiliary motive," is used to express the reason for choice in the absence of a ground for selection inherent in any of the possible modes of action. This motive is simply the necessity of realizing some one hypothesis; it functions in cases of hesitation. In its purest form this "auxiliary motive" may be recognized in the conception of fate. Authority (oracles, signs, prophecies), instinct, and, finally, pseudo-rationalism are more highly developed phases of the same motive. But pseudo-rationalism, contending that at the present time it is possible to have all of our activities regulated by knowledge, all of our decisions determined by insight, is guilty either of self-delusion or hypocrisy. The chief triumph of rationalism is the clear recognition of the boundaries of existing knowledge. We live in the time of pseudo-rationalism, but the auxiliary motive is advanced as well adapted to serve as the medium between tradition and rationalism, signs of whose advent may now be detected.

Über den Begriff des Gegenstandes in Meinongs Gegenstandstheories. ERNST MALLY.

In view of the objection that Meinung unjustifiably extends the employment of the concept of the object (*Begriff*), the author takes the opportunity to examine more closely into the significance of this idea in Meinung's theory. First, it is maintained that the object embraces everything which is an object of thought, be it real or possible, thus including the abstract and the psychical. Mathematics serves to illustrate that this is no artificial extension of the term. But the theory does not treat the objects as objects of thought. One of its basal tenets is that "objects," as objects, are completely independent of thought. Such a construction of thinking as a differential, for example, is entirely independent of our thought of the differential. Again, existence is not essential to the object. Experience alone, a further judgment, can justify the qualification of being or existence to the object. Finally, value, which might appear to present great difficulty to the acceptance of this theory, may also be construed in accordance with it. Value, be it only the subjective or personal

value of a thing, does not inhere in the feeling of the value. The value which I appreciate is not the feeling of the value. The author concludes with the view that the above theory of the object would protect us from a false metaphysics.

Das Heimweh. KARL SCHRÖTTER.

The phenomenon of homesickness is here selected for examination because, as the author concludes, it proves to be a psychical phenomenon well worthy of consideration since it may serve as a type of what he calls a "mooring for the feelings" (*Gefühlsverankerung*). The discussion is opportune, as increasing facilities in world-wide communication of peoples is rapidly causing the disappearance of this feeling. The strength and wide prevalence of this psychical phenomenon is attested in certain kinds of poetry, such as folksongs. The general theoretical question of the psychophysical is intentionally omitted.

Proceeding to the analysis of the symptoms of homesickness, its relation to anxiety is developed. The first essential characteristic of homesickness is the feeling of otherness. Otherness passes into strangeness which is an unpleasant experience. Strangeness is related to anxiety. Anxiety, then, is an essential characteristic of homesickness. Now anxiety differs from fear in lacking a definite object. The next step in the discussion consists in pointing out the connection of anxiety with certain sexual phenomena. The author accepts Freud's hypothesis to the extent of allowing that suppressed sexuality is converted into anxiety. But he is far from admitting that homesickness is to be entirely explained upon the basis of sexuality. As the author sums up in conclusion: "In the period of puberty there arise under the influence of inner secretional processes, of which the significance for psychology is just as important as unrecognized, certain new sensations, perceptions, feelings, of which the individual can make nothing." "If the individual concerned is distant from his homeland, this group of feelings will be connected with the indeterminate, but related homesickness, and, moreover, will be interpreted as such."

SAVILLA ALICE ELKUS.

VASSAR COLLEGE.

JOURNALS AND NEW BOOKS.

THE PHILOSOPHICAL REVIEW. May, 1914. *Why the Mind Seems to be and Yet Can not be Produced by the Brain* (257–270): H. WILDON CARR. – The mind and the brain function only in union with each other, and that is why the mind seems to be produced by the brain; and yet brain and mind are "absolutely incommensurable," the brain being material and spatial, the mind being non-spatial and temporal (pure duration), and that is why the mind can not be produced by the brain. *Roger Bacon and Experimental Method in the Middle Ages* (pp. 271–298): LYNN THORNDIKE. – An inquiry into Bacon's discussion of experimental science, correcting the view that great originality is due to Bacon, and maintaining that his conception represents an "important movement of the time in the direction of experimental method." The actual status of

contemporaneous experimentation is determined. *The Problem of Knowledge from the Standpoint of Validity* (pp. 299–316): ARCHIBALD A. BOWMAN. – Knowledge is primarily a question of validity, the determining character of which lies in a certain proportionateness between presentative (sense experience) and interpretative (import, meaning) factors, the two factors constituting a unity and the one necessarily implying the other. This view of knowledge is further elaborated in view of the difficulties besetting the position. Definition of knowledge in terms of validity rather than of completeness or degrees of adequacy is defended and explained. *A Faith Philosopher of the Eighteenth Century* (pp. 317–332): NORMAN WILDE. – An exposition of the life, writings, and philosophical doctrines of Friedrich Heinrich Jacobi, "Realist, individualist, pluralist, empiricist, man of faith, in all save incisiveness of thought and picturesque concreteness of style; he is the William James of the late eighteenth century." *Reviews of Books:* R. Hackforth, *The Authorship of the Platonic Epistles:* A. E. TAYLOR. L. T. Hobhouse, *Development and Purpose, an Essay towards a Philosophy of Evolution:* HARRY ALLEN OVERSTREET. William Caldwell, *Pragmatism and Idealism:* HENRY W. WRIGHT. *Notices of New Books. Summaries of Articles. Notes.*

REVUE DE METAPHYSIQUE ET DE MORALE. July, 1914. *La Valeur Morale de la Science* (pp. 431–455): G. BELOT. – A study of the general and essential relations between science and morality conceived as two primordial values. *L'Innéisme Cartésien et la Théologie* (pp. 456–499): E. GILSON. – An attempt to show that Descartes's doctrine of innate ideas had its origin in his theological training. *Du Sentiment Religieux dans ses Rapports avec l'Art* (pp. 500–516): G. DWELSHAUVERS. – This problem must be solved by taking the facts as they appear, with all their entangling interactions, and their full psychological coloring, and not by applying simple laws to an evolution from primitive forms. *Études Critiques. La Coutume Ouvrière d'après M. M. Leroy:* G. AILLET. *Questions Pratiques. Le Sentiment Patriotique:* G. SIMÉON. *Supplément.*

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Smith, Stevenson; Wilkinson, Madge W.; Wagoner, Lovisa C.; A Summary of the Laws of the Several States Governing (I) Marriage and Divorce of the Feeble-minded, the Epileptic, and the Insane. II. Asexualization. III. Institutional Commitment and Discharge of the Feeble-minded and the Epileptic. Bulletin of the University of Washington, No. 82. Pp. 87.

NOTES AND NEWS

In the 1913 presidential address to the Linnean Society, noticed in *Nature* for January 22, 1914,[1] Professor Poulton gave an account of an American booklet by G. W. Sleeper, dated 1849. The work, if genuine, was an extraordinary anticipation of many modern conclusions on evolution and the germ theory of disease. The booklet itself had been sent, early in 1913, to the late Dr. A. R. Wallace by a Mr. B. R. Miller, who stated that he had bought it at a second-hand book store in 1891 or 1892. Professor Poulton had also heard of the existence of three other copies in the possession of the author's son, Mr. J. F. Sleeper. It was pointed out in last year's address that the work was not registered, as stated; that the word "agnostic," introduced by Huxley in 1869, was used in its pages; and that there was no reference to it in an undoubtedly genuine, but commonplace pamphlet published by the author in 1860. Nevertheless, the get-up of the booklet appeared to be so genuine and the style so convincing that many critical authorities were by no means convinced that it was a forgery. Professor Poulton, having directed attention to the subject, felt that he must make every effort to produce a body of evidence which would finally decide the question. The investigation, which could not be hurried, was only complete by Easter of the present year, and its results were communicated to the Linnean Society in the anniversary address on May 25 last. The evidence then presented to the Fellows will doubtless lead to the undisputed conclusion that the work is a forgery, and probably a very late forgery. *The Type.*—Mr. J. W. Phinney, manager of the American Typefounders' Company, Boston, after an exhaustive inquiry, concluded that it was "impossible that the title-page could have been set at the date claimed for it." *The Contract with the Printer.*—This document, forwarded by Mr. J. F. Sleeper, satisfied many authorities, but aroused the suspicions of Professor C. H. Firth and afterwards of Sir Frederick Kenyon and Sir George Warner. The printer's signature, dated 1890, kindly sent by his daughter, Mrs. Endicott, was similar to that appended to the contract. It was submitted to Sir George Warner, who thought it "very remarkable that after so long an interval as forty years the signatures should be so precisely identical," and considered it "almost easier to believe that the early one is a forgery from a considerably later example." A little later Mrs. Endicott succeeded in finding another late signature also similar to that of the contract, and two early ones, dated 1856 and 1858, in both of which the B of Bense was very differently formed. It was evident, as Sir George Warner had predicted, that the signature of the contract had been copied from a late signature of the printer, W. Bense. Other evidence of falsification was also submitted to the meeting, and will appear in the pages of the Society's Proceedings. It was suggested in conclusion that the author, self-deceived as to the importance of his own ideas, really believed that he had forestalled many conclusions of modern science. In this way he might defend the falsification of evidence as the only means by which justice could be

[1] Noted in this JOURNAL, Vol. XI., page 190.

done not only to himself, but to the history of thought. A similar interpretation might be offered if we suppose— and many reasons were given for the belief—that the forgery was committed after the author's death by one who knew his feelings and shared his delusion that he was the victim of injustice.

THE pageant which Columbia University planned to give in November in honor of the seven hundredth anniversary of the birth of Roger Bacon has been postponed to a date to be announced later. So many members of the university felt unable, on account of the war in Europe, to enter into the performance whole-heartededly that the necessary cooperation for this large undertaking would obviously have been lacking or at least impaired. It was also feared that some unforeseen calamity might mark the progress of the war at any moment, and the peageant, if undertaken now, might have to be abandoned. The committee in charge hope to give the performance in the spring, or as soon as the European situation is on the way toward certain improvement. All the preliminary arrangements for the pageant are completed. The text is now offered for sale by the Columbia University Press in a limited edition and also in a cheaper edition.

AT the University of Pennsylvania the following changes have taken place in the department of psychology: Edwin Burket Twitmyer, Ph.D., has been promoted from an assistant professorship to a full professorship, and is to be assistant director of the laboratory of pychology; Francis N. Maxfield, Ph.D., has been made assistant professor; Dr. David Mitchell and Mr. Frank H. Reiter have been appointed instructors.

AMONG the German scientific men who have affixed their names to a manifesto renouncing the honors conferred upon them by English universities and institutions are Ernst Haeckel and Wilhelm Wundt.

DR. H. C. STEVENS, associate professor of psychology in the University of Washington, has been appointed associate professor of education in the University of Chicago.

DR. F. M. URBAN, professor of psychology, in the University of Pennsylvania, is in Austria, and is said to be with the Austrian army.

MESSRS. WILLIAMS AND NORGATE, London, announce that Mr. Balfour's Gifford lectures, "Theism and Humanism" will be published this month.

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THE MATRIX ALGEBRA FOR IMPLICATIONS

TWO developments of the "calculus of propositions,"—or algebra of implications,—may be said to give the same system provided the same propositions appear in each. Postulates of one development may be theorems of the other, and the same system may result from any number of different sets of assumptions. The system of material implication results from any set of postulates for the Boolean algebra, when the variables are interpreted as propositions.[1] The meaning of implication in this system is such that "p implies q" is not equivalent to "q can be inferred from p." In previous papers,[2] the writer has given postulates for another system, "Strict Implication," in which "p implies q" means exactly "q can be inferred from p."

The algebra to be presented in this paper is a new system, more comprehensive than any previously developed. The system of material implication, the system of strict implication, and at least one other system,—a calculus of consistencies which has never been developed,—are all included in it. We shall call it the "Matrix Algebra for Implications."[3] A set of assumptions for this system follows.

PRIMITIVE IDEAS

The primitive ideas are the same as a possible set for material implication, with one additional idea,—impossibility (the truth value of a proposition which implies its own denial).

Propositions. p, q, r, *etc.*, symbolize propositions or propositional functions. (A propositional function is an expression, involving a

[1] Postulates for this system have been given by Huntington, Müller (after Schröder), Peano, in Whitehead's "Universal Algebra," and in "Principia Mathematica," Whitehead and Russell. For the most economical set, see H. M. Sheffer, *Trans. Am. Math. Soc.*, Vol. XIV., pages 481–488.

[2] "A New Algebra of Implications, etc.," this JOURNAL, Vol. X., page 428, and "The Calculus of Strict Implications," *Mind*, N. S., No. 90.

[3] This designation is not intended to imply that this algebra is the most universal possible. Still more comprehensive systems for implication may be discovered.

variable or variables, which becomes a proposition when a value of the variable or variables is assigned.)

Negation. $-p$ symbolizes "not $-p$" or "p is false."

Impossibility. $\sim p$ symbolizes "p is impossible" or "It is impossible that p be true." The intent of this idea will become clearer as the system is developed.

Product. pq symbolizes "p and q both" or "p is true and q is true."

Equivalence. $p = q$ means "p is equivalent to q." This is the defining relation.

Truth Values

Systems previously developed have only two truth values,—truth and falsity. The addition of the idea "impossibility" gives us five truth values, all of which are familiar logical ideas.

1. $\sim p$. p is impossible; it is impossible that p be true.
2. $-p$. p is false.
3. $-\sim p$. p is possible; it is possible that p be true. Strictly, this should be written $-(\sim p)$. The parenthesis is regularly omitted for typographical reasons.
4. p. p is true.
5. $\sim -p$. p is necessary; it is impossible that p be false. The sign $\sim$ affects the whole of $-p$: parenthesis is regularly omitted, as in 3.[4]

The reader need be at no pains to grasp $-\sim p$ and $\sim -p$ as simple ideas. It is sufficient to understand $-p$ and $\sim p$ and to remember that each prefix affects the letter as already modified by those nearer it.

Definitions

The dyadic relations of propositions, with which the algebra principally deals, can be defined as truth values of products.

1. *Consistency.* $(p \circ q) = -\sim(pq)$. $\sim(pq)$, "It is impossible that p and q both be true," means "p and q are inconsistent." Hence its negative, $-\sim(pq)$, represents "p is consistent with q."

2. *Implication (inference).* $(p \supset q) = \sim(p - q)$.[5] "$p$ implies q

[4] It might be remarked that symmetry demands a sixth truth value. $-\sim p$ symbolizes strictly, not "p is possible," but "p is possibly true." We should, then, have "p is possibly false." In fact we do have it. $-\sim -p$ (each prefix affecting the whole of what follows it) is "It is false that it is impossible that p be false," *i. e.*, "p is possibly false." We may equally well observe that when "impossible" is distinguished from merely "false,"—as it is in ordinary logical thinking,—there are an indefinite, perhaps infinite, number of truth values. $-(-p)$ is equivalent to p, as will be postulated, but $\sim\sim p$ is irreducible, as is $-\sim -p$, $\sim -\sim p$, $\sim\sim -p$, *etc.*

[5] We make use of symbols which have figured in "Principia Mathematica" and elsewhere *with different meanings.* The excuse for this is the availability of the types in question.

(q can be inferred from p)'' is here defined to mean ''It is impossible that p be true and q false.''

3. *Dilemmatic Disjunction.* $(p \vee q) = \sim(-p-q)$.

4. *Material Implication.* $(p < q) = -(p-q)$. $(p < q)$ means: ''It is false that p is true and q false.'' This is the implication relation of all developments of material implication. $(p < q)$ does *not* mean ''q can be inferred from p.'' When we speak of implication hereafter, the relation defined in 2 is always intended. When $(p < q)$ is meant, we shall write ''material implication'' and ''materially implies.''

5. *Non-dilemmatic Disjunction.* $(p+q) = -(-p-q)$. The difference between $(p+q)$ and $(p \vee q)$ is exactly analogous to that between $(p < p)$ and $(p \supset q)$. The distinction can not easily be preserved in English: both $(p \vee q)$ and $(p+q)$ would be rendered, ''Either p or q.'' It is probably the confusion of these two ideas which originally led to the development of material implication.[6]

The first three relations, $(p \circ q)$, $(p \supset q)$, and $(p \vee q)$, involve the idea of impossibility and do not belong to material implication. (pq), $(p < q)$, and $(p+q)$ do belong to material implication and do not involve the idea of impossibility. An interesting analogy between these two sets will appear shortly.

For the sake of completeness we add two definitions.

6. $(p \equiv q) = [(p < q)(q < p)]$.

7. $(p = q) = [(p \supset q)(q \supset p)]$. $(p \equiv q)$ is ''material equivalence'' (always so referred to in this paper), which is equivalence of truth value, not of intension. $(p = q)$, the defining relation, is itself defined, although a primitive idea, because this definition enables us to deduce other definitions. Obviously the analogy above referred to extends to $(p = q)$ and $(p \equiv q)$.

Postulates

P1. $(pq) \supset (qp)$.
P2. $(qp) \supset p$.
P3. $p \supset (pp)$.
P4. $[p(qr)] \supset [q(pr)]$.
P5. $[p \supset (q \supset r)] \supset [q \supset (p \supset r)]$.
P6. $(p \supset q) \supset [(q \supset r) \supset (p \supset r)]$.
P7. $p = -(-p)$.
P8. $(p \supset q) = (\sim q \supset \sim p)$.
P9. $\sim p \supset -p$.

In this set of postulates, economy and logical neatness have been somewhat sacrificed to clearness. If $(p+q)$ and the idea of necessary truth, $\propto p$, were taken as primitives, in place of (pq) and $\sim p$,

[6] See ''Implication and the Algebra of Logic,'' *Mind*, N. S., No. 84.

P7 could be proved, P8 reduced to an implication, and P4 and P5 replaced by a single postulate. But the ideas of $(p+q)$ and $\propto p$ are much harder to keep in mind than (pq) and $\sim p$. In the set as given, P7 might be reduced to $p \supset -(-p)$, but this would require several long and difficult proofs which we are able to omit with P7 as written.

P8 is equivalent to the pair $(p \supset q) \supset (- \sim p \supset - \sim q)$ and $(-p \supset -q) \supset (\sim p \supset \sim q)$. These propositions are more "self-evident" than the postulate, but express exactly the same relation.

Operations

Substitution.—Any proposition or propositional function may be substituted for p, q, r, *etc.*, in any primitive proposition or any theorem. Also, expressions which are equivalent,—$(p = q)$, not $(p \equiv q)$,—may be substituted for one another.

Inference.—If p is asserted and $(p \supset q)$ is asserted, q may be asserted.

Production.—If p and q are separately asserted, (pq) may be asserted. (This operation is not indispensable, but occasionally renders proof much less cumbersome.)

The first theorem will be proved in full. Later proofs will be abbreviated or indicated only.

Theorem 1. $(pq) \supset p.$

P6. $\{(pq)/p;\ (qp)/q;\ p/r\}$: $(\text{P1}) \supset \{(\text{P2}) \supset [(pq) \supset p]$.
This proof may be read: "Postulate 6; when (pq) is substituted for p; (qp) for q; and p for r; states that: Postulate 1 implies that Postulate 2 implies $(pq) \supset p$." Let us make the substitutions indicated in Postulate 6. We then have

$$[(pq) \supset (qp)] \supset \{[(qp) \supset p] \supset [(pq) \supset p].$$

The expression in the first pair of brackets is P1. Since P1 is asserted, its implication, which follows it, may be asserted. The expression in the second pair of brackets is P2. Since P2 is asserted, its consequence, Theorem 1, may be asserted.

Th. 2. $(p \supset q) \supset (\sim q \supset \sim p).$

By Def. 7,

$(\text{P8}) = \{[(p \supset q) \supset (\sim q \supset \sim p)] \cdot [(\sim q \supset \sim p) \supset (p \supset q)]\}$ (a)
Th. 1; (a) $\supset$ Q. E. D.

We introduce here abbreviations of proof as follows: (a), or (b), etc., is placed after a lemma which has been established, and thereafter in the same proof we write (a), or (b), etc., instead of that lemma. Also, we shall frequently write "Q. E. D." in the last line of proof in place of the theorem to be proved. In the second line of

this proof, the substitutions which it is necessary to make in Th. 1 in order to get (a) $\supset [(p \supset q) \supset (\sim q \supset \sim p)]$ are not stated because they are obvious. If (a) is pq, p is clearly Th. 2.

Theorem 2 is one of the implications contained in P8. By Def. 7, a pair of implications may be substituted for any equivalence. By P2 and Th. 1, either of these implications may be taken separately.

Th. 3. $(-p \supset q) \supset (-q \supset p)$.
P1 $\{-q/p;\ -p/q\}$: $(-q-p) \supset (-p-q)$ (a)
Th. 2 $\{(-q-p)/p;\ (-p-q)/q\}$: (a) $\supset [\sim(-p-q) \supset \sim(-q-p)$
by Def. 2, $(-p \supset q) \supset (-q \supset p)$.

Th. 4. $(p \supset q) \supset (-q \supset -p)$.
Th. 3 $\{-p/p\}$: $[-(-p) \supset q] \supset [(-q \supset -p)]$.
by P7, $(p \supset q) \supset (-q \supset -p)$.

Th. 5. $(p \supset -q) \supset (q \supset -p)$.

Similar proof.

Th. 6. $(-p \supset -q) \supset (q \supset p)$.

Similar proof.

Theorems 3, 4, 5, and 6 are the four forms of the principle of permutation. Use of any one of these theorems is indicated hereafter by "perm."

Th. 7. $(p \circ q) \supset (q \circ p)$.
Th. 2 $\{(pq)/p;\ (qp)/q\}$: (P1) $\supset [\sim(qp) \supset \sim(pq)]$ (a).
Perm. (a) $\supset [-\sim(pq) \supset -\sim(qp)]$
by Def. 1, $(p \circ q) \supset (q \circ p)$.

Th. 8. $(q \circ p) \supset -\sim p$.
Th. 2 $\{(qp)/p;\ p/q\}$: (P2) $\supset [\sim p \supset \sim(qp)]$ (a).
Perm. (a) $\supset [-\sim(qp) \supset -\sim p]$
by Def. 1, $(q \circ p) \supset -\sim p$.

Th. 9. $-\sim p \supset (p \circ p)$.

Similar proof, using P3.

Th. 10. $[p \circ (qr)] \supset [q \circ (pr)]$.

Similar proof, using P4.

Th. 11. $[p \circ (q \circ r)] \supset [q \circ (p \circ r)]$.
P5 $\{q/p;\ p/q;\ -r/r\}$: $[q \supset (p \supset -r)] \supset [p \supset (q \supset -r)]$
by Def. 2, $\{q \supset \sim[p-(-r)]\} \supset \{p \supset \sim[q-(-r)]\}$
by P7, $[q \supset \sim(pr)] \supset [p \supset \sim(qr)]$
by Def. 2, $\sim[q-\sim(pr)] \supset \sim[p-\sim(qr)]$ (a).
Perm. (a) $\supset \{-\sim[p-\sim(qr)] \supset -\sim[q-\sim(pr)]$
by Def. 1, $[p \circ (q \circ r)] \supset [q \circ (p \circ r)]$.

We can now exhibit the analogy between products and consistencies, facts and possibilities, which runs all through the system.

P1. $(pq) \supset (qp)$.	Th. 7. $(p \circ q) \supset (q \circ p)$.
P2. $(qp) \supset p$.	Th. 8. $(q \circ p) \supset - \sim p$.
P3. $p \supset (pp)$.	Th. 9. $- \sim p \supset (p \circ p)$.
P4. $[p(qr)] \supset [q(pr)]$.	Th. 11. $[p \circ (q \circ r)] \supset [q \circ (p \circ r)]$.[7]

The same analogy holds between non-dilemmatic and dilemmatic disjunctions, as follows:

$(p + q) \supset (q + p)$	$(p \vee q) \supset (q \vee p)$
$p \supset (p + q)$	$\sim - p \supset (p \vee q)$
$(p + p) \supset p$	$(p \vee p) \supset \sim - p$
$[p + (q + r)] \supset [q + (p + r)]$	$[p \vee (q \vee r)] \supset [q \vee (q \vee r)]$

We prove the two theorems given in the first line to illustrate the method by which theorems involving disjunctions are deduced.

Th. 12.	$(p + q) \supset (q + p)$.	
P1 $\{-q/p;\ -p/q\}$:	$(-q - p) \supset (-p - q)$	(a).
Perm.	(a) $\supset [- (-p - q) \supset - (-q - p)$	
by Def. 5,	$(p + q) \supset (q + p)$.	
Th. 13.	$(p \vee q) \supset (q \vee p)$.	
P1 $\{-q/p;\ -p/q\}$:	$(-q - p) \supset (-p - q)$	(a).
P9.	(a) $\supset [\sim (-p - q) \supset \sim (-q - p)$	
by Def. 3,	$(p \vee q) \supset (q \vee p)$.	

Again, the same analogy holds between material implications and implications of the type of inference:

$(-p < q) \supset (-q < p)$	Th. 2. $(-p \supset q) \supset (-q \supset p)$
$-p \supset (p < q)$	$\sim p \supset (p \supset q)$
$(p < -p) \supset -p$	$(p \supset -p) \supset \sim p$
$p \supset (q < p)$	$\sim - p \supset (q \supset p)$
$(-p < p) \supset p$	$(-p \supset p) \supset \sim - p$

Note that the *main* implication in theorems in both columns is of the type of inference.

We prove the second theorem in each column.

Th. 14.	$-p \supset (p < q)$.	
Th. 1 $\{-q/q\}$:	$(p - q) \supset p$	(a).
Perm.	(a) $\supset [-p \supset - (p - q)$	
by Def. 4,	$-p \supset (p < q)$.	

[7] If P4 could be written $(pqr) \supset (qpr)$, an exact analogue $(p \circ q \circ r) \supset (q \circ p \circ r)$, could be derived from it. As it is, P4 proves Th. 10, and Th. 11 is derived from P5.

Th. 15.	$\sim p \supset (p \supset q)$.	
Th. 1 $\{-q/q\}$:	$(p-q) \supset p$	(a).
Th. 2.	(a) $\supset [\sim p \supset \sim (p-q)$	
by Def. 2,	$\sim p \supset (p \supset q)$.	

THE CALCULUS OF CONSISTENCIES

This persistent analogy between the relations which figure in material implication, pq, $p + q$, and $p < q$, and the set involving the idea of impossibility, $p \circ q$, $p \vee q$, and $p \supset q$, suggests that there may be a calculus of possibilities and impossibilities, similar to the system of material implication. We give below assumptions sufficient for such a system, which might be called the calculus of consistencies.

Primitive Ideas.—Propositions, negation, equivalence, and consistency,—all symbolized as before.

Definitions:

$$(a) \quad (p \vee q) = -(-p \circ -q)$$
$$(b) \quad (p \supset q) = (-p \vee q)$$

Postulates.—These postulates will be lettered, a, b, . . . to avoid confusion with the postulates of the matrix algebra. For economy of assumption, they will be expressed in terms of the relation $\vee$. But since this relation is easily confused with $+$, we give a', b', . . ., equivalent respectively to a, b. . . .

(a)	$(p \vee q) \supset (q \vee p)$.	(a')	$(p \circ q) \supset (q \circ p)$.
(b)	$(p \vee p) \supset (p \vee q)$.	(b')	$(p \circ q) \supset (p \circ p)$.
(c)	$(p \vee p) \supset p$.	(c')	$p \supset (p \circ p)$.
(d)	$[p \vee (q \vee r)] \supset [q \vee (p \vee r)]$.	(d')	$[p \circ (q \circ r)] \supset [q \circ (p \circ r)]$.
(e)	$(q \supset r) \supset [(p \vee q) \supset (p \vee r)]$.	(e')	$(q \supset r) \supset [(p \circ q) \supset (p \circ r)]$.

The force of b and c may not at once be clear. B, or b', expresses the assumption that if p is consistent with some (any) other proposition, q, it is self-consistent or non-contradictory. This is equivalent to $-(p \circ p) \supset -(p \circ q)$, "A proposition not self-consistent is inconsistent with any other," and to $(-p \supset p) \supset (q \supset p)$, "A proposition implied by its own negation is implied by any (every) proposition." C, or c', states that every true proposition is self-consistent.

This calculus has never been developed. It is not identical with Mrs. Ladd-Franklin's algebra[8] based on the notions of consistency and inconsistency, but has interesting relations to that system. All the propositions of the calculus of consistencies can be proved from the assumptions of the matrix algebra for implications.

[8] In "Studies in Logic by Members of Johns Hopkins University," ed., Pierce.

Material Implication

The propositions of the system of material implication also can be proved from the assumptions of the matrix algebra. We proceed to deduce the primitive propositions for material implication given in "Principia Mathematica."[9]

The primitive ideas; p, q, r, etc.; $-p$; and $(p=q)$; belong to material implication as to the matrix algebra. The other primitive is "either p is true or q is true, where the alternatives are to be not mutually exclusive" (p. 97). The use of this relation shows it to be non-dilemmatic disjunction, which we symbolize, $p+q$.

Of the definitions, one, $(p \equiv q) = [(p < q)(q < p)]$, is already assumed in the matrix algebra. The other two may be deduced. (Primitive propositions and theorems used in the proofs are, of course, those of the matrix algebra.)

Th. 16. $(p < q) = (-p + q)$ [10]
Def. 4. $(p < q) = -(p - q)$.
Def. 5. $\{-p/p\}$: $(-p + q) = -[-(-p) - q)$
by P7, $(-p + q) = -(p - q)$
by substitution, $(p < q) = (-p + q)$.

For the deduction of the next definition, three lemmas must first be proved.

Th. 17. $(p = q) \supset (p \supset q)$.
Def. 7 $\{(p=q)/p;\ [(p \supset q)(q \supset p)]/q\}$:

$$(\text{Def. 7}) = [\{(p=q) \supset [(p \supset q)(q \supset p)]\} \{[(p \supset q)(q \supset p)] \supset (p=q)\}] \quad \text{(a)}.$$

(The last three lines should be read as one.)

Th. 1. (a) $\supset \{(p=q) \supset [(p \supset q)(q \supset p)]$ (b).
Th. 1. $[(p \supset q)(q \supset p)] \supset (p \supset q)$ (c).
P6. (b) $\supset$ [(c) $\supset$ Q. E. D.

Th. 18. $(p=q) \supset (q \supset p)$.
Similar proof.

Th. 19. $[(p \supset q)(q \supset p)] \supset (p=q)$.
P2. [(a) in proof of Th. 17] $\supset$ Q. E. D.

Th. 20. $(pq) = -(-p + -q)$ [*Prin. Math.*, *3.01].
Def. 5 $\{-p/p;\ -q/q\}$: $(-p + -q) = -[-(-p) - (-q)]$
by P7, $(-p + -q) = -(pq)$ (a).
Th. 17. (a) $\supset [(-p + -q) \supset -(pq)]$ (b).
Th. 18. (a) $\supset [-(pq) \supset (-p + -q)]$ (c).

[9] Pp. 95–101, 114, and 120. We neglect those refinements of the development given in "Principia Mathematica" which are due to the theory of types.

[10] "Prin. Math.," *1.01.

Perm. $(b) \supset [(pq) \supset -(-p + -q)]$ (d).
Perm. $(c) \supset [-(-p + -q) \supset (pq)]$ (e).
by production of (d) and (e),
$\{[(pq) \supset -(-p + -q)][-(-p + -q) \supset (pq)]\}$ (f).
Th. 19. $(f) \supset$ Q. E. D.

We proceed to the proof of the postulates as given in "Principia Mathematica." The first step is the derivation of theorems similar to these postulates, but not identical with them.

Th. 21. $(p + p) \supset p.$
P3 $\{-p/p\}$: $-p \supset (-p-p)$ (a).
Perm. $(a) \supset [-(-p-p) \supset p$
by Def. 5, $(p + p) \supset p.$

Th. 22. $q \supset (p + q).$
P2 $\{-p/q;\ -q/p\}$: $(-p-q) \supset -q$ (a).
Perm. $(a) \supset [q \supset -(-p-q)$
by Def. 5, $q \supset (p + q).$

Th. 23. $(p + q) \supset (q + p).$

Similar proof, using P1.

Th. 24. $[p + (q + r)] \supset [q + (p + r)].$
P4 $\{-q/p;\ -p/q;\ -r/r\}$: $[-q(-p-r)] \supset [-p(-q-r)]$ (a).
Perm. $(a) \supset \{-[-p(-q-r)] \supset -[-q(-p-r)]$
by P7, $-\{-p-[-(-q-r)]\} \supset -\{-q-[-(-p-r)]\}$
by Def. 5, $[p + -(-q-r)] \supset [q + -(-p-r)]$
by Def. 5, $[p + (q + r)] \supset [q + (p + r)].$

Th. 25. $(\sim p \supset \sim q) \supset (q \supset p).$
Th. 18. $(P8) \supset$ Q. E. D.

Th. 26. $(\sim p \supset \sim q) \supset (-p \supset -q).$
Perm. $(q \supset p) \supset (-p \supset -q)$ (a).
P6. $(a) \supset$ [(Th. 25) $\supset$ Q. E. D.

Th. 27. $[(p \supset q) \supset (r \supset s)] \supset [(p < q) \supset (r < s).$
Th. 26 $\{(p-q)/p;\ (r-s)/q\}$:
$[\sim (p-q) \supset \sim (r-s)] \supset [-(p-q) \supset -(r-s)]$
by Defs. 2 and 4, Q. E. D.

Th. 28. $(p \supset q) \supset (p < q).$
P9 $\{(p-q)/p\}$: $\sim (p-q) \supset -(p-q)$
by Defs. 2 and 4, Q. E. D.

Th. 29. $(q \supset r) \supset [(p < q) \supset (p < r)].$
P5. $(P6) \supset \{(q \supset r) \supset [(p \supset q) \supset (p \supset r)]\}$ (a).
P6. $(a) \supset$ [(Th. 25) $\supset$ Q. E. D.

Th. 30. $(q \supset r) \supset [(p + q) \supset (p + r)]$.
Th. 29 $\{-p/p\}$: $(q \supset r) \supset [(-p < q) \supset (-p < r)]$
by Def. 4, $(q \supset r) \supset [-(-p - q) \supset -(-p - r)]$.
by Def. 5, Q. E. D.

Th. 31. $(q < r) \supset [(p + q) < (p + r)]$.
Th. 27 $\{q/p;\ r/q;\ (p + q)/r;\ (p + r)/s\}$: (Th. 30) $\supset$ Q.E.D.

We now have a set of theorems which differ from the postulates for material implication in only one respect,—each of these theorems contains one implication of the type $\supset$. But Th. 28 tells us that from any implication, $(p \supset q)$, the corresponding material implication, $(p < q)$, can be inferred. By use of this theorem we prove immediately:

Th. 32.	$(p + p) < p$[11]	(from Th. 21).
Th. 33.	$q < (p + q)$[12]	(from Th. 22).
Th. 34.	$(p + q) < (q + p)$[13]	(from Th. 23).
Th. 35.	$[p + (q + r)] < [q + (p + r)]$[14]	(from Th. 24).
Th. 36.	$(q < r) < [(p + q) < (p + r)]$[15]	(from Th. 31).

These are the postulates for material implication. However, the system of material implication, as previously developed, requires an operation which may be stated: "If p is asserted and $(p < q)$ is asserted, q may be asserted."[16] We do not assume this operation, because $(p < q)$ is not equivalent to "q can validly be inferred from p." But we can prove all the theorems of material implication from the postulates of the matrix algebra in much the same way as we have just proved the postulates. Also, by using the postulates and theorems of the matrix algebra,—*e. g.*, P6 and Th. 27,—as principles of inference, we can prove that the theorems of material implication *can be inferred from* the postulates of material implication. This has never before been shown. Previous developments of material implication have proceeded by means of numerous "mathematical operations" or have proved only that the theorems are *materially implied by* the postulates.

If, however, the opinion expressed in this paper, that the relation of material implication is not equivalent to valid inference, be correct, then the system of material implication has no value as an organon of proof, and its interest is chiefly mathematical and historical.

[11] "Prin. Math.," *1.2.
[12] *Ibid.*, *1.3.
[13] *Ibid.*, *1.4.
[14] *Ibid.*, *1.5.
[15] *Ibid.*, *1.6.
[16] See "Prin. Math.," *1.1.

Strict Implication

The following set of definitions and postulates is sufficient for the system of Strict Implication.[17]

S1. $(p \supset q) = (-p \vee q)$.
S2. $(pq) = -(-p + -q)$.
S3. $(p \vee q) \supset (q \vee p)$.
S4. $(p + q) \supset (q + p)$.
S5. $(p + p) \supset p$.
S6. $q \supset (p + q)$.
S7. $(p \vee q) \supset (p + q)$.
S8. $[p \vee (q \vee r)] \supset [q \vee (p \vee r)]$.
S9. $[p \vee (q + r)] \supset [q \vee (p + r)]$.
S10. $(q \supset r) \supset [(p \vee q) \supset (p \overline{\vee} r)]$.
S11. $(q \supset r) \supset [(p + q) \supset (p + r)]$.

S2 is Th. 20; S3 is Th. 13; S4 is Th. 12; S5 is Th. 21; S6 is Th. 22; S11 is Th. 30. We proceed to proof of the remainder.

Th. 37. $(p \supset q) = (-p \vee q)$. [S1]
Def. 2, $(p \supset q) = \sim (p - q)$
by P7, $(p \supset q) = \sim [-(-p) - q]$.
Def. 3, $(-p \vee q) = \sim [-(-p) - q)$
by substitution, Q. E. D.

Th. 38. $(p \vee q) \supset (p + q)$. [S7]
P9 $\{(-p - q)/p\}$: $\sim(-p - q) \supset -(-p - q)$
by Defs. 3 and 5, Q. E. D.

Th. 39. $[p \vee (q \vee r)] \supset [q \vee (p \vee r)]$ [S8]
P5 $\{-p/p;\ -q/q\}$: $[-p \supset (-q \supset r)] \supset [-q \supset (-p \supset r)]$
by Th. 37, $\{-p \supset [-(-q) \vee r]\} \supset \{-q \supset [-(-p) \vee r]\}$
by Th. 37, $\{-(-p) \vee [-(-q) \vee r]\} \supset \{-(-q) \vee [-(-p) \vee r]\}$
by P7, Q. E. D.

Th. 40. $[p \vee (q + r)] \supset [q \vee (p + r)]$. [S9]
Th . 2 $\{-q/p;\ -p/q;\ -r/r\}$:
(P4) $\supset \{\sim[-p(-q-r)] \supset \sim[-q(-p-r)]$
by P7, $\sim \{-p-[-(-q-r)]\} \supset \sim \{-q-[-(-p-r)]\}$
by Def. 3, $\{p \vee [-(-q-r)]\} \supset \{q \vee [-(-p-r)]\}$
by Def. 5, Q. E. D.

Th. 41. $(q \supset r) \supset [(p \vee q) \supset (p \vee r)]$. [S10]
P5. (P6) $\supset \{(q \supset r) \supset [(p \supset q) \supset (p \supset r)]\}$ (a);
(a) $\{-p/p\}$: $(q \supset r) \supset [(-p \supset q) \supset (-p \supset r)]$
by Th. 37, $(q \supset r) \supset \{[-(-p) \vee q] \supset [-(-p) \vee r]$
by P7, Q. E. D.

[17] See "The Calculus of Strict Implication," *Mind*, N. S., No. 90, page 243.

Thus the entire system of strict implication is included in the matrix algebra.

Aside from its comprehensive character, the matrix algebra for implications is useful as an instrument for investigating the interrelations of necessity, truth, possibility, falsity, and impossibility, and of such derivative relations as have figured in this paper. If the assumptions of this system are true, the consequences are important not only for logic, but also for epistemology and metaphysics.

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ARE REALISM AND RELATIVITY INCOMPATIBLE?

"THE new realism," says Professor Lovejoy in a recent article in this Journal,[1] "from the first had in it a strain of relativism." "Yet a thinker of the true realistic temperament," he goes on to say, "craves a world of objects which have each *some* intrinsic and solid character, which do not endlessly deliquesce into mere relations to other things, themselves equally characterless and elusive. . . . But it appears to be the fact that practically these two incongruous motives were conjoined in the production of neo-realism in its American form."

I dare say that many of us are ready to subscribe to Professor Lovejoy's contentions as here expressed. I must differ with him, however, if he holds that the realist's craving for solid *things* and the principle of relativity are inherently "two incongruous motives."

It is true that realism is prone to ignore a dependence among objects and that relativity is disposed to the opposite error of discounting an independence among them. But relativity, properly conceived, must include a specific investigation into the nature of its terms just as realism finds and has found it incumbent to recognize the effect of relations. Hence, whether for a so-called realist or for a relativist, the conjunction of things and relations appears inevitable. It is easy to perceive why a conjunction between them may stand obscured and denied; for relativity, when brought to its formulation, is as commonly lacking in its account of *things* as realism is lacking in a precise definition of its special stumbling-block,—the nature and scope of relations. Many, I have no doubt, would be surprised to find to what extent John Locke has already struggled, with no mean success, to solve this very issue. In Book III. of his Essay (to paraphrase him as nearly as possible in his

[1] Vol. XI., page 421.

own language) he writes: objects exist in nature with a measure and boundary that appear prefixed; yet gold in one relation is solid and in another liquid, in one relation yellow and in another red, green, or what not. Moreover, men do not appear to agree in their conception of the simplest and most common of objects. How, then, do objects acquire such measure and boundary as they possess? Having presented this matter at large in two publications,[2] I shall merely revert to what I think is pertinent in those publications to the issue in question. In them I have attempted a complete formulation of relativity.

Since the crucial issue for relativity centers in a definition of *things,* we may state in advance that those formulations of relativity that terminate in a mere flux-doctrine or in the more widely current one that objects "endlessly deliquesce into mere relations," are doctrines that have hopelessly lost sight of their most difficult problem. A relativist's point of departure is the dynamic world; but realism, with its apotheosis of a static world, rises to overwhelm him at the very point where a relativist's chain of reasoning is invariably at its weakest—its impotence in the face of what is static. Independence is a characteristic of things, writes the realist. Let us see to what extent this realistic doctrine can compel a relativist to rescind the inadequate doctrine that objects "endlessly deliquesce into mere relations."

Underlying this particular formulation of relativity is the abstract conception that each object is involved in all and all in each. This sounds beautiful, but what basis has the conception? The conception emphatically denies on its very face that a partiality or an indifference exists in the effective relations of one object with another. But the principle of elimination as involved in our inductive methods (to cite but one instance) declares as emphatically at the outset that *disconnections* exist among things, so overwhelming and obtrusive in their presence, as to make the search for *connections* among some of them the most arduous object of a scientist's special endeavor. In fact, if no real disconnections exist then neither do connections exist, for the two ideas involve and presuppose each other at every point, and neither of them can claim a reality more ultimate than the other. It is thus that we come to recognize that the dependence of a given object in a given (circumscribed) situation may be large, yet the dependence of other objects upon it or upon each other in that particular situation may be zero. The unaffected objects are accordingly more properly designated as inde-

[2] "Locke a Constructive Relativist," The Scientific Press, Brooklyn, 1912. "A New Conception of Relativity and Locke," University of Cincinnati Studies, 1914.

pendent (in that situation). But an independence properly maintained for an object in certain situations may in other situations convert itself into a mere dependence, as our scientific postulate of a general dependence of an object would naturally dispose us to expect. This is the first significant distinction,—obvious, but abundantly overlooked, that I would insist upon; namely, that to talk of an object's general dependence, as a dependence of each object upon all, and of all objects upon each, and to talk of a particular object's dependence upon certain other specific objects in a given situation, or in a series of them held together in an idea (as in the case of gold), are very different things.[3] To exhibit this matter of connections and disconnections between its objects constitutes in large measure the central business of chemistry.

Objects, as we thus perceive, are not without independence. Independence is further assured and made obvious when we recognize how, in this dynamic world of connections and disconnections, objects are seen to be as effective in reinforcing each other and in preserving each other intact as they are in building each other up or in destroying each other; and, in still other cases, not only disdain to enter into certain effective relations, but even block effective relations which might otherwise have come into existence. It is to chemistry with its combining laws of substances that we again may turn for the most precise formulation of each statement here made.

These empirical observations in support of an independence acquire additional confirmation when considering abstract relativity in the light of the principle of conservation. Here we learn that objects or terms may displace and modify each other, but that the extinction of one term has its equivalence established in the creation of others. That is, abstract relativity, in contradiction to the principle of conservation, would reduce a certain term to zero by a total abstraction of it from the rest of the universe; but it fails to note that this abstraction of one of its terms argues some change or other of the remaining terms; and, if we adhere to the principle of conservation in its abstract form (a thing I would myself avoid), such changes may be maintained as affecting all of the remaining terms. These facts then, taken together, even in this summary

[3] Once recognize this distinction in its full effect, and we will be found to have an empirical foundation for real change and novelty in the world; for the organization of our world, whether of science or of every-day life, whether of man's or of nature's production, involves such an *interchange* of effective elements, that many of them never yet have been and perhaps never will be brought together. Many of them, of course, have been; but herein lies the sphere and foundation of real novelty or creation in our world, especially if we do not in this connection forget our chemistry and Hume's special teaching that the incommensurable issues from every new combination of objects or elements.

statement of them, point to the conclusion that relativity (in its identity with the scientific postulate of general dependence) does *not* imply a total extinction of independence "into mere relations to other things, themselves equally characterless and elusive." Rather does the contrary hold true; without dependence there is no independence. How long, for example, would an object like "gold" preserve or realize its full independence (integrity) when the idea of gold, as generally recognized, and, in particular, as defined by a chemist, involves a host of qualities and properties which demand time and the most varied situations for their realization? Furthermore, without insinuating an arbitrary or biased standard of some kind or other, the qualities and properties it reveals in one situation are as truly to be considered of its nature as those it reveals in other situations. If a selection is made among them, the selection would intimate the existence of some new principle of control. But whatever the principle of organization that a specific object may involve, the fact remains, as in general true, that no single situation of actual existence can reveal or exhaust an object's total actuality, that is, all its possible phases or qualities.[4] It is in its very nature a mutiplicity viewed spatially or temporally. Hence when synthesized into a whole, our object assumes the character of a construct. But to preserve the independence (integrity) of such objects demands dependence. In so far, then, as we remain strictly empirical, and further, strictly adhere to our scientific postulate of general dependence, the following form of relativity seems the more permissible one: objects reveal themselves differently in different situations, and in different situations are capable of revealing qualities absolutely incompatible with each other.

But a mere proof of an *independence* is not a definition of *things;* for whatever other notion may be implied in our conception of a thing, a specific inclusion and exclusion of parts is inevitable to its specific and distinct recognition. Terms of some kind we must adopt, and in this conclusion we are justified by the relative independence of terms amid dependence and change; and it is to those aspects of reality where a term's substantiation may be gleaned, that realism is especially disposed to turn in defense of its demand for solid things. But *what* terms we must adopt, depends upon the nature of the problem in hand, and it is in this "what" aspect of terms that realism so commonly proves disappointing.

Turning attention, now, to this phase of the problem, the point

[4] The appreciation of this fact negates the idea of an Absolute of a completed reality. Time and varied situations are demanded in the realization of any complex reality, and the more complex the reality, the more largely does this demand apply.

of contact between relativity and realism opens up anew. Do objects exist in nature with a prefixed measure and boundary? If they do, what is the prefixed measure and boundary of every object? If they do not, what controls us in affixing such measure and boundary to objects as they acquire, however variable or identical the measure and boundaries are that are assigned to the objects about us? Thus we might ask: why does the average man and the physical chemist regard water, vapor, and ice as *three* things instead of following the lead of the general chemist in regarding them all as mere aspects of *one* and the same thing under varied conditions; namely, as aspects of H_2O, or all alike, including hydrogen and oxygen, as mere functions of weight? Relativity drives this problem home; realism, however, can not with impunity ignore it; for a mere reiteration that objects exist in nature with prefixed measure and boundary is no rational proof that such is the case, however much ultimately an agreement may manifest itself between the rational proof and the inarticulate protestations of common sense or good sense. I affirm, therefore, that realism and relativity in their common search for *things* (as previously in their common search for independence) focus in a common problem, the problem of the one-and-the-many.

To postulate an inherent essence (substance) in explanation of this problem will not help us, for in that case we postulate we know not what, as tradition from Locke through Kant has so fully taught. And where an object changes, and all objects do and can be made to change to an indefinite degree, the question arises to which group of its changing qualities shall I hold as representing *the* group of a particular object. Now chemistry has its own solution of the problem in its elementary substances just as modern physics has its present solution of it in electrons. As for philosophy (to quote from a recent book), "I do not say that it is impossible to solve the problem of the one-and-the-many, . . . but up to the present time no solution has been given."[5] Modern realism with its elusive and protean conception of an object would surely not offer its solution as a solution of the problem in hand. I wonder how long a chemist or a physicist would pause to receive the instruction thus offered.

Suppose, then, we accept the verdict of chemistry as provisionally valid. Our terms in that case are the elementary substances. The chemist regards them as irreducible and he regards them as constructs,—as specific groups of itemized properties demanding time and the most varied situations for their complete realization. But to speak of them as (1) irreducible and as (2) constructs involves a possible confusion. In this dual claim the one-and-the-many prob-

[5] Russell, "First Course in Philosophy," 1913, page 90.

lem is as obviously evoked as in any other quarter. The difficulty is further accentuated when we read chemistry in the light of the electron as ultimate, whereby, as affirmed by many of the leading physicists of to-day, the electron and not the elementary substance becomes the desired term. And thus the issue of the one-and-the-many problem continues and, for all we know, always will continue. But the ideal simplicity of the "term" (and this is important), the special aim of both of these sciences, is not of necessity the only ideal. Often we aim to know the effect of a complex term upon other complex terms. For example, when I make lemonade I do not combine elements that are simple from the standpoint of chemistry, but I combine the complex thing "water" with the complex things "sugar" and "lemon juice." Or when I seek the effect of a violin concerto upon an audience, I do not resolve the complex things—violin box, strings, bow, the air, the player, etc.—into parts that are elementary from the standpoint of chemistry, physics, psychology, or what not, but I deal directly with the interdependence or relations of parts exceedingly complex. Hence all we seem entitled to affirm thus far is, that the scientific postulate, in so far as it signifies so-called *conditions* and so-called *results,* presupposes the existence of terms at every step of its operation. Terms thus come and go; but with terms in some form or other we begin and with terms in some form or other we end. Hence the realist in his assertions that complex things are or may be ultimate, has, from the standpoint of relativity, here hit upon a bigger truth than he in his reasoning may have actually known; for its background is a clearly accepted pluralism and a clearly accepted relativity. The truth, however, of the ultimate character of complex things (under conditions) is impregnable. In addition the thing a relativist in the rôle of a pluralist would emphasize is, that no set of conditions with its results has in its conditions or in its results a *monoply* upon reality, whether in one case we adopt the electrons of physics as the foundation or limits of the objects involved, or the elementary substances of chemistry, or a sensory *quale.* Under conditions, then, as Locke himself wrote, "an army, a swarm, a city, a fleet are things as perfectly one as a ship or an atom."

Consistently hold to the fact, then, (1) that unity, under conditions, may be validly assigned to any object, from an electron to the universe in its totality, and (2) to the principle that given conditions produce a given result—then, whatever the conditions, the result *is* reality. Break up that result into parts, if you choose, or synthesize the given result with other results and, together, organize them into a larger result; in either case we have *reality,* of which common practise offers certification. For if it be once admitted that

objects exist in nature with no prefixed, natural, or inevitable unity or boundary of their own, then one boundary of them is no more true in the abstract than another, whether we proceed by the way of analysis to a pale and vapid *quale,* or by way of a synthesis advance to the Absolute of our objective idealists. Hence neither a *Ding an sich* nor a phenomenalism really has any meaning from a relativistic standpoint. A thing *is* what it reveals itself to be in any given situation, or, by a process of construction, *is* what it was found to be in a series of situations; and it logically remains entirely beside the issue whether a human organism, with its source for varied determination, constitutes a part of a situation or whether other objects do. For no set of conditions with its specific result, in the abstract, I repeat, has a prerogative or monopoly upon so-called reality. Constructs enter our world at every point, whether mechanical, industrial, artistic, scientific, or what not, and any one of them in its simplicity or in its complexity may become our real and actual point of departure in thinking as in action.

The length at which some writers, as Bergson for example, would decompose our ultimate units of knowledge because they are capable of a varied formulation or, in other cases, because they are capable of an indefinite analysis and decomposition, is not without error. Limits in these matters exist that Bergson and his confrères in anti-intellectualism are loath to admit or recognize. Thus we may add in the way of a refutation of these abstract claims that the *in*decomposable character of elements in chemistry is a far more rigid trait than their decomposable character, although some of the elements once thought of as indecomposable may slowly give way to a resolution coincident with the slow refinement of a complex technique elaborated in connection with them. Or again, in the case of our sense organism, is rigidity in and susceptibility toward the number, kind, and range of our sensations the conspicuous thing, or is it the opposite that is true? The answer is evident. Moreover, as stated, terms of an ideal simplicity—elementary substances, the electron, the *quale* of an immediate experience,—are not the only limits in the organization of our experiences. In the case of our violin concerto, limits present themselves that on their face are conspicuously complex. In fact, what would become of most of our sciences, in particular ethics, sociology, mechanics, if this were not the case? Limits exist, therefore, whether we move up or down for our unit; limits which, under conditions, make now one unit the basis of a synthesis and then some other.

When a thinker, therefore, in harmony with the scientific postulate of general dependence knocks at such limits, but refuses in his actual thinking to be controlled by them, he parts company with

what is empirical, to launch forth at will in a sphere of delightful (!) abstraction. Secondly, if he recognizes but *one* such limit, as Professor Lovejoy, for example, gives expression to in his sensory *quale* as the experienced datum, he is an absolutist who sees but one possible aspect of reality and mistakes it, however partial or fruitless, as adequate in its resolution of the whole universe with all its inherent variety and complexities. But whether the thing is determined by one *quale* or by a multitude of them, or whether the *quale* is determined by the thing, he does not say. In either case there is presupposed a determination of the *quale* or of the thing that is openly at issue. Thirdly, if as the realist does, a thinker (1) mistakes a mere assumption of an independence for its proof, or (2) mistakes an undefined independence for a defined *thing,* or (3) conceives of an independence apart from dependence, we might in each case be thought to have a doctrine of reality, but they would be doctrines of such value as I leave with my readers to judge.

I have sought to prove that relativity, when identified with the scientific principle of general dependence in its conjunction with so-called uniformity of nature, recognizes a variety of limits, which, as long as they remain practical, are actual; and that such limits are as apt to present themselves validly in the form of an obviously complex synthesis as in the direction of a minute analysis. Physics, chemistry, and the theory of the sensory *quale,* in contrast with realism, to my mind, more clearly define the nature of the limits they involve, but they differ from realism in a less general declaration for independence and pluralism. Finally, that a relativity that is empirical and pretends to adequacy must incorporate such independence and pluralism in its formulation just as obviously as a realism must recognize the postulate of general dependence (relativity) if it would be scientific. And further, that realists no less than relativists, before they can talk of *things* in any proper sense of the term, must both alike turn to the one-and-the-many problem as a common heritage of a metaphysical difficulty, and that it is in connection with this problem that I see hope for a fuller and clearer recognition and definition of the varied limits involved in the varied organization of our very complex and evolved experience.

Not in the conjunction of realism and relativity, therefore, but in their supposed incompatibility, do I see philosophical confusion.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Problem of Christianity: Lectures delivered at the Lowell Institute in Boston, and at Manchester College, Oxford. JOSIAH ROYCE. New York: The Macmillan Company. 1913. 2 Vols. Pp. xlvi + 425; 442.

Some years ago the present writer chanced to be in Cambridge at the time when Professor Royce was delivering his lectures on the "Essence of Christianity" which were subsequently published in the *Harvard Theological Review* under the title, "What is Vital in Christianity." The lectures were delivered upon the invitation of the Students' Christian Association which, if my memory is not at fault, suggested the topic. Chancing to meet Professor Royce at the time, I expressed my satisfaction that we were to have the benefit of his thought upon so practical a theme. Royce shook his head. "I did it," he said, "because I promised, but I will never take such a subject again; it is too concrete for my taste."

Readers of the two substantial volumes in which Professor Royce has embodied his views upon the problem of Christianity must rejoice that his excursion into the realm of the concrete has not proved so isolated an experience as he anticipated. We are all the richer for sharing his thought on a theme which has proved of perennial interest to humanity, and we feel safe in assuming that he himself has found the hours spent in studying the origins of Christianity, and thinking over again the questions which its existence raises, an enlarging and rewarding experience. Those who, like the present writer, have made it their life-work to study the problems of Christian theology welcome the entrance into this well-cultivated field of an independent thinker who brings the virility of mind, the broad outlook, and at the same time the earnest religious spirit which characterize the distinguished philosopher who so ably carries on the tradition of idealism in the oldest of our American universities.

Yet it must be confessed that the spirit which uttered itself in the remark which was quoted in our opening paragraph is still in evidence in the volumes under review. Like Hegel, whom Professor Royce follows in his attempt to give a philosophic interpretation of the essence of Christianity, the American idealist believes that absolute truth is revealed in history, but he is equally sure that you must not identify it with any particular historical phenomenon, even if that phenomenon be one so august and sacred as the Christian religion itself. To the man who has the insight to see it, truth is present everywhere and always as the inner meaning of that which, looked at from the outside, appears simply as a series of brute facts. What is needed above all things is the formula, and this it is the business of the philosopher to furnish us. How it is to be applied, what bearing it will have upon the special problems of the individual life, he leaves to others as no part of his professional concern.

Yet it would be a great mistake to confuse Royce's conception of the essence of Christianity with Hegel's. In spite of superficial similarities there is a real difference. Between Hegel and Royce there lies a mass of critical research devoted to the investigation of the facts of the Christian

religion. Professor Royce disclaims any right to speak at first hand of the questions under controversy in this criticism; yet he writes as an intelligent layman who has studied what the critics have to say and comes to his own problem with an independent understanding of their results. You feel, in reading his pages, that the religion with which he deals is really the Christian religion, not some independent construction of his own brain. Some Christians may feel—many will doubtless feel—that there are aspects of the Christian religion—and these fundamental aspects—which find no place in Royce's book, but what he gives they will recognize as a part at least of the religion they know, and they will feel in him, therefore, a kindred spirit. To take but a single illustration,—it would be difficult to find a more illuminating piece of analysis than the comparison which the author draws between Buddhism and Christianity in the seventh chapter of his first volume, a comparison equally just in its estimate of similarity as in its recognition of difference.

The book falls into two parts, independent yet complementary. The first, entitled the "Christian Doctrine of Life," is a study of the essence of Christianity considered as an objective historical phenomenon. The second, which the author entitles "The Real World and the Christian Ideas," asks the question how far the Christian solution of the problem of life can maintain itself at the bar of metaphysical inquiry. Thus the two parts of Royce's book cover substantially the ground which is discussed by contemporary German apologetics under the titles "Das Wesen" and "Die Wahrheit des Christentums."

The plan has advantages and disadvantages. Its advantage consists in its clear recognition of the fact that the problem of Christianity is one of definition as well as of proof. Before we can tell what Christianity signifies we must know what it is, but this is in dispute not only among non-Christians, but among Christians. It is methodically correct, therefore, to isolate this question for independent discussion as Royce does.

On the other hand, the method has disadvantages, in that it separates matters that belong together. The definition of Christianity involves among other things a description of the beliefs of Christians about ultimate realities, notably about the nature of God. But this question, fundamental for the understanding of every religion, Royce passes over with only incidental reference,[1] reserving his discussion, so far as he gives one, for the second part of his treatise. The result is a description of Christianity which omits altogether what most Christians would regard as the heart of their religion. Royce himself admits this and defends his method on the ground that Christians have believed many things in the past which we all recognize to-day have been outgrown. But whether this can apply to a conception so fundamental as that of God is a question which requires fuller discussion than our author has given it.

To begin with the first problem, that of the essence of Christianity, it may be premised at the outset that Professor Royce believes that the quest of such an essence is legitimate and important. If the world has a meaning, if history is more than a mere succession of events without inner

[1] *E. g.*, Vol. I., pages 202, 205.

relation and spiritual significance, then a great historical phenomenon like Christianity must have some significance which can be discovered by the sympathetic and reverent student. History, as Royce conceives it, is more than a science. It is a philosophy, a search for the inner unity which connects events and makes them luminous and meaningful to the instructed observer.

There are, however, two possible methods of interpreting an historical phenomenon like Christianity, each of which has its advocates. You may find your essence revealed at some particular point of time, identifying it either with the teaching of the founder, the content of the Bible, or the dogma of the church, as the case may be. Or you may find it in some spirit which runs through the whole course of history and whose full secret is only gradually apprehended. You may say of Christianity, It is the religion of Christ, meaning the religion that Christ taught, or you may say, It is the religion of Christians, meaning that it is the experience into which Christians have progressively entered as they have tried to understand and interpret Christ. Royce's view is of the latter kind. Like Schleiermacher and Ritschl he takes his stand within the consciousness of the Christian community, which he regards as the real creator of Christianity. He does not think it possible to press back of this consciousness and to recover some more primitive form of faith which, when recovered, must henceforth be our test of true religion, nor indeed is he greatly interested in the attempt. The church rather than Christ is the constitutive idea of Christianity, and the church is only another name for the ideal community, which is the unifying principle of philosophy and religion alike.

Holding this view, it is not strange to find Professor Royce indifferent to the results of recent critical study of the life of Jesus. Of the founder of Christianity he speaks with great respect and of many of his reported teachings he gives a sympathetic and in many respects an illuminating interpretation (*e. g.,* Jesus's teaching concerning love), but as to his own place in the religion that bears his name he professes himself agnostic. It is not simply that he feels the difficulties raised by modern criticism,—that we could well understand,—but that the picture of Jesus as presented in the Gospels, the picture of a particular individual embodying a definite ideal of service and brotherhood and love, finds no natural place in his philosophy. In contrast to Hegel, who insists that the ideal personality who incarnates the principles of his philosophy must at some definite time appear, Royce does not expect "any human and visible triumph of the ideal in history" (Vol II., page 430). All that we can hope for is an approximation toward that ideal, the assurance that somewhere and somehow (not here and now) it is realized in the eternal.

Passing from method to result, we find that our author discovers the essence of Christianity in three controlling ideas: the idea of the church, or the universal community through loyalty to which alone the individual realizes his destiny; the idea of sin, or the moral contradiction in which the individual finds himself necessarily involved because of the conflict between his own will and that of the community, and the idea of atone-

ment, or the saving deed of the community or its chosen representative through which this disharmony is overcome and the individual restored to his true place in the communal life. The ideas which underlie the discussion have already been anticipated in earlier works, notably in "The Philosophy of Loyalty," and "The Sources of Religious Insight." But the treatment forms a unity and can be followed without reference to any of the author's previous works.

Fundamental for Royce's thought is the conception of the community as an independent entity having a unity of its own as definite and as empirically verifiable as that of an individual personality. This conception to which Royce had come on independent grounds in his "Philosophy of Loyalty" he holds to be the central reality for the Christian consciousness. The Pauline church, or, as he paraphrases it, the beloved community, is in fact the community of the loyal. This is the body of Christ, the sphere in which his spirit expresses itself, the end in devotion to which every individual finds his true self fulfilled.

This view of the church explains Royce's view of the second of the great Christian conceptions, that of sin. The supreme sin, according to our author, is disloyalty, treachery to the cause of the community. But this he finds to be the inevitable result of the conflict between the individual's wants and desires and the claim of the community of which he is a part. The more highly developed the individual, the more conscious he is of capacities and desires that are inherently worthy, the more he rebels against the restraints which the community puts upon him, the more his experience approximates that of Paul in the seventh chapter of Romans. What is the remedy for this situation? It is the remedy which Paul discovered, namely, the existence of a new and higher social order, in loyalty to which the individual can find his highest desires fulfilled. Such a community is the church of Christ. Through loyalty to it alone salvation is possible. But what of those who have proved false to this new and higher allegiance? Such would seem to have committed the unpardonable sin, a sin for which even if others could forgive, they could never forgive themselves. What has religion to offer to those who have been disloyal to the cause of loyalty? This brings us to the third of the ruling ideas of Christianity which Royce discovers, namely, that of atonement.

Professor Royce finds in the Christian emphasis upon the atonement one of its chief claims to our acceptance. "The human aspect of the Christian idea of atonement," he tells us, "is based upon such motives that if there were no Christianity and no Christians in the world the idea of atonement would have to be invented before the higher levels of our moral existence could be fairly understood (Vol. I., page 271). It is quite true that the particular theories of atonement which meet us in the official theology of Christianity are unsatisfactory. But this is because the problem has been conceived in too superficial and external a way. Either, like the penal theory, the deed has been isolated from its consequences and atonement found in some form of legal substitution; or like the moral theories, a moral transformation of character in the individual has been considered sufficient. But what is needed is something more profound

than either, such a dealing with the tragedy of sin that the world shall be the better for the fact that it has happened. What if it should appear that the traitor's deed of disloyalty prove the occasion for some corresponding deed of love so wise, so gracious, so winning in the beauty of its unselfish adaptation to the tragic situation that not only others, but even the traitor himself who is responsible for the evil that called it forth must recognize that the world is the better for its having been done. Such a deed, could it be done, would fulfil the conditions of a real atonement, and such, in the opinion of our author, is the remedy which Christianity proposes for the tragedy of sin.

In spite of the abstract form in which it is cast, one must recognize in the analysis a true insight into the genius of historical Christianity. It is the more to be regretted that the author should have passed so lightly over other ideas to which most Christians would attribute equal if not superior importance, namely, that of God, the ultimate object of Christian faith, and Jesus Christ, the historic mediator of his revelation.

Of the reason for the first omission I have already spoken. The explanation of the second appears in the second and metaphysical part of the book. It is here made clear that the reason why Royce gives no independent doctrine of God is that he identifies God with the community, which from a different point of view is only another name for the living Christ or the Holy Spirit of historic Christian theology. This identification is possible because the community which is the object of Christian loyalty is not the empirical society we call the church in any one of its many conflicting forms, but a noumenal reality which as completely transcends present (and for that matter all future possible) experience as the God of Kant himself.

Royce's justification for his identification of the ultimate reality, or God, with the ideal society, has two parts. The first develops the idea of the community as the ultimate metaphysical reality; the second gives reasons for the belief that such a reality actually exists. The former occupies chapters nine and ten, which deal with the Community and the Time Process and the Body and its Members; the latter is discussed in chapters eleven to fourteen, which treat of the significance of interpretation for our knowledge of reality. Two concluding chapters draw certain practical conclusions.

Of the first point I can speak briefly. Royce makes use of Wundt's "Studies in Social Psychology" to defend the thesis that the community is a true unit in that it has a common past and a common future. It has a common past because the same historical event may enter into the consciousness of each of its members who, through this common inheritance, become what Royce calls a community of memory. It has a common future because each of its members may work for the same ideal, and this common purpose constitutes them a community of expectation.

We have no criticism to make of this interesting discussion other than to remark that it opens the way for an interpretation of history far more concrete and vital than that which Royce has given. If the possession of a common past is essential to the existence of a community in the sense in

which Royce defines it, then it would seem that the specific historic facts which constitute that past must bulk more largely than they do for our author, and the Christian's backward look to Jesus as the founder of the Christian community can not be dismissed in the summary manner in which he dismisses it.

More interesting, because more original, is Royce's use of the theory of interpretation as a justification of his metaphysical position. For this theory he confesses his indebtedness to Mr. Charles Pierce, that fruitful source of suggestion to American philosophers. But the use which Royce makes of it is his own. According to this view there are not two methods of knowledge as ordinarily supposed, perception and conception, but three, perception, conception, and interpretation. Perception is concerned with that which is immediately given in experience; conception with general ideas reached by a process of abstraction; but interpretation is the process by which we share what we have experienced with other persons for purposes of common action. Both perception and conception admit of being stated in individual terms, but interpretation is essentially social. It takes for granted the existence of a society of persons and would be meaningless without it.

Here again there is much that is interesting in Professor Royce's discussion, over which it would be a pleasure to linger. But we are concerned here primarily with its bearing upon his argument as a whole. If we understand him aright, what he gives us is a new variety of the ontological argument. We must assume, so the argument runs, that the reality which is implied in the very processes of our knowledge has objective existence. As used in the older forms of the ontological argument this reasoning, even if its validity were admitted, could give us at most a highly abstract result such as Kant's "Ens Realissimum." But as used by Royce in the light of his doctrine of interpretation it gives us the most concrete of all results, namely, the beloved community itself. If all our knowledge involves the process of interpretation, and interpretation is meaningless without the existence of the community with whose members insight is shared, then we must believe that the nature of ultimate reality is social, which is the thesis which is to be proved.

A corollary of the doctrine of interpretation is the doctrine of signs. A sign is any object which admits of interpretation, *e. g.*, "a word, a clock-face, a weather vane, or a gesture" (p. 283). Not only art and literature, but science and common sense, are constantly making use of signs. Experience itself may be defined as "a realm of signs" (p. 289), and history is constantly presenting us with objects which through interpretation give us insight into the nature of reality. What we all recognize as valid in particular instances Royce would extend to the world as a whole. "The world is the community. The world contains its own interpreter. Its processes are infinite in their temporal varieties; but their interpreter, the spirit of this universal community,—never absorbing varieties or permitting them to blend,—compares and through a real life interprets them all" (p. 324).

One must regret that Professor Royce has not followed this clue

further and given us a classification of signs with special reference to the signs of which religion makes use, and especially the particular religion which he is studying. This would enable us to test the correctness of his previous analysis and discover why he omits from his catalogue so many of the ideas which have played so large a rôle in historic Christianity. But this would take him back into the realm of the concrete, from which he has so happily escaped. As it is, we must be content with the general principle without application in detail.

In one of his closing chapters Professor Royce, by a use of the creative imagination, not uncommon among philosophers, calls back from the grave a Pauline Christian and, transporting him across the lapse of years into the new world of modern science, presents him with a copy of "The Problem of Christianity," in order to discover how far he will recognize in it the essence of his own religion. As could hardly be otherwise under the circumstances, the test is successful and the position of the author triumphantly vindicated. For a moment, to be sure, our convert hesitates, but being at heart a gentlemen as well as a philosopher, he recognizes in Professor Royce a kindred spirit and soon finds himself at home in his new environment.

If the reviewer might venture upon a like liberty he would suggest a repetition of the experiment. There were more types of Christians in the Pauline community than one, and it may be that a second visitor would look at the matter from a somewhat different angle. He might address this new interpreter of Christianity as follows: "This religion that you call Christianity has much that attracts me. I recognize my own experience in your description of sin and of salvation. I respond with enthusiasm to your plea for loyalty, but there is one thing I miss, and that is a personality fitted to call forth my loyalty. Such a personality I knew in Jesus Christ, the founder of the church to which I gave my allegiance. But in this sublimated community, which I am not at liberty to identify with any existing society, I look in vain for my Master and my Lord. What I need is not the divine in general, but the divine as revealed in the human, and such a revelation I find in the person of Jesus. I rejoice in your protest against reducing Christianity to a mere ethical system. I welcome your re-emphasis upon the universal and metaphysical elements in my faith, but why need the emphasis of the one involve the sacrifice of the other? Christianity, to be sure, is religion, not ethics; but it is ethical religion, and the reason why Christ must ever hold the central place in Christian faith is the fact that he embodies to the imagination of men in the picture of a human life principles universally applicable. He is the sign by which we interpret the universe and discover the nature of the social order after which we are to strive. Put back Christ into Christianity and I shall find myself at home in the beloved community whose ideals you have so fascinatingly sketched."

Whether our resuscitated Pauline Christian would speak thus I do not know, but I am sure this is a sentiment which will find an echo in the heart of many a modern Christian as he lays down Professor Royce's book.

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JOURNALS AND NEW BOOKS.

REVUE PHILOSOPHIQUE. May, 1914. *Sous Quelles Conditions le Mysticisme Est Légitime* (pp. 449–481): JULES DE GAULTIER. – Only those forms of mysticism are legitimate which "do not enter into conflict with phenomenal experience, but, on the contrary, confirm, explain, and transfigure it, for it is mysticism's accord with experience which in the end determines its legitimacy in the domain of the *possible.*" *Vers l'Intuition Expérimentale de l'Electron* (pp. 482–505): A. REY. – This, the last article of the series, reviews the evidence obtained since 1908, and arrives at the final conclusion that "experimentation has put beyond doubt the existence of an elementary electric charge." *Contribution a l'Étude du Sentiment Amoureux* (pp. 506–526): N. KOSTYLEFF. – A study of extra-genital erotism, and of its associations with mental images. *Revue Critique:* FR. PAULHAN. *Analyses et Comptes Rendus.* H. Reverdin, *La Notion d'Expérience d'après William James:* FR. P. Dr. Werner, *Le Pragmatisme de James et de Schiller:* FOURET. A. de Gramont-Lesparre, *Les Inconnus de la Biologie Déterministe;* Dr Agostino Gemelli, *Il Metodo degli Equivalenti:* G. L. DUPRAT. James Mark Baldwin, *History of Psychology:* M. SOLOVINE. G. F. Arnold, *Psychology Applied to Legal Evidence:* G. L. DUPRAT. Carlo Spanzini, *Die Fortschritte der Voelkerpsychologie von Lazarus bis Wundt:* DR. JANKÉLÉVITCH. Paul Souriau, *L'Esthétique de la Lumière:* LUCIEN ARRÉAT. Andre Fauconnet, *L'Esthétique de Schopenhauer:* A. JOUSSAIN. E. Guyot, *Essai sur la Formation Philosophique du Poête Arthur Hugh Clough:* FOURET. *Revue des Périodiques.*

ARCHIVES INTERNATIONALES DE NEUROLOGIE. July, 1914. *Traitement de l'État de Mal Épileptique* (pp. 1–3): HENRI DAMAYE. – In the condition known as "*status epilepticus,*" the administration of bromides is a very unsatisfactory method of treatment; and a solution of chloral hydrate in hot milk, introduced into the stomach by means of the œsophageal tube, should be substituted. *Sténose Congénitale de l'Aorte et des Artères avec Epilepsie* (pp. 3–14): A. OBREGIA, C. J. URECHIA & A. POPEA. – Congenital aortic stenosis may be regarded as one of the causes of epilepsy. *Ptoses Viscérales et Hallucinations Visuelles* (pp. 14–22): HENRI AIMÉ. – Visual hallucinations are often met with in cases of visceral ptosis, and are due to the traction on the abdominal sympathetic ganglia by the different viscera. *Revue des Sociétés. Analyses Bibliographiques.*

Allen, Edward. Wayside. Boston: Sherman, French, and Company. 1914. Pp. 159.

Calkins, Mary Whiton. A First Book in Psychology. Fourth Revised Edition. New York: The Macmillan Company. 1914. Pp. xxi + 428.

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Keyser, Cassius J. Science and Religion: The Rational and the Super-Rational. New Haven, Conn.: Yale University Press. 1914. Pp. 75. 75 cents.

NOTES AND NEWS

THE *Rivista di Filosofia Neo-Scolastica* attaches the following notice to its number for September 20: (1) If the current of events permit, the next number will be wholly dedicated to Roger Bacon. Distinguished Italian, German, and English writers will collaborate to it. (2) We invite all those who are interested in philosophy to send us their visiting cards. These we shall forward to the President (Rector) of the Leo XIII Institute of Philosophy of the University of Louvain, to express to him our sympathy for the colleagues of that glorious institution in their sad bereavement. (3) As the storm rages over Europe in this fateful hour, we, both as scholars and as believers, can not refrain from urging our friends to unite with us in prayer. And this for two reasons: To invoke God, in whose hands are the destinies of man that he may in his mercy turn the course of events, and out of this great evil bring the blessing of peace upon our hearts and restore comfort to our souls. And, secondly, to invoke the protection of God in behalf of our numerous friends who are at present engaged with the belligerent armies. Many students of scholastic philosophy are now fighting as soldiers of Belgium, Germany, and France, and from very few of them have we any news. May they return unharmed, after they have gloriously served their country, to the defense of our common heritage of learning.

DR. A. E. DAVIES, professor of philosophy in the Ohio State University, is away on a year's leave of absence. On account of the war he will be unable to visit the European universities, and has accepted the opportunities extended to him by the English universities for carrying out his original programme of work. His address is 44 Beechhill Road, Eltham, Kent, England.

THE New York University Philosophical Society met in the Students' Room of the university, Washington Square, on Tuesday evening, October 20. Professor Edward Gleason Spaulding, of Princeton University, addressed the meeting on the topic "A Defense of Reason."

MANY students of philosophy and sociology will be interested in the address of the president to the Anthropological Section of the British Association for the Advancement of Science, entitled, "A Study of Primitive Characters," delivered in Australia, and printed in *Science* for October 9.

FOUR lectures on "Heredity" were recently given by Dr. Sandwith at Gresham College. The first dealt with the subject from the purely scientific point of view and the remaining three discussed it in its social aspect, largely with reference to eugenics.

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PSYCHOLOGY AND SCIENTIFIC METHODS

QUALITIES, RELATIONS, AND THINGS

PROFESSOR LOVEJOY'S resumption[1] of the discussion on secondary qualities raises at the outset in my mind that most depressing question, "Is agreement in philosophy possible?"

At the meeting of the American Philosophical Association in 1912, when this question was raised, it resolved itself into the question, "Are philosophical problems, provisionally, at least, isolable?" And Professor Lovejoy rightly, it seemed to me, contended that if the determination of any question involved as its premises the solution of all other questions, philosophic effort was hopeless. Inspired by my agreement with Professor Lovejoy and a disbelief in the extreme organic view which would make a complete botany of "the flower in the crannied wall" depend upon diverse issues of theology and anthropology, I ventured a practical application of our common belief by isolating one of Professor Lovejoy's arguments against neo-realism with the hope that he and I might thus arrive at a mutual agreement. But in two attempts I have found it utterly impossible to induce Professor Lovejoy to pay any attention to my argument on its own merits. He persists in looking beyond it to other differences between us, and thus escapes my well-deserved efforts to show the world that philosophers can sometimes settle a point of difference between them. Thus, in my last brief note, I happened to have been provoked into making the logically unnecessary announcement that I pay no homage to the usual or "familiar" distinction between qualities and relations. This, as any one who re-reads my note can see, was an *obiter dictum* and not put forth as an essential part of my argument. Nevertheless, Professor Lovejoy's last communication fixes on this side issue and ignores the two main points of my contention. Under the circumstances, the promptings of my heart are to give up the effort, to "curse God and die." But the hope that

[1] This JOURNAL, Vol. XI., page 421; *cf.* Vol. IX., page 675, Vol. X., pages 27, 214, 510.

by persistence I may, perhaps, induce abler hands to take up and champion my righteous cause induces me to make a third attempt.

I

The original issue consists of two parts.

(1) Is it a fact that science regards secondary qualities as subjective? Is it true, that in any physical investigation, *e. g.*, on light, the category of consciousness or subjectivity or mere appearance is actually used to explain redness, blueness, etc.? Professor Lovejoy's colleague at Johns Hopkins,Professor Wood, has recently raised in a very original form the question, Why does a prism produce the dispersion of light called the spectrum? Will any physicist venture to bring in the category of consciousness to explain this, or contend that the difference between colors belongs, after all, to the realm of mere appearance? Professor Lovejoy harps on the fact that no physicist regards an ether vibration of 6,438 A° and red as identical. But why assume that the difference between red and a wave-length of 6,438 A° (if indeed there be any difference) must be no other than that between appearance and reality or subjectivity and objectivity? Surely, such assumption is not necessary for any laboratory procedure or mathematical computation. As a matter of fact, the distinction between primary and secondary qualities, while probably inspired in its earlier forms (*e. g.*, in Kepler and Galileo) by neo-Platonic considerations regarding appearance and reality, has maintained itself in modern physics for a purely technical reason, viz., the need of a distinction between qualities which must be assumed as original and qualities like compressibility and malleability which are to be explained in terms of the primary ones; and as the list of primary qualities has changed, the line of division has been a shifting one and entirely irrespective of the concept of subjectivity. It is certainly possible to remain a good physicist and yet maintain that a wave-length of 6,438 A° impinging upon a proper surface is all that the physicist does or should mean by "red." One can deny the metaphysical doctrine that secondary qualities exist only in a realm of "merely subjective appearance," without in any way being compelled to give up any of the established methods of science. Such a denial certainly fits in with the physicist's assumption that the laws of coloration as treated in optics express what goes on in the absence of conscious observers and were true before the possible existence of conscious beings.

This question of the actual procedure of science does not, of course, settle the further philosophic question whether an ultimate interpretation of the procedure and result of physical science requires the notion of consciousness. But if Professor Lovejoy be correct, if

in their actual procedure scientists do and must introduce the category of subjectivity in their dealing with secondary qualities, there would be to most of us an almost conclusive authority against further dallying with such questions as are raised in Professor James's article—"Does Consciousness Exist?" or Professor Woodbridge's article—"The Belief in Sensations." Surely attempts to deny that which actually underlies the procedure of the sciences ought not, in this busy day, to be listened to by any self-respecting thinker. If, however, physical science can get along without the category of subjectivity, the issues which pan-objectivistic philosophies raise are at least worthy of a hearing. As yet, Professor Lovejoy has not produced the slightest evidence to prove that scientific procedure is incompatible with the neo-realistic view of secondary qualities as relations or processes between physical or physiological objects.

It will be observed that I do not contend that Professor Lovejoy's view, *e. g.*, of redness as just mere subjective appearance and nothing else, is incompatible with physics. Science is tough and can endure a great many interpretations. But I emphatically deny, and challenge Professor Lovejoy to *prove*, that there are any facts of physical science incompatible with the view that secondary qualities are a genuine part of the physical universe.

(2) My second and main point has been misapprehended by Professor Lovejoy probably because he regards it exclusively as an argument *for* neo-realism (the six previous arguments for which he believes he has refuted). But it is not primarily an attempt to prove anything, but rather a challenge to Professor Lovejoy to prove an assertion which he often makes. I deny his assumption that there is any contradiction involved in saying that the same object can "really" or objectively be red in relation to one screen and blue in relation to another, hot to one thermometer and cold to another, square from one point of view and oblong from another, etc.

Now as all students of logic know, it is obviously impossible to prove that any assertion does *not* involve self-contradiction, *i. e.*, does not imply two contradictory propositions. One can only indicate that there is no *prima facie* case for supposing any contradiction in the case by showing parallel statements which no one considers self-contradictory. Thus I urged that the same line can subtend an angle of 45° from one point of view and of 23° from another. Professor Lovejoy retorts that "this ignores the familiar distinction between qualities and relation," thus implying that angles are only relations. To this I replied in my second note that the distinction between qualities and relations is apparently not a very clear or sharp one to Professor Lovejoy himself, since he maintains that the same figure can not without contradiction be both square and oblong

(the difference in both cases being an angular one); and I urged the case of the parallelopiped, that is a rectangular one in one position and an oblique one in another.

Are "rectangular" and "oblique" qualities or relations? Professor Lovejoy does not meet my challenge, but simply points out what he considers fatal difficulties in a view which denies a fixed difference between qualities and relations.

To simplify the issue, however, I can withdraw the last point and ask directly, has Professor Lovejoy proved or made out a case for the contention that there is a *contradiction* in the assertion that the same object can be really red and blue?

It is to be observed that the expression "contradictory qualities" is based on some confusion. Qualities as such can never be contradictory. Indeed, it would be peculiar if the principle of contradiction, obviously a formal one, could tell us that certain empirical qualities like red and blue are contradictory, but that others like red and soft are not so. Red and blue are certainly no more contradictory than kindness and cruelty, yet the same man may in one transaction display kindness to A and cruelty to B. Indeed, he may display both kindness and cruelty in his relation to B alone, provided a distinction in point of view is made, *e. g.*, kindness from the point of view of B's ultimate interests, cruelty from the point of view of B's immediate interests. The principle of contradiction applies only to two propositions having the same subject and predicate, but differing in the quality of the assertion, or, more elliptically, that when anything is asserted it must not be denied *in the same relation.* Obviously, the principle of contradiction can have no application to a single assertion which predicates different qualities of the same object in different relations.

Please observe that I have not hitherto directly challenged Professor Lovejoy's right to start with the assumption (which he really makes) that secondary qualities can exist only in consciousness, and to argue that *therefore* the supposition that they are relations between physical entities is false (because it contradicts his assumption). What I have challenged is his contention that his assumption is necessitated by any logical contradiction in the view that secondary qualities are relations between objective entities. I have never entertained or expressed the hope that Professor Lovejoy and I might agree with reference to the truth of his fundamental assumption. That is a wider issue than the one which I have hitherto tried to raise. But I see no reason why Professor Lovejoy should not honorably agree with me that his original argument against neo-realism, based on the supposed contradiction in the objective nature of

secondary qualities, is, in the light of a clear analysis of the principle of contradiction, essentially unproveable.

II

With the above I ought to rest my case; for the further issue which Professor Lovejoy discusses so elaborately in his last article, viz., the distinction between qualities and relations, is unnecessary for the settlement of the question of the supposed contradiction in the objectivity of secondary qualities. Moreover, my own thoughts on the question of qualities and relations are an integral part of a metaphysical system or, if you please, phantasy, which is still in the process of incubation. However, as the mere glimpse of my nursling which my last brief note uncovered has affrighted such stout thinkers as Professors Lovejoy and Montague, so that they are willing to sink their serious differences in order to unite in exterminating it as a poisonous serpent, it is my duty to say something in support of this innocent fledgling and show that it is no monster, but the legitimate offspring of reflection. In thus displaying it prematurely before the public I can only hope that the philosophic world contains, besides rigorous logicians, who, like Professor Lovejoy, are admirably qualified to dissect it and pronounce it dead, some more sympathetic souls who may, perhaps, help me to nourish it into full life and usefulness.

III

Like the distinction between primary and secondary qualities, the distinction between qualities and relations seems to me a shifting one because the "nature" of a thing changes as the thing shifts from one context to another. Let us, then, like true philosophers begin with the "nature of things." To Professors Montague and Lovejoy the "thing" is like an old-fashioned landowner and the qualities are its immemorial private possessions. A thing may enter into commercial relations with others, but these relations are extrinsic. It never parts with its patrimony. To me, the "nature" of a thing seems not to be so private or fixed. It may consist entirely of bonds, stocks, franchises, and other ways in which public credit or the right to certain transactions is represented. And after all, what are private possessions but publicly protected rights to collect rent, exclude trespassers, etc.? At any rate, relations or transactions may be regarded as wider or more primary than qualities or possessions. The latter may be defined as internal relations, *i. e.*, relations *within* the system that constitutes the "thing." The nature of a thing contains an essence, *i. e.*, a group of characteristics which, in any given system or context, remain invariant, so that if these are changed the thing

drops out of our system. Thus, if a banker no longer issues credit or receives deposits he ceases to be a banker. But the same thing may present different essences in different contexts. As a thing shifts from one context to another, it acquires new relations and drops old ones, and in all transformations there is a change or readjustment of the line between the internal relations which constitute the essence and the external relations which are outside the inner circle.

Our neighbor M is tall, modest, cheerful, and, we understand, a banker. His tallness, modesty, cheerfulness, and the fact that he is a banker we usually regard as his qualities; the fact that he is our neighbor is a relation which he seems to bear to us. He may move his residence, cease to be our neighbor, and yet remain the same person with the same qualities. If, however, I become his tailor, his tallness becomes translated into certain relations of measurement; if I become his social companion, his modesty means that he will stand in certain social relations to me, etc. This view, of course, does not deny the existence of terms, literally termini of relations, but it denies that terms have any nature apart from relations. The world of existence is thus a network of relations whose intersections are called terms. These termini may be complex or simple, but the simplicity is always relative to the system in which they enter. Thus an atom or electron may be simple for many purposes of chemistry or physics, but from another point of view may be complex, possessing dimensions and other properties. Even the mathematical point is not absolutely simple. It is so only in point geometry. In line geometry a point is a complex formed by the intersection of two lines, and there is no reason for supposing that point geometry is more fundamental than line geometry. The prevailing metaphysic, founded on the model of the more widely taught point geometry, regards things as more fundamental than their relations, but it finds it difficult to tell us what the things are apart from their relations. The metaphysic here suggested starting with the relational structure of things avoids the ontologic ills that beset things in themselves.

The above view does not involve adherence to the doctrine commonly known as the relativity of knowledge. The transformations which are the objects of the natural sciences reveal on reflection certain invariant relations. These invariant relations (the objects of pure mathematics and logic) may be called rules in the process of the transformation of things. I see no reason, however, for modern subjectivism which places these rules in a mind outside of the nature of the things involved, but prefer, with Plato, to regard these invariant relations or rules as the very heart of the nature of things.

This, then, is a brief sketch of my metaphysical babe. Its features

are not yet definitely formed and its bones are not yet perfectly joined. There are, doubtless, many serious difficulties before it, and it may not survive its second summer. But I am not asking any one to adopt it. I reluctantly display so much of it before the public as is necessary to show that the fierce onslaught of Professor Lovejoy has not in the least hurt it.

IV

Professor Lovejoy's attack is all directed against that part of the above view which maintains that all qualities are essentially relational, *i. e.*, characteristics or processes which a thing can exercise only in relation to other things or within a system.

That we may not miss the force of any of Professor Lovejoy's objections let us follow his own order of exposition. He distinguishes between two possible meanings of the above doctrine—(1) the more radical view that qualities are reducible to relations, and (2) that qualities in some manner depend on relations. Three objections, which he considers fatal, are brought against the first. Let us examine these objections.

(*a*) A careful analysis of what Professor Lovejoy says under this head reveals only matters which are either irrelevant to the point at issue or else beg the question. He begins by denying that science has proved that "qualitative differences are quantitative differences in a homogeneous medium" (p. 425). But the reduction of qualities to relations is not the same as their reduction to quantitative differences. Indeed, I am inclined to go further than Professor Lovejoy and hold with Duhem that the progress of modern physics has been in the direction of a Neo-Aristotelian physics of qualities instead of a purely quantitative physics which we got through the Cartesian tradition; but physical qualities are surely not the private possession of things in themselves, but determinate relations which terms have in a physical system.

Another statement under this head which might have been intended as the point of the argument is the following: "What blue is, as a datum of sense-experience, we know very well. And we know equally well that it is not an undulation of a colorless medium." This strong statement is, I suppose, a denial that blue can be a physical quality at all and that, as a datum of sense experience, it is purely subjective. But as this is precisely what I question, it can not be used as a fatal objection against me without involving a *petitio principi*.

(*b*) Under this head Professor Lovejoy again confuses the reduction of qualities to relations with their reduction to quantitative differences. He then goes on to state the more serious objection that

the reduction of qualities to relations would leave us with a world of relations with no terms to be related. This seems to me a *non sequitur*. The denial of a distinction between qualities and relations does not mean a denial of terms or terminii of relation. It only means, as I have pointed out above, a denial that things have a nature apart from all possible relations; and I can not see how science would be in any way impoverished if these unrelated things in themselves were dumped into the cave which swallowed Korah.

(*c*) What Professor Lovejoy says under this head about Plato, the Megarians, and the fallacy of accident seems to me irrelevant to the principle that all qualities can be reduced to relations. Professor Lovejoy concludes that the assumption of the "absolute univocality of each determinate relation of each thing to any other specified thing is a *sine qua non* of all reasoning and all coherent thought" (p. 427). But this surely can not be a fatal objection against my view, for this is precisely what I have been urging all along as the true meaning of the principle of contradiction, viz., no entity can at the same time be and not be in a given relation to a given entity. But this "axiom of univocality" surely does not militate against the view that the same entity can at the same time have two different relations to two different entities. Thus, I conclude that Professor Lovejoy has not made out a single valid objection against the principle that qualities can be reduced to relations. At best, he has shown that it leads to consequences which he does not believe; he has not shown any consequences inconsistent with what I assume to be true.

I might stop here, but as I have not sufficient evidence for the above principle, but rely simply on the fact that it has not as yet broken down in my own thought or through the objections of such a powerful thinker as Professor Lovejoy, I must confess that it is possible that some one else, or Professor Lovejoy in another attempt, may show that the above principle must be limited, qualified, or modified. Hence, while I still believe the above principle in its more radical form, I am not ready to leave undefended the second interpretation; viz., that qualities depend upon relations. (It will be observed that if the more radical doctrine is true, the second is likewise so, but the giving up of the first does not necessitate the giving up of the second.)

With his usual subtlety Professor Lovejoy distinguishes two meanings in the principle that all qualities depend on relations.

(*a*) It might mean that the qualities of an object vary with, and are determined by, its relations. This, he thinks, does not remove the contradiction in saying that the same plane is objectively both red and blue. But that there *is* any contradiction in saying that the

same surface is red with reference to one camera plate and blue with reference to another plate is precisely what I deny. Professor Lovejoy concludes, "though a thing's relations to other things determine the character which at any given moment it has, they none the less unequivocally determine it to have, then and there, one character, and not two contradictory ones" (p. 427). This argument involves a serious equivocation in the use of the term *one character*. If by *one character* is meant the total nature which a thing in a given context has, the argument is obviously true, but irrelevant. If it means that the relations of a thing to other things always determine it to have but one characteristic and not many different ones, the argument is a clear case of the fallacy of exclusive particularity.

(*b*) The final argument is directed against the view that the same object may have one quality in its relation to one (physical) object and at the same time another quality in its relation to a second object. Against this it seems to Professor Lovejoy a good empirical objection that "the only instances of relativity of pure qualities which we actually discover in experience are instances of relativity to minds or sentient organisms, not of relativity to other physical objects" (p. 428). This seems a most astounding statement, for not only does it beg the question about qualities being relative to mind, but it flatly ignores the fact that the neo-realists have been at pains to compile a long list of such instances of physical or objective relativity so that even those who share the neo-realist faith as little as Professor Dewey have admitted this point. I can explain Professor Lovejoy's lapse only by the fact that in his keenness to consider the dialectic difficulties of the neo-realism he has overlooked the empirical evidence for it.

V

As both Professors Montague and Lovejoy think that the point of view of my note on secondary qualities seriously affects neo-realism, a few remarks on this point may be expected here.

Between a complete subjectivism and a complete objectivism, I can see no theoretic difference. The distinction between different kinds of entities can remain the same in the two systems. It seems to me of no import to argue against subjectivism as solipsism, since the subjectivist can readily distinguish in consciousness between his own private body or personal thoughts and the bodies and thoughts of others. Likewise pan-objectivism need not, and in the neo-realist form certainly does not, deny the difference between the different levels of existence of bodies, thoughts, etc. Wherein these differences consist is for every thoroughgoing philosophy a matter of more or less empirical study of the diverse facts involved. But while there is

no important theoretic difference between pan-objectivism and pan-subjectivism, there is a practical one based on the psychologic fact that the set of symbols or words we choose drags with it a system of subconscious associated meanings which determine the direction of inquiry. I prefer to begin with the method of pan-objectivism, and try to see how far it can carry me, but this mainly as a counsel of prudence to any one who, as unfortunate as myself, walks in darkness whenever he asks what specific difference consciousness as an observer makes to the things which constitute the physical universe. But while I speak with genuine certainty and unfeigned misgivings of all questions relating to the nature of consciousness, I feel certain that neither Professor Lovejoy nor any one else has as yet made out a convincing case for the view that consciousness is the manufacturer of secondary qualities, mere appearances, illusions, or other entities outside of the charmed circles of the real things in themselves. I have read all of Professor Lovejoy's polemics against neo-realism with the care that his writings always deserve, but I fail to see that he has ever met the point made by the neo-realists to the effect that the difference between the different levels of existence, such as between appearance and reality, does not coincide with the difference between the mental and the non-mental. Professor Lovejoy wofully misapprehends Holt's position when he implies that the latter believes "that irresoluble and unqualified contradictions exist in the objective world" (p. 423). The realm of existence, according to Holt, is precisely the realm of entities having non-contradictory relations. But contradictions *subsist,* and this subsistence is no more mental than the field of existence. Perhaps the neo-realists may save themselves from this common misunderstanding if they will develop a complete theory of categories or types of existence to take the place of the rather inadequate distinction between existence and subsistence.

Professor Lovejoy, with the sympathy of Professor Montague, assumes that realism must necessarily regard the category of things, and even of things in themselves, as fundamental. I think that the neo-realists, so far as they are inclined to recognize the reality of relations or universals, are taking a more hopeful path. The contrast between a realism of things and a realism of relations or universals like Plato's (which seems to me the essence of the historical form of idealism), has been obscured by Kant's unfortunate confusion of the thing-in-itself with the noumenon or object of reason. Neo-realism is helping us get rid of this confusion. It has shown that the difference which separates a realism of things from a realism of relations is for Professors Lovejoy and Montague one of "the weightier matters of the law," and more fundamental than the

difference between the realism and idealism which Montague and Lovejoy typify.

To a realism of brute things the progress of philosophic reflection involved in the sciences seems to me distinctly hostile. The pre-scientific man lives almost exclusively in a world of impenetrable things. The instruments of analysis which science brings reveal to us something of the relational texture of things, and in the clarified vision things lose their grossness. Hard matter, for instance, loses its isolated self-sufficiency. and becomes a vortex or strain in the universal ether, or a group of electric charges (electrons). To naïve common sense which has not penetrated into things and whose vision is not so refined, these conclusions or suggestions of science must remain disconcerting; and when the things analyzed or dissected are still regarded as "sacred" or taboo, the scientific attitude is also regarded as impious. The realism of hard brute things, therefore, seems to me an outcropping of the pre-scientific Adam within us. Hence, when Professor Montague charges that I am a serpent who would drive the neo-realistic Adam out of his Garden of Eden, I gladly (except for the implied reference to my subtlety) accept the analogy. but contend that the serpent was the best friend that Adam ever had, and one that told the truth. By tasting of the tree of knowledge Adam became not only practically productive and creative, but acquired the other, and I believe higher, attribute of divinity, theoretical knowledge, knowing, like the gods, the *difference* between good and evil.

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PROFESSOR THORNDIKE'S ATTACK ON THE IDEO-MOTOR THEORY

IN a paper printed in *The Psychological Review,*[1] Professor E. L. Thorndike presents a searching criticism of the currently accepted theory of ideo-motor action. That theory is itself so important and my colleague's attack upon it is so impressive, and yet to my mind so unconvincing, that, though a layman in psychology, I venture to offer the following objections to his argument.

Throughout his article Thorndike implies that for the idea of an act to produce the act itself, as stated in the ideo-motor theory, would involve a mysterious influence of *sheer similarity* or *similarity as such,* like that assumed in the practise of sympathetic magic.

[1] March, 1913.

And it is on this alleged analogy between sympathetic magic and the ideo-motor theory that he relies to discredit the latter. He supports his general argument by empirical evidence in the form of answers to a questionary. which was designed to show, and which appears to have succeeded in showing, that the theory underlying sympathetic magic and the theory underlying ideo-motor action are regarded by psychologists as differing only in their degree of probability.

I

The extravagance of the results of the questionary, as Thorndike interprets them, should have warned him that something was wrong. For they would appear to indicate that at least two members of the American Psychological Association have a sneaking sympathy for the belief of primitive peoples, that by reason of a magical affinity of similars for one another you can the better injure your enemy by first injuring a wax image of him. My criticism of this sensational conclusion is to urge an interpretation of the answers to the questionary that is more prosaic and, I think, more plausible than the one accepted by Thorndike.

1. I believe that those psychologists (of whom, if memory serves, the present writer was one) who answered the question as to whether or not the wax image procedure could possess any efficacy had in mind nothing magical or crazy, but only the belief that *rehearsing* an act in advance, with wax images or any other accessories and properties, might conceivably make one more skillful and more determined in performing it.

2. My second criticism of Thorndike's interpretation of the replies to his questionary bears less directly upon the immediate point at issue than upon the general procedure to be adopted in the wording of such questions as were submitted. Thorndike argues that the fact that the explicit and detailed formulations of the ideo-motor theory were ranked lower in the order of probable truth than the vaguer and simpler formulations indicates that the more clearly the law was understood the less it was believed. I think that this is a mistaken conclusion, for the following reasons: If I ask you to arrange in the order of their probable truth the propositions—(1) A is B; (2) A is B and C; (3) A is B and C and D, you will put (1) as most probable, (2) as next most probable, and (3) as least probable. And you will make this arrangement on purely formal and *a priori* grounds, regardless both of the meanings assigned to the symbols and of the separate intrinsic probabilities of B, C, and D. For, other things equal, the more complex an event the less its antecedent probability; and the more complex the elements asserted in a proposition the greater the possibility of error and the less the probability

of truth. There is, then, nothing in any way significant or surprising in the fact that the vaguer and more general formulations of the law of ideo-motor action were assigned a higher probability than those that were more detailed and explicit. The extent to which that assignment was made is not a measure of the esteem in which the law is held by the members of the American Psychological Association. It gives no information on that topic at all. In so far as it is a measure of anything it is a measure only of the general intelligence of those who answered the questions. *From all of which it follows that it should be regarded as an axiom of procedure in drawing up questionaries of this type that the various propositions submitted for serial arrangement have the same degree of logical complexity.*

II

Let us now turn from the empirical evidence of the questionary to the general arguments made by Thorndike against the theory of ideo-motor action.

1. The author's main assumption that ideo-motor action implies a mystical influence of sheer similarity analogous to that which is supposed to operate in primitive magic appears wholly unwarranted. For when the idea of an act produces the act, we have but a special case of a type of process which is general throughout nature. All effects are in some degree similar to their causes. And in many cases both in the inorganic and the organic realms the effect repeats the qualities of the cause with great precision. Echoes, reflections, and, above all, the fact of reproduction in every form of living matter, are examples in point. In none of these cases is there any mysterious action of a disembodied principle of similarity. The cause A by transmitting energy through a medium M produces an effect A'. What the qualities constituting the effect A' will be, depends upon the antecedent qualities of the cause A and also upon the medium M. In brief, $A' = f(A, M)$. If M were perfectly transparent, or if its distortions corrected one another, A' would be exactly similar to A. And conversely, the extent to which in a given case the effect fails to duplicate the qualities of its cause depends upon the distorting influence of the medium. Now between a given act and the psycho-cerebral state which we designate the "idea of" that act there is a resemblance. The neural mechanism connecting the two events furnishes a perfectly good medium by means of which the psycho-cerebral cause can produce its physical effect. Experience seems to show that ideal anticipations of simple bodily movements are as a matter of fact followed by the movements themselves. What is there that is mystical or magical in the situation? As we have already said, the world offers innumerable cases in which effects duplicate

the qualities of their causes. Optical images and photographs; auditory images or echoes, and phonographic records; electrical induction and conduction; and the universal tendency of living cells to reproduce their kind—are each and all illustrations of the reproduction of similars. It would be strange indeed if psycho-cerebral states were the only natural events which were incapable of transmitting any of their qualities or relational patterns to their effects. I do not deny that there is a fundamental puzzle as to the manner in which a conscious state is correlated with its cerebral accompaniment. But granted the fact of correlation there is no *further* puzzle as to why or how the two-sided psycho-physical cause produces by the medium of the motor nerves an effect which resembles it.

2. The relation between the ideo-motor theory and the underlying theory of imitative magic is, as Thorndike says, most instructive, but it is instructive in a sense quite other than that which he supposes. The savage perceives, as we do, that effects resemble their causes in many instances, and particularly in the instance of his own acts and the antecedent ideas of those acts. What he does not perceive is that a *medium of transmission* is always necessary for a cause at one place to reproduce its qualities in the form of an effect at another place. He knows nothing of the air as a medium necessary for the production of echoes or of the ether as a medium for the production of images. And in particular he is innocent of what to us is a commonplace of physiology, viz., the necessity of nerve fibers as the medium necessary for the execution of one's plans or ideas. Given his ignorance of the existence of media of transmission and his resulting belief that all action involves action at a distance, it is not only natural, but well-nigh inevitable, that he should infer that a man can influence his neighbor's body with almost the same ease and by somewhat the same methods as serve to influence his own. Things and thoughts thus seem to him to reproduce their like regardless of spatial distances and material obstacles. His reasoning is the same as that of the superstitious person of to-day who concludes that telepathy is as natural as wireless telegraphy, and who fails to perceive that the specific medium of ether which makes possible the latter is wanting (or unavailable) in the case of the former. Thorndike, as we have said, claims that this reasoning of the savage in support of his sympathetic magic is analogous to the reasoning by which the ideo-motor theory is defended. But I think that, on the contrary, it can easily be shown that the reasoning of the savage is analogous not to that used in defending the ideo-motor theory itself, but rather to Thorndike's own reasoning in refuting it. For the savage appears to argue thus:

If my thought of an action tends to produce that action in my own body it will tend equally to produce its like in all other bodies. [*As the ideo-motor theory is observed to be true, sympathetic magic may be inferred to be true.*]

While Thorndike appears to argue thus:

If my thought of an action does not tend to produce that action in other bodies it will equally not tend to produce its like in my own body. [*As sympathetic magic is observed to be false the ideo-motor theory may be inferred to be false.*]

The two arguments when thus condensed into hypothetical propositions are instantly seen to be logically equivalent, the one being the contrapositive of the other. It seems to me, therefore, that my distinguished colleague has fallen rather neatly into the very trap which he set for his enemies. In charging the upholders of the ideo-motor theory with the fallacy of sympathetic magic he has himself committed that fallacy. For, as we have seen, the fallacy underlying sympathetic magic is the assumption that because an idea can produce its like when a physical medium is present, it can do the same when such a medium is absent. Thorndike's fallacy seems to consist in the obverse assumption that because it would be miraculous for an idea to produce its like in the absence of a medium it would be equally miraculous for a reproduction to take place when a medium, such as the nervous system, was present. In each case the crucial difference due to the presence or absence of a medium is overlooked.

III

In the first section of our paper we criticized the interpretation which Professor Thorndike put upon the answers to his questionary; and the inductive reasoning by which he sought to establish a damning analogy between sympathetic magic and the ideo-motor theory; in the second section, we endeavored to answer his attempt to demonstrate by deductive analysis the existence of that same analogy; in this third and last section we have to urge a *reductio ad absurdum* to which our author's conclusion would appear to be open, quite apart from the question as to the soundness of his methods of proof.

The denial of ideo-motor action implies a denial of the possibility of imitation and finally of perception itself.

1. The experience of spontaneous and relatively automatic imitation is very familiar. One person smiles and his companions smile back. A cough or a yawn has the same contagious quality. Gestures, accents, and rhythms appear to be imitated spontaneously. Some of these seeming imitations may have originated as accidental variations and have been preserved for their utility by natural selection.

Such might be the explanation of the tendency of a herd of cattle to bellow together or to run away together, when one member of the herd does either of these things. But it would be rather difficult to establish a survival value for contagious yawning and coughing.

The cases of what we may call voluntary imitation are even more difficult to explain without admitting a tendency of perceptions to reproduce their like. The painting of a picture of any objective situation, or the repetition of a sentence seem quite obviously to imply that a perceptual mental state can produce an object representing it. It may be claimed, however, that the responses to separate stimuli which have been either inherited or learned by the trial and error method and become habits would account for these apparent cases of imitation. But such a reply would overlook the essential feature of the situation. For, granted that the elementary responses have individually been learned, it is the collective structure, the *tout ensemble,* or relational order of combination that is important. And this latter feature is often absolutely novel. The only possible cause of the production of the relations in a picture of a scene that is painted for the first time is the relational pattern revealed in the artist's perception of the object to be painted. It does not detract from the essentially creative function of imagination to point out that the sensory material is furnished by memory and that imagination only originates the relational pattern, for it is precisely the latter that is important and distinctive. No more does it explain the imitative reproduction of a complex relational scheme to point out that we have acquired the habit of reproducing the straight lines or the simple tones which may constitute the material elements of the scheme. In short, unless perceptual ideas could reproduce their like, in accordance with the principle asserted in the ideo-motor theory, imitation, both automatic and voluntary, would be impossible.

2. Professor Thorndike does not deny that a group of objects and events outside the organism can and does produce that state of affairs which we call the perception of those objects. And however we may answer the question as to whether or not the "secondary" or non-quantitative qualities of objects exist apart from their relation to the sense-organs, no one denies that ideas or perceptions have a relational similarity or one-to-one correspondence with their causes. *Now any consideration that would make it impossible for a system of ideas to be the cause of a corresponding system of objective acts would make it equally impossible for a system of objects to be the cause of corresponding ideas by which they were perceived.* For the effecting of a movement by a perception and the effecting of a perception by a movement are but the two directions of one and the same kind of causal process. Hence, to reject the possibility of ideo-motor action

logically compels a rejection not only of imitation, but of perception itself.

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AN EXPERIMENTAL STUDY FOR CLASSES IN REASONING AND ITS TRANSFERENCE

FAIRLY ample provisions for experimental approach to the notions of sensations, perceptions, imagery, and even attention already exist, thanks to the experimental psychologist who, from the nature of his science, made these largely analytic conceptions his first concern. The teachers of the science feel the need for enlarging these earlier "tramping-grounds" so as to include such notions as concepts, judgments, recognition, reasoning, and so on, and to place them on an experimental basis. The need of better methods of approach to the explanation and control of the thought processes is self evident from the fact that they constitute the direct and essential mental activities involved in learning, in industrial processes, in social intercourse, and in industrial organization. In this connection it is encouraging to observe that a more than substantial beginning in experimentation on the thought processes has been in progress for the last decade. These experimental contributions have been supplemented by critiques, summaries, and a few extended treatises, all of which should enrich our teaching programme.

Some years ago Spindler[1] rendered timely service to those members of the psychological fraternity who have to teach the fundamental notions of the science to beginners by giving a description of the general attitude he adopted and the methods employed in teaching the concept to his classes. I had hoped that the pen of Professor Spindler or that of some other would furnish a similar description of methods of procedure in presenting working notions of other higher thought processes to elementary classes. My continued hope or wish in the matter is father to the account here submitted for presenting the notion of reasoning by means of experimentation.

Neither apology nor justification for an extended use of experimentation in teaching the laws of mental life seems any longer in order. Reference is made to the matter simply to emphasize the desirability of allowing the means by which psychology has become a science to be used in turn as a method in teaching it.

[1] Spindler, F. N.: "Some Thoughts on the Concept," this JOURNAL, Vol. V., page 684.

For clearness and brevity in presentation I have adopted the form in common usage for reporting experimental work with comments here and there.

Problem.—To observe the elements of the reasoning consciousness, their modification under practise, and the transference of the latter.

Material.—Two series of questions asking for dates. Series A consists of two sets I., II., of ten questions each. Series B consists of 200 questions divided into 20 sets of 10 each. A stop-watch. If a higher degree of accuracy and control is desired, the experimenter and subject may work in separate rooms communicating by means of a pair of telephones and measure the time in answering the questions with a Hipp chronoscope provided with a mouth reactor.

SERIES A, SET I

1. If Wednesday is January 28, what will be the date of the next Monday?
2. If Monday is May 3, what was the date of the previous Thursday?
3. If Thursday is September 28, what will be the date of the next Wednesday?
4. If Tuesday is October 3, what was the date of the previous Thursday?
5. If Sunday is August 30, what will be the date of the next Thursday?
6. If Saturday is June 3, what was the date of the previous Sunday?
7. If Friday is July 30, what will be the date of the next Wednesday?
8. If Wednesday is February 3, what was the date of the previous Saturday?
9. If Monday is March 26, what will be the date of the next Sunday?
10. If Thursday is April 1, what was the date of the previous Saturday?

Set II. of Series A is similar to set I., save that the names of the days of the week, of the month, and the dates occur in a different order, *e. g.*, the first given date will be odd and the second even, the third odd and the fourth even, and so on.

SERIES B, SET I

1. If Monday is the 13th, what was the date of the previous Tuesday?
2. If Friday is the 10th, what will be the date of the next Wednesday?

3. If Monday is the 19th, what was the date of the previous Friday?
4. If Friday is the 20th, what will be the date of the next Thursday?
5. If Tuesday is the 27th, what was the date of the previous Thursday?
6. If Tuesday is the 18th, what will be the date of the next Saturday?
7. If Saturday is the 19th, what was the date of the previous Sunday?
8. If Monday is the 12th. what will be the date of the next Saturday?
9. If Tuesday is the 21st, what was the date of the previous Sunday?
10. If Saturday is the 24th, what will be the date of the next Friday?

The remaining 19 sets of Series B are to be prepared by the experimenter according to the plan given below.

Observe that both Series A and B have some features in common. First, the date asked for is either a past (—) or a future one (+). These dates alternate throughout both series. Second, the numbers of days between the given date and the required vary uniformly and are repeated in a regular recurring series of three. Such as 4, 3, 5 or 5, 4, 6 and so on. Of course the subject at first is ignorant both of the numbers and of their order, and, owing to the change of the names of the days with each question, the full discovery of the order comes tardily, if at all. In the test series A the required date is always either in the month preceding or in the month following the given date. In the practise series the two dates are within the same month. The given date that requires a + date is an even-numbered date for the first ten questions, while those that require a — date occur on odd numbers, and in the second ten the odd numbers go with the + dates and the even with the — dates. These two sets of conditions alternate with every set of ten questions in the interest of uniformity and control, and to test their possible effects on the time relations.

Procedure.—The test series A, set I., are given to two groups of subjects (C) control and (P) practise, respectively. The more general nature of the questions and the manner of asking them should first be explained, together with an example of each of the + and — dates. The experimenter should maintain uniformity of manner and of voice and adhere strictly to the same phraseology in putting the questions. The stop-watch is started simultaneously with the pronunciation of the *day* whose date is required and stopped when the subject answers with the number of the required date. (In the test series, however, the answer includes both *month* and *date.*) The first set of Series B should be given to the practise group im-

mediately after performing the first set of Series A, and the remaining 19 sets at the rate of one per day until finished. At the end of the 20th set both groups of subjects are given set II. of Series A. Introspections are made after each answer. Those at the beginning of each new series, especially, are characterized by completeness.

Results.—Arranging and tabulating the results (objective) and checking them by the arithmetical methods in common use offer no serious difficulties to the beginner. The time in answering past and future dates is tabulated in separate columns under the respective signs — and +.[2] The following is a typical record of the mean averages of — and + time for answers to 10 sets of Series B.

No. of trial.	1	2	3	4	5	6	7	8	9	10
Mean	+ 4.60	4.04	3.40	2.52	3.38	2.56	1.86	2.34	2.84	2.52
Averages	— 6.00	5.14	4.10	3.64	3.50	3.22	2.34	2.60	3.60	3.30

The initial and final records of the same series and subjects are: + 4.8 and + 1.5; — 8.0 and — 3.5 seconds, respectively. The records of the test series taken before and after the practise series for the same subject are: before + 9.76 and — 10.90 and after + 5.12 and — 6.76 seconds, giving an average of 42.30 per cent. of transfer.

Among the observable facts of bodily behavior are: (1) tapping with the fingers on the table, chair arm, subject's body, etc.; (2) resting and covering the face with the hands; (3) "screwing up" the facial muscles, especially about the eyes; (4) closing the eyes and grasping the arm or the seat of the chair; (5) repeating portions of the question half audibly, *e. g.*, the given date. The subjects report a stiffening of the body as the question is put, and a slight, but decided movement of the whole body to the front or back, right or left, according as the answer is given as a — or + date. The writer experiences an incipient movement to the right of the whole body in thinking of a future date and to the left of past dates. One of my subjects refers a future date to the left. I have noticed occasionally a slight toss of both head and hand of this subject to the left when giving a future date and to the right when the given date was past. Both observation and introspection make it possible to trace the history of these extraneous movements as affected by the practise in answering the questions.

Two graphs are drawn, one showing progress in making answers to questions of — dates and the second to questions of + dates.

The introspections are studied and the more significant portions are ranged in a time order for comparison with graphs and tables. The introspections furnish ample opportunity for the study of

[2] I hope to make a full report later of experimental results now being secured from trained psychologists and scientists acting as subjects.

"time forms" as it may appear in imagining the days of the week. One subject finds a "hump" or hillock at Sunday-Monday which he reports as interfering when these two days appear within the time interval.

My subjects so far develop their methods gradually rather than suddenly "in a happy moment." One method finally settled upon is to determine the intervening number of days by always counting forward; in the case of a + date, the count is forward from the given date to the required date, the number thus determined is added; in the case of — dates, the count is forward from the required date to the given one, the number of the count is then subtracted from the given date. Another method developed more slowly, but used eventually with equal rapidity consists in counting forward from the *required* date to the day ending the week of the given date in the case of + dates; the number of the count is deducted from 7 and the remainder added to the given date, *e. g.,* If Tuesday is the 19th, what is the next Saturday? The subject counts: Sunday, Monday, Tuesday, and thinks 3. Then $7-3=4$, but $4+19=23$. Therefore, Saturday is the 23d. For determining a — date the count is forward from the *given* date to the day ending the week from the required date, the number of the count is deducted from 7 and the remainder subtracted from the given date. In determining either — or + dates this subject used the day ending the heptad as the first objective point, and began the count either from the required or the given date, depending on the conditions of the question. After settling upon a method, the subjects soon begin to determine dates of the 6-day interval with marked rapidity; with such an interval the date often seemed *given* with the question and the intervening steps are omitted. Just as the old habit of recognizing dates of 7 days or a week interval formed an objective point from which the date of a 6-day interval is readily determined, so the new habit of apprehending dates of a 6-day interval gradually favored in turn the determination of a 5-day interval. Thus dates of 5- and 6-day intervals are determined with far greater rapidity than those of 4 days!

Discussion and Summary.—(The following questions are merely suggestive and justified in part by the brief results given above; they direct attention to significant portions of the results, encourage further experimentation, and urge a more critical reading of the literature[3] on the part of the student.)

If it be granted that the aspects of reasoning involve (*a*) appre-

[3] Pillsbury, W. B., "The Psychology of Reasoning," 1910; Titchener, E. B., "Experimental Psychology of the Thought Processes," 1909, or Binet, Alfred, "The Psychology of Reasoning," 1907.

hending a problem, (*b*) devising a method, (*c*) applying the method to the problem, and (*d*) an attitude toward the solution as belief, doubt, testing, may the answers to both the test and practise series be accepted as the results of reasoning? The introspections, especially the earlier ones, are studied for purposes of identifying any one or all of these aspects, to ascertain which are more evident and constant, and to identify those that grow less noticeable with practise. What old habits, bodily and mental, were serviceable in devising your method and in applying it? Make a list of the mental and bodily habits formed during the practise series and indicate which ones facilitated or inhibited making answers to the questions in set II., Series A. Was the method that you used gradually developed or did you hit upon it at once? Indicate the kind of questions that were most difficult in Series B; compare these questions with their time records and describe the difficulty in detail. Indicate the dominant type of imagery and the more persistent forms of movement. Is there any appreciable and constant difference in the time required to determine a past date when the given date is an odd number from that when the latter date is an even number? Compare the time required to determine a future date, when the given date is even, with that required to determine a past date, when the given date is odd. (My results thus far do not show a constant difference for all subjects.) Do these several considerations and the recorded results indicate that reasoning processes are subject to modification with practise? State the nature and the direction of the modifications.

Further experimentation is quite possible with these "time reckoning problems" under slight variations in the form of the question and in the time interval, uniformity of control being still maintained. For example, if Wednesday is the 16th, what *day* of the week is the 19th? Or, if Wednesday is the 16th, what day of the week was the 11th? Or again, upon what date *will* an 8 months' note mature that was made March 15th? Or, upon what date *was* an 8 months' note made that matured November 15th? These conditions produce four types of problems: When the time interval is limited to weeks the problems are (1) a date and an interval given, to find a date; (2) given a day and two dates, to find the other day. When the time interval is limited to months the problems are (3) a date and an interval given, to find a month and date; (4) given two dates and a month, to find the other month.

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REVIEWS AND ABSTRACTS OF LITERATURE

Religion and Free Will: A Contribution to the Philosophy of Values. W. BENETT. Oxford: The Clarendon Press. 1913. Pp. 345.

The sub-title might well have been left off this volume. The book will hardly reward the reader who searches it for new light on the problem of values; and the pages are given over to a rather loose-jointed discussion of religion and of free will.

The only place where the topic of values is in the forefront is in the latter half of Chapter I.; and here, not only is the argument reminiscent of other theories (*e. g.*, Münsterberg's), but it is practically duplicated in other terms in Chapter II. This argument runs: Nothing in life is more certain than the existence of values. Yet values point conclusively to a final end; there can be no values without it. What then is the end? A survey of evolution fails to reveal any end which we can have any reason for preferring to present conditions of life on earth. In fact, the process is endless. We must, then, assume the final end to be external to the process of evolution and beyond the limits of our reason. Here the task must be given over to religion, which alone can furnish man with a supreme final end—an end transcendental, extra-phenomenal. One should pause to ask, what warrant is there for passing from the value experiences of the phenomenal world to a unitary all-inclusive value or final end? If a fundamental unity there be in all the interests and worths of experience, empirical investigation has yet a great discovery and surprise in store. Our author does well to insist that this is an hypothetical assumption.

What is religion? Psychologically it is based on the emotion of worship directed toward a personal God necessarily assumed. Its core of fervent emotion, of unreasoning enthusiasm, of intuitive illuminations, makes it antithetical to science and (so our author thinks) to philosophy. Thus emotionality is fundamental in religion. But it must be supplemented by the intellectual element of dogma. One of the best points in the book is the treatment of dogma (Chapter IV.). If the emotion of worship demands a personal God, the first stirrings of thought cry out for some definition thereof. The intellectual element becomes the organizing factor of the faith, and the development of the religion from primitive devil-worship is due to it. Dogma is thus supplementary to the spirit of the religion, but it is more. It intensifies all the emotional attitudes impartially: if it adds to the ardor of self-sacrifice it also increases the fury of cruelty. But if dogma is to be the efficient organizing and developing power it must beware lapsing into a bare rationality or changing into an illiberal and unspontaneous orthodoxy. An ultimate question is raised: does good prevail; is life worth living? Being limited to single phases or particular classes of human conduct, ethics can give no answer to this supreme question and leaves it to religion. A brief survey of the principal religions of the world shows Christianity to excel all others in speaking for a qualified optimism in the world of experience based on a transcendental end in another world which gives it its real meaning and value. And the past and

future success of Christianity is always dependent on this superimposition of new supernatural values on the old natural values—a transvaluation of values. This, it would seem, is getting at the heart of the author's own position and the message of the volume. Asceticism in most respects shows this point of view clearly by exaggerating it; but it is a little hard to see why the whole of Chapter VI. should be devoted to a rather full discussion of those practises.

This conception of Christianity was indeed vital for many centuries, yet it is plainly to be questioned whether in its more live and promising phases to-day it is a Christianity of this un-sociological, un-scientific type. This lack of sympathy with the modern empirical, sociological tendency is shown in several places where we are informed most impressively that the supreme end of all religion is perfection of individual character, without regard to racial destinies.

The second part of the book is a discussion of the problem of free will and determinism. It opens (Chapter VII.) with the statement that one's answer to this problem is dependent largely on his conception of the final end of human conduct and the method of thinking therein implied. If he looks to the phenomenal world for the ultimate end of human endeavor, he will limit himself to the intellectualistic, scientific, mathematical method, and his answer to the question will be determinism. But what phenomenal end is self-sufficient and complete? Pleasure is most generally named, but when taken as an end it defeats itself. The religious attitude, on the contrary, which looks beyond experience for its ultimate goal, and which uses the "teleological method" (recognizing a spontaneity in life which is inexplicable to science), makes room for freedom. Freedom of the will, we are told (Chapter VIII.), is a freedom traceable to a transcendental, non-empirical self, behind all phenomena (almost a Kantian will over again). This is the real key to individual personality.

According to the author (Chapter IX.) the doctrine of determinism is coming to play havoc with the administration of justice. Justice, to him, is the vengeful emotion held within bounds that maintain equality of retribution with offense, and implies a recognition of freedom. The concept of determinism is substituting scientific and prudential methods for red-blooded indignation, and the nursing (reformation) of criminals is both illogical and socially suicidal! It is hard to feel convinced of the seriousness of some of these pages.

An interesting "Note on the Misuse of Terms" indicates that many terms originally implying purpose and value have been wrongly appropriated by science, which uses them without such implications. Cause, *e. g.*, really refers to the spontaneous initiation of a series, not to a link in a series; instance the German "*Ursache.*"

The relation of scientific method to human purposes is stated well in several places. "With science, emotion precedes activity and sets it to work, but it does not direct it course" (p. 231). "Science . . . supplies no ends. The ends must be already there" (p. 263). "Ultimately, science itself is a branch . . . of ethics; but it proceeds . . . by a special and independent method" (p. 341). In spite of this, the author is almost

frankly anti-intellectualistic, even anti-empirical and anti-sociological, as has been pointed out in places. In one place (p. 100) he refers to the "degeneration of character, which is the ultimate consequence of an exclusive devotion to science." If this be not either ignorance or disregard of numerous biographies, it is explicable on the basis of the author's conception of high character as an "ardour of unreasoning enthusiasm" (p. 116) by which "a devil-worshiper will be stronger than a man who is his superior in morality, but an atheist" (p. 107).

On almost every page occur variants of the expression, "processes of evolution." They appear to be dangerously near cant, for nowhere is evolution, as we generally understand it to-day, given fair description or fair handling. A continual strife of opposites in something of an Heraclitean sense seems nearer the author's meaning; and these opposites when given the names "good" and "bad" hardly need more than capitalization to take on an Ormuzd-Ahriman character.

Taken as a whole, the book seems strangely out of touch with thinking of the twentieth century. The style of the author is not commendable: a loose, almost irresponsible theorizing with highly abstract terms, and a method of argument that assumes either great sympathy or great credulity on the part of the reader. As to composition, printing, and binding, suffice it to say that the book is issued by the Clarendon Press.

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Das Unendliche und die Zahl. Hugo Bergman. Halle: Verlag von Max Niemayer. 1913. Pp. 88.

In this study of infinity the author is not concerned with the question whether infinity exists as a physical reality, but only whether it exists as a mathematical concept. Is such a concept thinkable? Is it consistent with the other notions of mathematics? His answer is that there is such a thing as an infinite magnitude, or an infinite class, but no such thing as an infinite number.

Bergman uses *number* in the definite and narrow sense of positive integer. A number is a "counter"; it answers the question "how many?" There have been two errors made with regard to the infinity-concept,—the earlier error of regarding infinity as a fixed number that is very large, and the later error of confusing infinite number with infinite class. An infinite class is a class that may be put into one-to-one correspondence with a part of itself as, for example, the class of positive integers may be matched one-to-one with the class of perfect squares

1, 2, 3, 4, 5, . . .
1, 4, 9, 16, 25. . . .

Such a class, however, never answers the question "How many?", for it is evidently insufficient to say that the number of things in a class is known by putting this class into one-one correspondence with another class where the number of things is unknown. Thus we can not know the number of perfect squares through the correspondence which we have just established.

There is no such thing as an infinite number because the counting process limits itself at each step. 2 exists only as $1+1$, 3 exists only as $2+1$, *et cetera*. Each number comes into being only through "following" some other number. It is similarly true of classes, as Cantor has shown, that if a given class is finite, then the class formed by adding one more member is also finite. And if an infinite number could be formed by the counting process, what would it mean and how would it differ from the finite numbers?

In saying that there is no such thing as an infinite number, Bergman does not call in question the results of Cantor and his school regarding infinite classes, but protests only against the meaning given to these results. His treatment is somewhat long for his thesis, but is interesting historically on account of numerous quotations, in particular from the works of Galileo and Leibnitz.

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Bergson for Beginners. DARCY B. KITCHIN. New York: The Macmillan Company. 1913. Pp. vii + 255.

The attempt to expound Bergson's philosophy by following his works chronologically is difficult because of the absence of systematic framework, or constructive plan, which is an avowed character of this philosopher's writing. Mr. Kitchin has made a skilful and reasonably successful attempt, however, to accomplish this task. While he recognizes that "Time and Free Will" "gives an exposition of the ideas which underlie the whole of Bergson's philosophy," he objects to Mr. Carr's opinion that Bergson's thought has not developed essentially in the later works. The contrary conviction is not very successfully justified, in the reviewer's opinion; but no doubt it accounts for this author's willingness to find the chronological order the effective one for his exposition.

This plan of the work, taken together with the wording of the title, may give rise to illusory expectations in the uninstructed. A summary of the book would indeed be a condensed statement of all Bergson's work, since the book itself is admirably inclusive. But it is itself mainly a summary, and recalls rather that misguided type of abridgment which able students sometimes prepare, at college, for those incompetents who "cram" for their examinations, than a very enlightening interpretation. The college pre-examination "syllabus" or "digest" is sometimes an admirable achievement of thinking on the part of its author, but the purpose and result of it are unsound; it only makes for the atrophy of the thinking faculty in those whose first care is to side-step thinking of their own. I am not saying that this book is mere abridgment: there are a thoughtful Introduction and Conclusion. But these are a small proportion of the book, and the rest, I believe, would be more valuable—to beginners no less than others—if the attempt at methodical inclusiveness had yielded somewhat to a more critical interpretation. To some of Bergson's more important critics the author pays his respects, very briefly, but the questions at issue are not very satisfactorily examined.

There is a list of Bergson's works, and a very short list of works about them.

Two obvious proof-reading errors are the omission of the word "not" at the end of the first line (p. 198), and the substitution of the word "institution" for "intuition," in the ninth line from the bottom (p. 248).

ARTHUR MITCHELL.

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JOURNALS AND NEW BOOKS.

REVUE PHILOSOPHIQUE. June, 1914. *L'Activité Chemique du Cerveau* (pp. 557–580): E. BOHN. – A summary of results up to date, concluding with the statement that "the human brain has become enormous not because it has been greatly exercized, but because human blood proved to be an excellent *milieu* for its growth." *Les Conditions Générales de la Connaissance* (pp. 581–610): FR. PAULHAN. – Knowledge appears as "an assimilation of subject to object, and also at the same time, of object to subject—an assimilation which permits of exact knowledge, the further the assimilation is pushed, the more exact being the knowledge." The identity of subject and object is the limit to which knowledge tends. *La Vérité Spéculative* (pp. 611–623): EMILE BRÉHIER. – The notion of a speculative truth, according to which reality is like an object that one contemplates, is a contradictory notion, because of the inclusion in the concept of "truth of the conceptual order" and "truth of the intuitive order." *Analyses et Comptes Rendus.* René Berthelot, *Un Romantisme Utilitaire:* LIONEL DAURIAC. J. Maritain, *La Philosophie Bergsonienne:* LIONEL DAURIAC. *Revue Générale.* Serge Boulgakov, *Filossofía Khoziaïstva: Tchast Pervaïa, Mirkak Khoziaïstvo* (*La Philosophie de l'Organization Économique*): G. SELIBER. A. Bogdanov, *Filossofiia Jivovo Opyta* (*La Philosophie de l'Expérience Vivante*): G. SELIBER. Serge Boulgakov, *Dva Graga* (*Les Deux Cités. Récherches sur la Nature des Ideés Social*): G. SELIBER. *Filossofsky Sbornik L. M. Lopatinou* (*Récueil Philosophique en l'Honneur de L. Lopatine*): G. SELIBER. Lopatine L., *Filossofskiia Kharakteristikii Retchi* (*Caractéristiques et Discours Philosophiques*): G. SELIBER. S. Askoldov, *A. A. Kozlov* (*Série: Penseurs Prusses*): G. SELIBER. *Notices Bibliographiques. Revue des Périodiques.*

Varendonck, J. Recherches sur les Sociétés d'Enfants. Travaux de l'Institut de Sociologie Solvay. Notes et Mémoires, No. 12. Brussels: Misch and Thron. 1914. Pp. 93. 6 Fr.

Watson, John B. Behavior: An Introduction to Comparative Psychology. New York: Henry Holt and Company. 1914. Pp. xii + 439.

NOTES AND NEWS

Report of Professor Sharp's Chicago Conference Paper

To the Editors of the Journal of Philosophy, Psychology, and Scientific Methods:

Professor F. C. Sharp requests that the following abstract be printed as a substitute for my report of his paper before the Chicago Conference on Legal and Social Philosophy, April 10, 1914. I hope you can give the necessary space to the matter.

Very truly yours,
G. A. Tawney.

University of Cincinnati.

The Moral Criterion in Some Recent Decisions of the United States Supreme Court.—That the law is utilitarian and ought always to be interpreted and developed with this truth in mind is recognized by practically every present-day student of the subject. But this view of the matter is too vague to be of very much practical value. The pressing problem is how to proceed when interests conflict, and it is here that the most important differences of opinion among our judges arise. In matters which concern the claims of individual liberty, the privileges of property, and the demand for equality of treatment, a definite answer has been gradually worked out by the Supreme Court of the United States and has been, for the most part, consistently employed in its decisions. It is most succinctly formulated in Bacon *vs.* Walker (1907), in the declaration: "The power of the state . . . extends to so dealing with the conditions which exist in the state as to bring out of them the greatest welfare of the people." The Principle: Infringement upon the claims of individual liberty, property, or equality, is justified when necessary for the attainment of a greater good, has been applied in a great variety of decisions so that its meaning is unmistakable. That this principle is morally a just one would be agreed by the overwhelming majority of the ethicists of our generation. This fact is significant. For in interpreting the vaguely worded guarantees of the Fifth and Fourteenth Amendments of the Federal Constitution the Court has been compelled to build up the law through a process of judicial legislation. And judicial legislation, like all other forms, is under obligations to be guided by principles of justice. Most of the state courts have had to start from constitutional provisions essentially the same in content as the amendments in question, and to make use in a similar manner of the process of judicial legislation. If then the authority of the Federal Supreme Court and the consensus of ethicists are worth anything, it would seem that they ought to bring their decisions more closely into conformity with the decisions of this Court.

Frank Chapman Sharp.

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The Fifth International Congress of Philosophy, which was to have been held in London from August 31 to September 7, 1915, has, on account of the war, been indefinitely postponed.

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PSYCHOLOGY AND SCIENTIFIC METHODS

THE PULSE OF LIFE

ON various occasions[1] I have expressed the opinion that life and mind must be defined in terms of behavior whether observed or expected. The reasons that led me to this conclusion have been set forth at sufficient length,—they all come back to this one: that to assert the existence or non-existence of any thing is meaningless unless we can verify the assertion, but experience is the only means of verifying assertions, and behavior the only aspect of the beings we call living or conscious which is matter of experience. Hence in our empirical reasons for calling one thing alive, another not, one thing conscious, another unconscious, must lie the meaning of life and mind.

I had not thought to return to this matter whose interest for me lay rather in what it led up to[3] than in its own modest content. But I have come to see that one can not define a method without illustrating it, unless one is willing to be widely misunderstood. I have had sufficient occasion to realize this, for the thesis which seemed to me so much a matter of course has been regarded by many as revolutionary,[3] not to say *"waghalsig,"*[4] and a way of looking at things which I should have called Aristotelian has been interpreted as "materialistic."[5]

The fault, of course, is my own. I have confined myself to showing why life and mind *must* be defined by a certain method, and have offered no reply to those who ask,—But how can they be? I have pointed to behavior as that in terms of which life and mind must be set forth, but I have not answered the question,—What behavior? One might well enough remind me that *"Kein tolleres Versehen kann sein, Gebt Einem ein Fest und läd ihn nicht ein."*

To mend all this there is but one way, and that is to sketch in a

[1] This JOURNAL, Vol. VIII., page 180; Vol. IX., page 15 and page 206.
[2] *Ibid.*, "Man and Fellow Man," Vol. X., page 141.
[3] Miller, *ibid.*, Vol. VIII., page 322.
[4] Jacoby, *Internationale Monatsschrift.* Jg. 8, No. 1, page 7.
[5] Montague, "The New Realism," page 271.

picture of the world as it appears to one who has come to look upon life and mind as behavior. Such a picture can not be presented with any confidence that its details are correctly drawn; as one hand moves the pencil the other is ready with the eraser. But as an illustration of method the whole imperfect thing has its interest, and while in my impatience to get on to the consequences of a theory I faced the task of illustrating it as an unwelcome interruption, I have nevertheless experienced in the working out no little enjoyment.

But in this first paper I shall attempt no more than a picture in which *life* appears—the concept of *mind* shall be for another time.

Life and Mechanism

As the medium in which the image of life is to be wrought, let me assume the world of mechanism. When I conceive such a world, I spread it out in space and attach to each of its points a limited number of characteristics or parameters which I then connect by such formulas as enable me to express their values as functions of a single variable, *time*. To construct such an image of the world we live in is the ideal of physical science. It is only an ideal, and to have chosen it as a medium in which to work means no more than to have registered a pious intent to introduce no definition of life or mind which shall stop our approach to the mechanical ideal. Those whom the history of physical science inspires with no such respect for its ideal as to require them to conform their notions of life to it will care little for an image worked out in a medium they reject. Their quarrel with me is serious enough; but this is not the moment to enter on it nor a suitable *terrain*. It can be only for such as regard the mechanical ideal as inviolable that the problem of defining life consistently with it is a real problem.

But for such the problem is very real, for every one knows how difficult it is to pass from an image of the world as mechanism to an understanding of that same world as the medium not only in which, but also of which life has its being. The difficulty which this transition offers to thought has sometimes been taken for a very hiatus in the order of nature, a chasm and an abyss so threatening to the continuity—not to say the consistency—of our thought that the most extraordinary philosophies have been built to bridge it. The most notorious of these inventions are (1) that which attempts to make life consistent with mechanism by making life mechanical, (2) that which tries to make mechanism consistent with life by making mechanism alive at every point. The first, I think,[6] may fairly be

[6] I say "I think," for since I find that I have myself been called a "panhylist," which must be an aggravated variety of materialist, I am not sure that I know what idea, if any, the term materialist conveys. If every one is a ma-

called a *materialistic,* the second a *monadistic* account of the relation of life to mechanism.

For one who confines himself to determining what behavior on the part of certain objects of our experience makes us call them living, and who then defines life as that which is common to the behavior of living things, neither materialism nor monadism is possible; but neither for such an one does the gap exist for whose bridging these philosophies have been invented. He makes it his problem so to define life that it may dwell in mechanism and be of it, but in such manner that neither shall life be turned into mechanism nor mechanism into life.

Materialism

In framing such a definition of life we shall be in accord with very old tradition if we consider that a certain purpose is revealed in the behavior of the beings we call living, and that it is because of this purposive behavior we call them so. But to erect this purpose into a definition of life is to enter at once on the troubled domain of teleological definition.

The confusion that usually attends upon this method of defining comes, I think, from our failure to keep distinct the two classes into which a single individual may fall when one of these classes is defined without reference to purpose; the other connotes nothing but a sameness of purpose. The distinction is obvious enough when our thought is not troubled by the application of both methods of classifying to the same system. The classes "triangle," "gravitational system," "salt" suggest nothing of a common purpose served by triangles, or by gravitational systems, or by salts. A triangle *must be* three-sided and plane, it *may be* the best form for a spear-head, for an element of a bridge truss, for a certain fashion of musical instrument. Neither is any one purpose served by gravitational systems, nor have salts a unique function. The definition of these geometrical, physical, and chemical concepts is ateleological and the sciences dealing with terms so defined might be called *ateleological* sciences. On the other hand, the classes "musical instrument," "time-piece," "seasoning," connote nothing of the geometry, physics, or chemistry of the objects contained in them. A musical instrument *must be* capable of producing pleasant tones, it *may have* the structure of a triangle, or of a fiddle, or of a flute. So "time-pieces" may vary in mechanism from a sun-dial to a chronoscope, and to make its proper appeal the

terialist who refuses to look upon the contours of a living being as the boundary of a region in which the kind of predictability that holds outside of it breaks down, then I am a materialist along with Spinoza and Kant. If, on the other hand, a materialist is one who attempts to give a mechanical definition of life, then, unlike Democritus, or Lamettrie, I am no materialist.

"seasoning" may call for salt or it may call for pepper. If, then, there is any group of sciences whose peculiar and specific concepts are defined in terms of purpose and place no limit on the variety of mechanisms which may be found to serve this purpose, we might call such sciences *teleological.* It is in this group we should place biology, if that life of which biology is the study is properly defined in terms of purpose alone.

No one would be tempted to confuse these two *principia divisionis* if it were not for the puzzling way in which the classes they denote intersect and overlap. For example, that portion of the extended world which is at this moment bounded by the surface of my body is part of the universal mechanism, and is more or less like other parts in its mechanical structure. Hence it belongs to a class of mechanisms, ateleologically defined. Am I not, then, a machine? On the other hand, the history of my body's behavior reveals a purpose running through its various acts, a purpose quite like that which characterizes my neighbor, my dog, the moth that flutters by me. Am I not then a being with a purpose? And one may repeat this question apropos of every member of the class "living-being": it is a member of that class because its behavior reveals purpose; it has at each moment membership in another class defined without reference to purpose. Which is it, *really,* a thing of purpose or a mechanism?

But the question answers itself and I introduce it merely to point out the part it plays in the psychology of materialism. For materialism is nothing but an attempt to define life in terms of mechanism. It observes correctly enough that each living thing has at each moment a place in a class of mechanisms: it fails to observe how endlessly unlike these classes may be and seeks to state what is common to them as the definition of life. But there is nothing in the way of mechanism common to all that is or might be called living, and the living would never be put into a single class were they not moments in a scheme of purpose: the class living-being has nothing but a certain purpose common to its members and only this purpose can be offered as the definition of life. It is for this reason that as living I am classed with the grass of the field: as mechanism I am much more like my own corpse.

Monadism

If the definition of life as a certain kind of purposeful behavior makes materialism impossible, it makes "monadism" or "hylozoism" no less so. For implicit in the concept of purpose is that of freedom, and freedom is exactly that which we have denied to the points of our mechanical system. At the point there can be no freedom, no purpose, no life.

That freedom is implicit in our definition of life may be made to appear by either of two comparisons. If we follow the history of any individual living thing we observe through what varying mechanical vicissitudes (of light, heat, chemism) it works out its purpose. "adapting itself" as we say to a wider or narrower range of circumstance. Or if we compare, not the same individual at different moments, but the most resemblant individuals at the same moment, we may measure their adaptability in terms of the range of mechanical situations that leaves their purpose as living beings undefeated. But to accomplish the same defining purpose in a variety of mechanical situations is to be independent of mechanism to a degree measured by the range of things that "do not matter."

The invariance of purpose in a variety of mechanical situations is freedom. We do not first find life and then speculate as to the freedom of living beings; it is not until we have found this freedom that we are sure of having found life.[7]

It is clear then that in a system whose points are assumed to be mechanically connected we can not posit life in all its freedom at the point. The only remaining possibility is to regard life as a phenomenon of the *group of points.* But how are we to effect a grouping of mechanically determined points so that the group shall be free when the points are not? How can a kind of grouping introduce freedom into a system whose elements are not free?

Theory of the "Pulse"

The relation of whole to part is no one relation, but presents an infinite variety. The simplest type is that in which the whole is said to be equal to the sum of its parts, and because of the ease and familiarity of the operation of adding we are only too willing to think of all grouping as summation and to apply to it the principles of arithmetic. As a matter of fact the examples which our experience offers us of what might be called additive groups are rare: we think of a foot as the sum of the inches which compose it, of a pound as the sum of the ounces contained in it; but we should not get very far if we tried to think of a chemical molecule as the sum of its atoms, and we should go much too far if we insisted upon defining a state as the sum of its citizens. At the outset, then, it is well to protect oneself against a natural tendency to apply axioms of addition to all forms of composition. Can it be less absurd to say, The whole being

[7] Curiously enough the attention of those who discuss "freedom" has been centered on the possibility of doing different things under the same circumstances. This is not freedom, but caprice. Our freedom is measured by our ability to do the same thing under different circumstances: it is that *independence of circumstance* which Stoic and Epicurean understood so well.

equal to the sum of its parts, if there is no freedom in the part there can be none in the whole, than to say, A triangle being composed of straight lines, if there is no triangularity about each of these lines there can be none in their combination?

Now of all the ways of composing a whole out of parts there is none which holds more surprises in store for the arithmetical soul than that which permits us to regard a wave moving through a medium as made up of the parts of that medium itself; for in no other form of composition is the non-additive character of the grouping more obvious, in none other is the contradiction between the properties of the group and the properties of the elements grouped more keenly felt. Through a medium whose parts are moving up and down, a pulse composed of these very parts may move horizontally; through a medium whose parts are moving back and forth about a center of equilibrium, a pulse may pass on and on. If we have overcome the primitive instinct to add, if the peculiarities of wave-composition no longer surprise us, there can be nothing to shock us in the further suggestion that through a medium of mechanism all of whose points are determined, a pulse of life may pass freely on its way.

Following this suggestion our method of defining life, though it insists upon the distinction between mechanism and life, denies the chasm between them. For imagine that through the infinite sea of mechanism already defined, there move certain wave-like forms, not indeed wind-tossed, but rather purpose-drawn; and imagine the purpose in terms of which the behavior of these forms could be explained and predicted to be that of *self-preservation;* would not each of these pulses correspond in all respects to what we call a living thing? Is it not as such a pulse that each thing which lives moves slowly on through the vast sea of mechanism drawn this way and that, not as the waves of the ocean are blown, but as "the lover is moved by the loved object"—until breaking upon some sudden obstacle or dying out in the viscous medium it is seen no more? But between such a pulse of life and the universal mechanism in which it arises, through which it purposefully moves awhile and into which it passes away again, there is no discontinuity or break. A new thing has indeed appeared, a new thing that is not to be defined or studied by the methods of mechanics: this new thing is a *group;* a group which is in the nature of a *pulse;* a pulse whose behavior may be defined in terms of *purpose;* a purpose which we recognize to be that of *self-preservation* requiring adjustment and adaptation to the various mechanical situations through which in the course of its history the pulse freely passes. This new thing is *life.*

The Science of Life

But if life can not be mechanically defined, if living behavior can not be mechanically explained or predicted, in what sense can there be a science of life? What must be the nature of the laws of such a science and on what sort of calculations can it enter?

The answer to these questions must depend upon our understanding of the term "purpose," which has entered into our definition of life and so must control our treatment of living phenomena. I take it that the accomplished purpose of an act will always be sought among the results of that act. No doubt the chick yonder embodies the purpose for which a certain egg was laid: it is also a result of that laying. But if we were to follow all the results of that laying, a humble barnyard episode would turn into a cosmic event on our hands. For that egg in falling has jarred the universe, and one wonders why out of its endless consequences just this unimpressive chick should have been taken as the one for whose sake the event befell. What is it that distinguishes the result that is a purpose from the infinity of other consequences that are merely accidental?

I know that it is usual to define purpose as the *desired* result and to accommodate this definition as best one may to the purposeful acts of the humbler order of beings; to the tree whose blossoming must express some one's or some thing's desire for another tree of the same kind, to the unicellular organism whose ingesting of a foreign body must betray its hunger. But in order that the concept of desire may have so wide an extension, must we not have made its meaning identical with that of purpose? Must we not have offered a tautology in place of a definition? Or else we may have done worse than this. We may have made of desire some immediate experience of which we believe ourselves in possession, but of which we can give no account or description; we may then have trusted to luck in assuming that others would understand us when we used this term; we may finally have appealed to analogy to justify the hypothesis that all things acting purposefully have a like subjective experience. The emptiness of each phrase that sets forth the process by which I am supposed to read my own inarticulate experiences into others has been sufficiently insisted upon elsewhere.[8] It will be enough to point out at this time that no one could verify the "hypothesis" of desire in fellow-man, fowl, shrub, or amoeba. How then could one make use of these unknown desires to distinguish the known purpose of an act from its accidental results?

No, the definition of purpose can gain nothing by an appeal to desire as that which can be established first in the study of any given act and then used to distinguish the purpose of that act from

[8] This Journal, Vol. VIII., page 180.

its accidental consequences. Such an appeal does indeed suggest that the distinction between the purpose and the accidental results of a given act requires us to collect other data than those furnished by the mechanical description of that act and its consequences. But these data can only be collected if they are as observable as the act itself. And what can be as observable as the act except *another* act that is like it? Here then we have our suggestion. If but once in the known history of the universe an egg were laid, a blossom burst, a morsel were ingested, would there be any possibility of our recognizing among the consequences of each unique event one that was its purpose? Or if the same sort of event happened many times, but among the consequences none were found to be common to the various cases, would we then be able to recognize a purpose in that type of event? But if, on the other hand, the type of event happened frequently enough to enable us to compare the spheres of consequence that emanated from each case as from an origin, and if we found that in a certain proportion of cases the same kind of result followed, would we not be justified in looking upon this *average common result* as *the purpose of the act,* assigning the remaining variable consequences to accident?

Purpose then may be defined as the average common result of a type of act. As an average result it is not expected to follow "always" but only as Aristotle would say "for the most part." Or rather, this classic expression is still too vigorous. For we recognize a result as a purpose when it is common to but a very small percentage of the cases falling within the type of act whose purpose it is. The purpose of the depositing of each shad's egg is no doubt the production of another shad, but it would be unfortunate for the rest of us if this result followed for the most part on the event. In place of the loose Aristotelian phrase we should substitute an exact mathematical expression, one that is based on an empirical study of statistics and presents itself finally as a *measured probability.* We may say then that the purpose of an event is the result which that type of event is *calculated* to accomplish; the calculus in question having for its data statistics and for its method the theory of probabilities.

A teleological science has for its laws the statistical principles which we call rules, but to contrast it for this reason with the "exact" sciences is inexact. For though from the very nature of the concepts which it employs a teleological science must deal with principles that apply to the individuals of a group *collectively,* and not *distributively,* there is no limit to the exactness with which these laws can be expressed. If we are interested in applying its results to an individual of a group it has studied, it can only offer us mate-

rial for a calculus of what this individual will probably do, but it can give to this probability as exact an expression as it chooses.

There is then a science of life; it is an exact science of the probable in the domain of self-preservative behavior.

"Self-Preservation" Defined

It requires, I suppose, no special defense that we have taken only one of the purposes revealed in the behavior of living beings as the *defining* purpose. Any self-preservative being may belong to a number of other teleological classes—the type-preservative for example. In general the possession of one "nature" by a given individual does not exclude the possession of a different and even contradictory nature, for from what has already been said respecting the meaning of teleological classification, it will appear that the behavior which justifies us in assigning an individual to a given class may be and generally is only part of its total behavior. It will not surprise us then if self-preservative beings are also type-preservative and if at moments their type-preservative acts are self-destructive. In framing our definition we have included in it only the minimal connotation that would give to the class defined the denotation which has been traditionally accorded to the term life and which we are prepared to preserve for future use. It is sufficient for us that no finite being devoid of self-preservative behavior has been called living, and that we are prepared to recognize as living a being, however constructed, however devoid of other purposes or natures, if only it reveal self-preservative behavior.

But is this concept of self-preservation itself so clear and well defined that it may profitably serve for the defining of other terms?—I confess that I am not of those who move with ease and enjoyment through the domain of the reflexive categories. Even this most familiar one of self-preservation gives me pause. To preserve one's fortune, to preserve one's reputation, these expressions are intelligible enough because the preserver and the thing preserved are sufficiently marked off the one from the other to permit of a relation being set up between them. But when the preserver and the preserved are as closely identified as one is with oneself, it is with no gaiety of heart that I approach the task of so mixing "the same" with "the other" as to constitute the concept of self-preservation.

However, there comes to my mind the couplet into which a certain weary soul put the whole story of his life as it appeared to him in retrospect. "I ate," he said,

> "I ate, drank, slept, and then,
> I ate, drank, and slept again."

Now whatever of the richness and variety that sometimes pertain to the lives of men this unimpressed person had managed to miss or to forget, he had not been able to leave untold a certain minimum which is the content of life itself. And this minimum seemed to him to consist in a precarious sort of *againness* whose monotonous rhythm had filled his years. If one had asked him why he had thus eaten, he would have said, I fancy, in order that he might eat *again*. In the same sense that the fowl lays an egg in order to produce another fowl, our hero ate his dinner in order that he might eat another dinner. A being who so acts that the repetition of his act is well calculated to result from it, whose act is seen to be a means of ensuring its recurrence, is a self-preservative being.

Such, at least, is the simplest life definable; but our hero's was relatively complex: he not only ate, but he also drank and slept. We should doubtless be too additive in our methods if we represented him as doing each of these things for the purpose of doing just that thing again. Did he not do each in order that he might do all three again? A in order that he might do A, B, C . . . in the future, B, for the same reason, and C, with a like motive . . . ? A being whose acts may be analyzed into n types such that each type has for its purpose the repetition of all n types is not only a living being, but also an organism. I dare say we can find no example of a living being which is not also an organism, so that the terms living being and organism have come to be used interchangeably, but the meaning of organism contains more than the definition of life.

Thus we have our concept of organized self-preservation. The sameness implied in it is the sameness of the wave as a whole, the otherness the rhythm of its complex and changing contour as it is transmitted by and translated through the medium in which and of which it is.

Concerning Death

With this definition of self-preservative behavior, the picture of life and its relation to mechanism are complete. Yet it may be a matter of surprise to some that we have included in our definition of life no reference to the episode of death, so universal as to be commonly regarded as a part of life itself. Even Professor Schaffer, who startled an over-excitable if not over-imaginative world by accepting the possibility of a laboratory creation of life, was unable to stretch his thought to the point of conceiving a laboratory prevention of death.[10] But if one has gone so far as to exclude from one's conception of living things all reference to their way of coming into being, it would seem natural that one should include in one's definition no reference to their manner of passing away again. The *pos-*

[10] *Science*, N. S., 36, 289.

sibility of creating life and the *possibility* of eliminating death mean no more than that we may define life without reference to its beginning or end. Whether we can find or produce beings that fall within this definition and *also* meet certain conditions of beginning and ending is a purely empirical question, the ground of whose answering lies quite outside of the definition.

Birth and death then are only synthetically attached to life, but while the motive for reading birth into the definition of life is no deeper than an habitual association of ideas, I am not sure that the insistence on death as a thing whose germ lies in birth is to be explained in the same way. For we have seen that the teleological method of defining which gives us our concept of life is essentially statistical and looks upon the future of each thing in a class as a matter of probability. In order that there should be nothing more than probability, there must be a possibility that the future expected should not arrive: there must then be cases in which it does not. But the defeat of the purpose of the living being is death, and so its occurrence would seem to be essential to the meaning of life. It will be remarked, however, that this necessity of death is but a requirement that some die, not that all die. Death is an essential phenomenon of a group taken collectively, not of that group taken distributively. As for any individual, it is enough that for him life is not certain, nothing requires us to maintain that death is.

So I have defined life without reference to its beginning or its end; I have also defined it without reference to its higher and lower forms. It is possible to do this because so far as life goes the existence of the higher form is not involved in the meaning of the lower, and conversely. Where, however, these differences of higher and lower life exist it is possible to introduce a new category to describe their relations. This new category is *mind*.

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A DEFINITION OF CAUSATION: A REPLY TO PROFESSOR SHELDON

PROFESSOR SHELDON, in an interesting series of four articles recently contributed to this JOURNAL,[1] draws attention to a new definition of causation. His results may be summarized as threefold:[2] (1) that two types of causation clearly emerge, "a certain serial type called a self-repeater, and one of composition"; (2) that "the

[1] Volume XI., pages 197, 253, 309, 365.

[2] Vol. XI., page 365.

cause is *two* terms'' and not ''*one term alone,* where Hume and his successors always looked for it''; and, (3) ''that there is a *necessity* in the existent world.'' I shall direct attention to (2) and (3) only. The reason for the restriction lies in the mere desire to narrow the issue. I wish also to state in advance that I do not take issue with the *conclusions* advanced in (2) and (3), but with the argument offered in their support.

That ''the cause is *two* terms'' and not ''one term alone,'' is a correction of ''Hume and his successors'' that easily welcomes an emphatic approval. On this point, as in so many others, Hume's displacement of Locke in general esteem has proved a detriment to subsequent tradition. Thus Locke, unlike Hume, and in part coincident with the results reached by Professor Sheldon, emphasized (1) the duality of our cause; (2) a necessity existent in ''the constant and regular order'' of things, together with a necessity that the causal situation more directly inspires; and (3) an element which Professor Sheldon omits adequately to note and incorporate; namely, the presence of *change.* I must touch somewhat upon each of these points in Locke before I turn to Professor Sheldon's results.

Locke writes: ''There must always in relation be two ideas or things, either in themselves really separate, or considered as distinct, and then a ground or occasion for comparison.'' [3] He thinks this duality of terms to be true of ''relations'' in general. The causal relation with him differentiates itself from other relations in the fact that ''the ground or occasion for comparison'' in causation is change. Thus we read: ''wherever change is observed the mind must collect a power somewhere able to make that change, as well as a possibility in the thing itself to receive it.'' [4] It is with an emergence of change, then, in one or more of the initial terms that Locke would seem to find the first moment in an analysis of causation. It follows by natural consequence that, in the emergence of change, we also have the essential differentia of a causal from a non-causal situation.

The term ''power,'' however, in the above citation, carries an objectionable meaning and tradition. We, with Hume, have come to reject it. But, in justice to Locke, let us remember that he, too, rejected it quite as forcibly as did Hume. The contention Locke reiterates without end assumes a form not unlike that reached by Hume. He writes: ''We have by daily experience clear evidence of motion produced by impulse and thought. But the manner how, hardly comes within our comprehension; we are equally at a loss in both. . . . For when the mind would look beyond those original ideas we have from sensation or reflection, and penetrate into their causes, and

[3] ''Essay on the Human Understanding,'' Bk. II., Ch. 25, Sec. 6.

[4] *Ibid.*, Ch. 21, Sec. 4.

manner of production, we find it discovers nothing but its own short-sightedness; . . . there is no more difficulty to conceive how a substance we know not, should by thought, set body in motion, than how a substance we know not, by impulse, set body in motion."[5] He thereupon concludes, that "powers are relations and not agents."[6] That is, "the changes which one body is apt to receive from or produce in other bodies upon due application" are of such a nature as to leave us in total darkness as to the manner of their production. What we have, therefore, in Locke is *a relation of objects, not of agents.* But not any object at random is capable of receiving or producing a change in another object; objects of a "due application" only have this capacity, or, as I prefer to express it, objects that are mutually *effective* and not such as are mutually *neutral* in respect to each other. This distinction is vital and I shall enlarge upon it later. For the present, the point I wish to enforce is that with Locke, as emphatically as with Hume, we are enjoined in the formulation of the causal situation not to transcend such data as are directly offered us in our sense perception, except possibly in the form of a working hypothesis.

Thus conceived, an investigation of the causal situation would resolve itself into the following parts: (1) an investigation into the nature and foundation of change in support of the distinction it establishes between a causal and a non-causal situation; and (2), an investigation into the elements (our related objects), in reference to which change is found to emerge and in reference to which change must be grounded and explained to the extent of its susceptibility to explanation.

A consideration of (1) and (2), however, will not fail to give proof of the presence of a thought-process. Hence, to ignore or deny the presence of a thought-process is apt to invite ambiguity and even failure. The following statements extracted from the articles in question intimate such ambiguity. "The main results of this investigation are, that there is a necessity in the existent world, and that it is not an absolute *a priori* necessity, but one *derived from* the existence of a dyadic relation."[7] That is, given "two terms in a certain relation . . . *the rest of necessity and by pure deduction* follows."[8] Or again: necessity is found "in the empirical contents of experience, rather than in the form imposed on it by mind."[9] I hold such statements in question if they intimate, as I fear, a failure to distinguish between an immediate perception that is ultimate with-

[5] *Ibid.*, Ch. 23, Secs. 28–29.

[6] *Ibid.*, Ch. 21, Sec. 19.

[7] This JOURNAL, Vol. XI., page 376.

[8] *Loc. cit.*, page 375. The italics are not mine.

[9] Page 375.

out mediation of any kind, and one that is immediate after a prior mediacy. That causation, in respect to the varied elements it combines—change among others—embodies such mediacy, requires no extended proof. I think we are safe in assuming, in the way of a proof, (*a*) that, without the emergence of change (a fact Professor Sheldon inclines to ignore) in one or more of the terms of the initial or dual situation, we have a non-causal and not a causal situation; and (*b*) that, without comparison and without data for a comparison, change for us can not even so much as emerge (appear). Such comparison demands that our original terms have each their more or less specific measure and boundary (a thing demanding thought), and, secondly, that the new element that appears in the form of change be a distinguishable element. If the "change" is not an element that is distinguishable, the presence of change is either not recognized, or, if recognized from one standpoint, is denied from another. Hence chemistry is disposed to deny *real* change in a mere mechanical mixture or composition. It is even disposed to deny a *real* change in a chemical mixture or composition, when compounds are held to as mere functions of its eighty or more elementary substances. But it does hold that a chemical change is more truly a change than a mechanical one. In all this, however, a thought-process operating under the control of certain principles is clearly evident. It is still further evident where our new element, the so-called change-datum, acquires the status of an adjective only or that of a substantive. Thus a general chemist regards water, vapor, and ice as mere adjectives of the so-called mass, H_2O; whereas the physical chemist regards them as substantive in character. Such differences, which are to be multiplied at will, are not without their foundation and special points of reference. The fact I seek to establish is that whether I assign the adjective or substantive status to the new change-datum as manifested in the original situation depends entirely upon the measure and boundary affixed to the dual or multiple objects prior to their entrance into a causal situation. If the change-datum is compatible with the measure and boundary of our original terms, then one or more of the original terms would appropriate it, and the element of change would appear as an adjective and not as a substantive. If, however, such change-datum is incompatible with the defined measure and boundary of the original terms, then it is that the change-datum emerges as a new *thing*. But decisions of this character clearly indicate the presence of a thought-process and a multiple of principles at every point.

So much taken for granted: let us now turn to Professor Sheldon's definition of causation. Each of the two types established by him "starts from a duality. . . . This is self-evident in the case of composition, where two factors plus the relation of combination deter-

mine unambiguously the resultant. In the case of the series, . . . two terms with a relation of sameness—and also of difference—between them determine unambiguously the remainder.''[10] That is, ''two terms plus the relation'' determine the result. But if two terms *plus* the relation is one thing and two terms *minus* the relation another, by what mark or sign are we to tell when the required ''relation'' is present or absent? The phrase ''plus the relation'' presents itself as an addition to the two terms. But what is it? For unless it is at once real and distinctive, how am I to tell by an exclusive attention to a relation that it is present or absent; and, if present, that it is the relation of ''combination'' or ''sameness'' or some non-causal relation? Or is it not at all a matter of ''relations,'' but a matter of ''terms''? If so, will *any* two terms do? If not, ''two terms'' of what kind are required? Unless we can answer these questions, ''plus the relation'' remains a mere phrase. Locke has said as much and as little in his phrase that ''powers are relations and not agents.'' For the question would persist: if the causal relation is real and distinctive, what is its nature and foundation? You can not find the required foundation or differentia in ''sameness with a difference,'' for this principle of ''sameness with a difference'' is not and can not be restricted to the causal situation, inasmuch as it is vital to a thought-process in general.

Suppose, then, we follow Locke and identify our ''relation'' with a change-datum. In this case to say that the ''relation'' is present when our dual terms ''combine'' and absent when they do not thus combine (either mechanically or chemically) would suggest the solution, but the solution would be one that made *change* and not the *dual* terms the more ultimate element in the causal situation. Moreover, if he accepts this suggestion, the meaning of ''relation'' would convert itself into a matter of ''terms''; for ''change,'' in its status, is either an adjective or a substantive. A causal ''relation,'' then, is as real and as distinctive as a *change* in the *terms*.[11] If so, what we ought to say is, that two or more terms

[10] *Loc. cit.*, page 371.

[11] It is in virtue of this fact that a causation of one order of existence distinguishes itself from another, whether that order be one that is bound up with physics, or with chemistry, ethics, esthetics, economics, etc. If, however, Professor Sheldon has come to mistake the types of causation identified with physics as exhaustive, this error would be explained in his failure to distinguish at the outset between a causal and a non-causal situation. Suppose we question whether his ''two types of causation'' are really valid forms of causation. Where would he turn for support in his position if not to the *elements* revealed in a prior distinction between a causal and a non-causal situation? In this way only can we tell whether physics has done full justice to the conception of causation or not. Hence a comparative method involving *all* the sciences is unavoidable to the investigation. And in this aim it is of special importance that

plus a change in them give us the causal situation; whereas two or more terms, not in this relation of change, give us a non-causal situation; and I stand ready to affirm that the causal relation as a "relation" can not otherwise be empirically defined. Not *any* "two terms," but two terms of a "due application" (to revert to Locke's phrase) embodies the differentia of a causation. But I fail to see how Professor Sheldon can define the causal relation by reference to change, unless his phrase,—"two terms plus the relation of combination or sameness unambiguously determine the result"—would read otherwise than it does read when transcribed in terms of *change;* namely, two terms *plus a change* determine a *change.* I would, however, be willing to discount this evident tautology if it were not that Professor Sheldon, according to my understanding of him, explicitly identified the causal situation, not with a cause-effect situation, but with the "cause" as divorced from the "effect" (I shall speak of this later). Hence, the cogency of the conclusion he is seen to draw; namely, two terms plus a relation given, "*the rest of necessity and by a pure deduction* follows."[12] But how we are to distinguish between a "change-datum" and an "effect," if "plus the relation" means *change* and the phrase, "the rest of necessity," etc., means the "effect"; or again, how Professor Sheldon is going to rescue the one or the other or both of these phrases, if this doubling up in *change* is denied, are matters that I find myself unable to grasp. Rather does this complication serve to convince me of my original conclusion, that the phrase "plus the relation" is devoid of any real import. For we do not proceed from a "relation" to "change," but we proceed from a "change" to the claim that such objects as involve a change indicate a dependence or connection—a relation—which neutral objects, by comparison, are seen to lack. As for the other phrase ("the rest of necessity and by pure deduction follows") Hume has long since administered the death-blow to its rationalistic implication. For with an emphasis upon change as something real, our "effect" not only becomes an inherent element of the causal situation, but, further, assumes the nature of an independent incommensurable. The principle of sameness to this extent obviously becomes inadequate to the full meaning of a *connection* in cause and effect. On the other hand, to deny a reality to "change" is to convert an apparent causal into a non-causal situation.

I agree with Professor Sheldon that we must assume two or more terms for our cause. But this, as we have seen, is not enough. We must further assume that objects are neutral or effective, partial

one should not mistake a particular *theoretical explanation* of causation for a direct investigation of *causation* in general. Professor Sheldon, I feel, did not escape this further error.

[12] *Loc. cit.,* page 375.

or indifferent in respect to each other. When neutral or indifferent objects are brought into conjunction, nothing follows, and our situation is a non-causal one. But where effective or partial objects are brought into conjunction, there a change-datum will appear, and our situation becomes one involving causality. In a word, causation finds its differentia in the fact that disconnections exist among objects as well as connections,—a fact which our inductive methods strikingly exemplify, although philosophy, in dealing with causation, with a possible exception in favor of Locke, has consistently and persistently ignored this distinction. Yet this distinction is so vital and far-reaching that I see in it little less than a revolution for metaphysics. But why certain objects in respect to others are either effective or neutral, that we can not tell. That they are effective or neutral is a matter of every-day and of scientific experience. But when, as Locke wrote, "we penetrate into their causes [as agents] and manner of production, we find our mind discovers nothing but its own short-sightedness." The assumption of neutral *versus* effective objects (and an object effective in one situation may be neutral in another, and *vice versa*) makes it possible to transcribe the odious, trans-empirical "power" into terms that are strictly empirical, and yet enables us thereby to retain the full scope of the rôle originally assigned to "powers."

Having once postulated the existence of effective and neutral objects, our next aim should be an investigation into the varied ways a given causal situation is handled by different men or sciences; for one might call that a change (hence a causal situation) which another might deny, as noted above in connection with chemistry. The same holds true in respect to the measure and boundary affixed to our objects. They are variously defined in virtue of varying principles which we either consciously or unconsciously adopt. Yet the specific conception of our objects is so important that, without it, the substantive or adjective status of our change-datum can never be determined. But in a preoccupation with principles so vast and varied, we drag in metaphysics by the wholesale. Mass, motion, space, conservation of energy, sense-perception, in mutual harmony or in opposition, are but a few of the many principles that would determine us in such decisions. Evident constructs, then, are present in any conception of the causal situation. Hence to speak of causation as found apart from "the form imposed on it by mind" seems to me not only a needless, vitiating restriction in our conception of the problem, but one that, in advance, precludes a full and complete analysis and estimate of its various parts.

A comparative method of the order suggested, then, such is my opinion, would aid us in more narrowly defining the elements pe-

culiar to the causal situation. Such a peculiar characteristic of the situation, I think, is to be found in the fact that the "effect" in respect to its "dual cause" embodies an "incommensurable element," even in those specific cases of a cause-effect series designated by chemistry as reversible. Such a reversible series is offered by "water" in respect to its origin from and return to H_2O. Yet water as water is as unique and as distinct a phenomenon as hydrogen or oxygen; *i. e.*, water is not wholly to be explained in terms of hydrogen and oxygen. Here lies the tantalizing enigma. Something inherently new has emerged, yet something can not come out of nothing. Nor can "agents" and "powers," in their odium, offer us any assistance. They help to indicate, however, as a matter of tradition, that the enigma is one that is inherently real. Yet Professor Sheldon seems to glide over it even in his causation of the type called "composition." Two terms with him "combine to produce a third in which they are preserved intact."[13] (Are hydrogen and oxygen, as hydrogen and oxygen, held intact in water)? "The first [the dual cause] is more fundamental than the second [the effect] *only* in the sense that the second is defined by reference to the first, but not conversely."[14] The reason he offers is that the cause and the effect are fundamentally identical except for their occurrence in a "time" that is "existential" and "irreversible." We therefore require a reference from effect to cause, and not the converse, he thinks, because "the past has a certain existential rank higher than that of the future."[15] Otherwise identical, the effect, it seems, would demand no explanation. It is wrong, then, he thinks, to speak of a cause as if it gives "rise to, or necessitates, or in any way accounts for, the effect."[16] Yet we *do* speak of the cause in the manner Professor Sheldon would here proscribe, and we do so for the reason that a given result in respect to its dual cause is an incommensurable, and because a given result is invariably bound up with one or another (not merely *any*) specific set of conditions. We do this because we think it pertinent to refer to the specific terms with which a given effect is commonly found associated; our sole alternative would be to refer to any term at random. And the need or necessity to refer to some term or other appears to be bound up with the fact that the effect is at once something new and incommensurable. If, accordingly, we did not seek to find its origin and explanation in this special reference, where are we to turn for its origin and explanation? Hume's insistence upon the incommensurable character of the effect is a matter of tradition. His exaggerations, no doubt,

[13] *Loc. cit.*, page 371.
[14] *Ibid.*
[15] *Loc. cit.*, page 372.
[16] *Loc. cit.*, page 371.

are susceptible to correction; but they are not susceptible to a reduction to a zero, without reducing the reality of causality itself, and every principle it leans upon for support, to a zero. Yet the only incommensurable element that Professor Sheldon appears to retain for an "effect" is an irreversible, existential time, with a "past" that is assumed to be of a higher rank than a "future."

The foundation of a causal *versus* a non-causal situation is one thing; an explanation of our "effect" as an event distinguishable from the dual terms of the "cause," another. The first, I think, is found in the distinction between terms as neutral and as effective; the second is found by a method of comparison involving qualitative and quantitative likenesses and differences. If an "existential time" presents itself as such an element, well and good. That "time," however, constitutes the *sole* difference. or that it constitutes the real distinction between a causal and a non-causal situation, are conclusions that I, for one, at least, could hardly accept. Nor would either chemistry or physics justify us in such a conclusion. In them, time constitutes but one possible element among other elements (as temperature, pressure, etc.) in a multiple cause as necessary to a certain result. But whatever the specific conditions of a given "effect," the effect would never acquire its distinctive character if it did not embody an incommensurable of some independence. Deny its incommensurable character and we may ask, why speak of a causation at all? I fear a too exclusive dependence upon physics in support of his explanation of the causal situation has reaped its penalty; for while the incommensurable element offers nothing that is peculiar or real in the causal situation of a science almost exclusively dependent upon the principle of conservation, this disposition of the incommensurable element, however far it may validly be carried in a certain directon, would still have such difficulties confronting it as sense-perception presents, whether or not such elements, from the standpoint of physics, are labeled as secondary or illusory.

The objections I have raised in connection with Professor Sheldon's postulate of "two terms" are, (1) that he neglects to distinguish and to give a foundation for "two terms" of a causal and "two terms" of a non-causal relation; (2) that his principle of "sameness" with a difference in an "existential time," fails to do justice to the conception of an effect as something independent (incommensurable) and as something dependent (upon a cause); and (3) that he fails to recognize the constructive process which any specific solution of the cause-effect relation necessitates and entails. It is in an estimate of the principles thus laid bare, however, that an exposition and a definition of causation are alone made possible.

I turn to a consideration of Professor Sheldon's next main

result. It relates to the subject of an existent necessity. He writes that "the main results of this [his] investigation are, that there is a necessity in the existent world, and that it is not an absolute *a priori* necessity, but one *derived from* the existence of a dyadic relation."[17] Had Hume, he thinks, "examined specific cases of causation, or had he even told us what necessary connection meant, the present almost universal philosophical skepticism in regard to its history might not have come into being. One great obstacle to his search was that he treated a cause as *one* instead of *two*."[18]

Grant that Hume did not "tell us what necessary connection meant." What, then, *is* it for Professor Sheldon? The answer is, that necessity is a *connection* in cause and effect based upon sameness with a difference. The emphasis is upon sameness. Hume, I take it, reversed the terms thus emphasized and accordingly denied a connection. Professor Sheldon, however, not only affirms the reality of a connection, but affirms it to be one of the existent world. It is a thing, therefore, that is not to be imputed to a thought-process. But such a position is infected with what is overtly contradictory. For if it be true that sameness and difference are vital to the thought-process in general, the conclusion would seem to be that they are principles of thought rather than of things, although things may and do show themselves amenable to them. What I mean is, that a sameness or a difference that is vital from one standpoint in the determination of an object's specific measure and boundary may be negligible from another, and *vice versa*. Thus a Shakespeare and an idiot, a criminal and a saint may be fundamentally the same from one standpoint and fundamentally different from another. Yet Professor Sheldon deals with sameness and difference as if they were existential constants. Without pausing to discuss the issue, therefore, let us assume with Professor Sheldon that sameness and difference are existential constants in the full sense that his position demands. In that event it is necessary to ask, whether the cause-effect *duality* finds its reality in the fact of a difference? If so, what reality can we gather for the duality, if our difference (the incommensurable) is disposed of as approaching zero, except for an existential "time" with a past of a higher rank, as he assumes, than a future? On the other hand, what reality can we gather for *connection*, if based upon *sameness* and a fixed or variable scope is permitted to difference? Unless a scope is given to difference, the cause-effect *duality* vanishes; and if a scope be granted to difference, we to that degree diminish or neutralize our connection. The dilemma is a serious one. Professor Sheldon meets it by his assumption of an existential time.

[17] *Loc. cit.*, page 376.

[18] *Loc. cit.*, page 375.

Cause and effect appear at different intervals in time, and herein, he thinks, lies their sole difference. Thus he speaks of the effect as "another case" of the cause, although "another case" of it with a time difference. Sameness is still made to bear the burden of a causal connection,[19] in contrast with which, difference is made to carry no burden; and "that two terms can be the same while different does not seem contradictory"[20]—such is his version. But suppose we focus attention upon a causal *situation* and not upon a causal *connection.* In that event, would difference still be released of its share of burden? And if not (as I must affirm), how avoid neutralizing the *connection* that an affirmed *duality* in the cause-effect relation naturally entails? If, however, it be maintained that no difference between cause and effect exists except the one difference in "time," suppose we ask whether our "effect" also consists of *two* terms as Professor Sheldon claims for a "cause"? For if our cause is *two* and our effect *one,* how can the effect be "another case" of this cause, unless this particular "difference" (together with all other differences in our effect except that of time only) be one that is negligible? But if a duality of terms is a negligible difference in the effect, it must also be held to as a negligible difference in the cause. But it is not a negligible difference in the cause, as Professor Sheldon's indictment of Hume in the above extract emphatically proclaims. Then how can it be a negligible difference in an "effect" that is at bottom but "another case" of the "cause"? One can not thus blow hot and cold with the same "difference," especially when one is committed to the task of dealing with difference and sameness as if they were existential constants. Deny that they are existential constants, and our argument at once shifts to principles even more damaging to his position. For once admit that a sameness or a difference in objects is a variable, then a causation that is based upon a "sameness with a difference," where *sameness* bears the burden of *connection,* converts its supposed connection into a disconnection and its necessity into a sheer contingency, or the reverse.

Notwithstanding these difficulties and consequences as incident to his position within the range of his own argument, suppose we allow that sameness in cause and effect guarantees the connection between them and that a difference in time is all that Professor Sheldon says of it and that it is adequate to the full meaning of an "effect." In that case it still remains to ask whether or not I have an instance of causation when I clearly have recourse to "sameness" and "time" in considering objects of a purely static relation, as in the case of two successive, unconnected rain-drops falling from a roof or between two

[19] *Loc. cit.,* page 372.

[20] *Loc. cit.,* page 374.

unconnected rain-drops in juxtaposition on some leaf? If the crux of a causal situation for him is an existential time, why does not the time-interval of the falling drops suffice to convert them into a causal relation? Or if "two terms with a relation of sameness" yields a type of causation, why do we fail to have a causal situation with our *identical,* unconnected rain-drops? And this facilty of "sameness" and "time" to convert a causal into a non-causal relation, or the reverse, holds true apart from the flexibility the principle of "a sameness with a difference" acquires, as noted above, if denied the status of an existential constant.

I conclude that a connection in causation primarily based upon sameness or a disconnection in causation primarily based upon difference (Hume), fails to make good. It fails to make good for the reason that *the existence of a connection can be proved only by reference to its affirmed opposite—disconnection,* or the reverse. Without *change,* such a distinction fails to appear. Admit change to be *real,* and the difference between connection and disconnection is real. Deny change to be real, and the difference between connection and disconnection ceases to be real. Without the reality of a disconnection, however, the reality of connection has no import. For like "sameness" and "difference," connection and disconnection constitute terms that are correlative, and hence they either rise together or they fall together.

But what a "connection" has to do with a "necessity" (the next step in his argument), is not evident, unless such connection reflects itself as a principle of control in thinking or in the behavior of objects. Hence to prove an "existent necessity," demands that we show a fixed or regular behavior among objects uninfluenced by a thought-process. Now sameness in objects may embody a principle of such control in thinking, but in what its necessity may consist in the behavior (active relation) of objects, remains unillumined darkness for me in the exposition of causation under discussion.

"That there is a necessity in the existent world," however, I have come to take for granted; and in conclusion offer my reasons in support of the contention. In this I purpose a further independent contribution to the subject. (*a*) Mutually effective terms exist in contrast to terms that are mutually neutral. In the former case, *a* change appears, although *what* change remains *a priori* unknown. But the change, if the terms are mutually effective, *will* appear. The necessity works both ways. The change *will not* appear if our terms are mutually neutral. This is the first moment of a causal necessity as I have come to conceive it. (*b*) The second moment of a causal necessity presents itself in the fact that a given set of conditions *produces* but one given result; hence *any* terms taken at random

can not produce this specific result. (*c*) And the third moment of necessity is found in the fact that the *same* set of conditions will always have the *same* result. Hence we may conclude that *effective terms are bound up in a way of dependence and connection that neutral terms lack.* But what specific terms are bound up with what specific terms in this effective and in this neutral way, is, as I understand it, the aim of all science to discover.

Such "necessity," I hold, is of the "existent world"; but this existent necessity is not, of need, the only "necessity" present in an analysis of the causal situation. Other principles, abstract or what-not, as indicated above, enter and determine it as well. But with such corrections and suggestions as have been offered, I feel my reply to Professor Sheldon may be brought to a close.

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REVIEWS AND ABSTRACTS OF LITERATURE

Bergson and Romantic Evolutionism. Two Lectures Delivered before the Philosophical Union of the University of California. A. O. LOVEJOY. Berkeley: University of California Press. 1914. Pp. 61.

Studies in Bergson's Philosophy. ARTHUR MITCHELL. Bulletin of the University of Kansas. January 1, 1914. Pp. 115.

Both Professor Lovejoy and Professor Mitchell are manifestly and confessedly very much influenced by Bergson, but neither is willing to be regarded as a follower of that philosopher. Professor Mitchell undertakes a summary and a criticism of the principal aspects of Bergson's philosophy, and his studies are largely concerned in pointing out contradictions, although he concludes with a high expression of appreciation. Professor Lovejoy, on the other hand, while admitting many logical flaws in Bergson's notions of time, matter, and the like, is minded to dwell not on these, but rather on that which to him constitutes the French philosopher's chief significance,—to wit, "that he has revived this hypothesis of Romantic, activistic, or radical evolutionism."

This hypothesis Professor Lovejoy welcomes as taking the place of the mechanistic philosophy of nature which has been in alliance with thinking on evolution, and through it he hopes to see the intolerable "spectacle of a 'block-world'" exorcised. "Bergson," he continues "has presented to us the future of a world which is at bottom alive, in which in truth there is at every moment 'something doing' and something to do; in which there is a striving in progress which all *our* strivings help or hinder; in which, finally, the future contains the possibility of unimaginable fresh creations, of a real and cumulative enrichment of the sum of being." This concept of an evolution which is a real becoming Professor Lovejoy finds will lead on to a new philosophy of religion, inasmuch as it will give

rise to a new concept of the relation between temporal, fragmentary existence and the supreme reality, God. He analyzes the historic views regarding this relation into five, as follows: (1) God is a Being superior in power and moral attributes, but, nevertheless, temporal and not properly speaking omnipotent; One whom man can oppose and who will fight with man to bring about a better order. (2) God is self-sufficient reality, perfect and supra-temporal. The temporal world emanates from Him and constitutes an imperfect unreal revelation of Him, yearning to return to its source. (3) God is perfect, but this perfection includes the partial and the relative. He is supra-temporal, but His eternal nature includes and subordinates time and its events. (4) God is a perfect supra-temporal Being, but not the efficient Cause nor the all-inclusive Unity involving the temporal and imperfect. Rather He is a final Cause who draws all life toward Himself. Tending toward God is not a return, for the temporal did not emanate from, nor was it caused by, the Eternal. (5) According to *radical temporalism* or evolutionism, God is only a God in the making. He is the *élan vital* which works through us to ever higher realizations.

Toward this last philosophy of religion Professor Lovejoy inclines, and he regards it as a natural outcome of Bergson's "Creative Evolution." It would indeed seem as though the "Creative Evolution" left no place for a perfect God in the real universe of time. Difficult as it is for the understanding to grasp the notion of progress dominated by a God who is non-existent, one must yet admit the appealing quality of a view of religion that leaves man something real to do and something as yet undreamed of to achieve.

Professor Lovejoy's lectures are charmingly written and will afford not only to the expert, but also to the layman in philosophy, a very clear and entertaining account of Bergson's views on evolution.

Professor Mitchell holds that philosophy is essentially a matter of reflection and that, in consequence, a philosophy based on intuition or immediate experience, is bound to be at last a contradiction. The contradictory positions into which Bergson's intuitionism leads him are displayed at length. Matter is at times ruled out of reality by Bergson, while again it is held to be only another type of the real known by the intellect; the abstract is inveighed against in favor of the reality of the thing, yet there is a "reification" of the abstract in the denial of the validity of any but immediate knowledge; quantity is denied to consciousness, yet at times quantitative predicates are subtly applied thereto, and so on. "A deep temperamental abhorrence of determinateness" seems to Professor Mitchell to be the dominent motive in Bergson and to preclude him formulating a definite philosophy. Notwithstanding this, our author declares Bergson to be preëminent among those who express our *Zeitgeist* in a demand for complete experience and in affirming "in theory the possibilities of an intense instinctive living as an answer to the riddle of the universe."

Bergson might well say of these two recent critics that, while he has offended their intellects, yet their intuition seems to have found in the

apparent contradictions of his pure duration and his creative evolution a fascinating reality.

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Die Religion der Griechen. ERNST SAMTER. Leipzig and Berlin: B. G. Teubner, 1914. Pp. 86 + 16.

This booklet, belonging to the series "Aus Natur und Geisteswelt," does excellently in brief compass what it proposes, to wit, to offer a short survey of Hellenic religion. Its title, I fear, is calculated to mislead the reader, who should be warned that our author does not offer a sketch of Hellenistic religion, a theme to which, as is proper, a separate volume of the series is to be devoted.

Dr. Samter's account is on the whole what one has a right to expect of a brief summary. Its limits preclude completeness and enforce a practise of selection of typical and important matters treated with sufficient fulness to avoid the appearance of a catalogue and with due regard to views generally accepted, because argument is out of place and novel views should not be put forth without full evidence. There are naturally many points about which scholars would differ, but they are minor and incidental. Thus the statement (p. 24) that the cult of Demeter originated in Thessaly, and (p. 28) that in Plato's "Apology" the judges in the under-world are represented as settling quarrels there rather than as sitting in judgment on the past lives of souls that descend to them, are both open to serious question. In the effort to distinguish between the religion of the common folk and that of the enlightened, whether artists or philosophers, Dr. Samter incurs the inevitable risk which besets any one who is compelled, as the historian always is, to take account of the spirit as well as the form in religion, with scarcely a hint as to the former except in the writings of the great leaders of thought. One may well question whether the common folk could rise to such heights as Æschylus, Pindar, and Plato, but how can one know what passed in the minds of the multitude when they performed their simple rites? The fairest dreams of the prophet grow out of the daily life of his people, and many an unheralded soul has seen visions and dreamed dreams. No historian can afford to ignore the mute aspirations and inspirations of the throng.

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La Conscience Morbide: Essai de Psycho-pathologie Générale. CHARLES BLONDEL. Paris: Felix Alcan. 1914. Pp. ii + 336.

In the first two fifths of the book the author gives analyses of seven cases which lead to the formation of a new hypothesis regarding morbid consciousness. Morbid consciousness is largely cœnesthetic instability, it is a rebel to logic, and refractory to our conceptual régime; it differs essentially from the normal consciousness and is *sui generis.* Of the difference between the normal and the morbid consciousnesses the morbid individuals are incapable of giving us information, "since their conduct

and language are in large part unintelligible to us." The normal consciousness, we are told, is fragmentary and distributed and is only an abstraction of the (suppositious) continuum upon which it depends (p. 271). Both the normal and the morbid have the same intensity, value, and activity, but the practical results of the two kinds of consciousness differ in that the normal consciousness "is capable of that conceptual distribution and organization, which collectivity, intelligence, and language . . . have adapted to the objective conditions of our existence among men and things." The case histories are worthy of study.

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JOURNALS AND NEW BOOKS.

REVUE PHILOSOPHIQUE. July, 1914. *Antour du Sens Musculaire* (pp. 1–39): J. PHILIPPE. – A suggestive study based on the introspective accounts of athletes, who are obliged to keep their motile sensations free from other sensuous admixture, while the accuracy of their sensations may be objectively controlled. Its conclusions bear on the formation and education of motile sensations, their various types, and their relation to types of motion. An essential factor in the translation of the idea of motion into action is the precision of the motile sensations, which must be adapted to the end in view. These sensations seem to "vanish in the measure in which the realized movement approaches its perfect form." There is some evidence for the existence of *sui generis* motile images. *Programme d'une Esthétique Sociologique* (pp. 40–51): CH. LALO. – "The normative science of art," esthetics, presupposes certain social conditions, of both esthetic and non-esthetic order, which alone render artistic judgment concrete. "Esthetic value . . . is a social fact. . . . A work is considered ideal when we suppose that it corresponds to the normal condition of a future technique." All art has a social function, namely, "the discipline of *luxe*," which, left to itself, is anti-social. *Grâce et Foie* (pp. 52–70): G. TRUC. – The Catholic definition of belief implies a dispensation of divine grace, which quickens the dogma by inducing a state of assentive feeling in the believer. From the psychological point of view this emotive and intuitional state may be characterized as a spontaneous organization and synthetic harmony of feelings previously latent or subconscious. *Revue Critique: La Psychologie des Phénomènes Religieux d'après Leuba* (pp. 71–79): G. BELOT. – A favorable review which in certain points completes Leuba's ideas. The reviewer takes exception to Leuba's conclusions as to the future of religion, which do not agree with the author's own definition of religious activity, and points out the necessity of a sociological inquiry to supplement the psychological. *Analyses et Comptes Rendus.* Ingenieros, *Principes de Psychologie Biologique:* TH. RIBOT. Hans Vaihinger, *Die Philosophie des Als Ob:* M. SOLOVINE. Ch. Fiessinger, *La Formation des Caractères:* FR. PAULHAN. H. Le Savoureux, *Le Spleen:*

L. DUGAS. Arnold Pick, *Die Agrammatischen Sprachstörungen:* PH. CHASLIN. Maurice Halbwachs, *Quetelet et la Statistique Morale:* JANKÉLÉVITCH. Eugène Lévy, *L'Évangile de la Raison. Le Problème Biologique:* JANKÉLÉVITCH. George Chatterton-Hill, *The Sociological Value of Christianity:* G. RICHARD. *Fausto Squillace. La Moda:* J. PÉRÈS. *Revue des Périodiques Étrangers.*

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NOTES AND NEWS

HENRI LICHTENBERGER, now French Exchange Professor at Harvard from the Sorbonne, is an Alsatian, having been born in Strasbourg in 1864. His native tongue, therefore, is French, though he learned German very early while attending the German *Gymnasium*. His family, as so many of that region, soon after the war decided to leave that unfortunate province, and went to Paris in 1876 where, shortly afterwards, Henri Lichtenberger took the regular courses at the Lycée, and was from that admitted to the Sorbonne. Having at this time chosen as his special field the study of Germanic thought and literature, he returned to Alsace and studied at the University of Strasbourg from 1884 to 1887. As soon as he had completed his studies Mr. Lichtenberger was appointed professor at Nancy. Here he remained until 1905, when his writings and renown secured him a professorship at the greatest of French universities, the Sorbonne, where he has taught ever since. Mr. Lichtenberger's name is probably more closely associated with the modern philosophy than with the literature of Germany. In fact he found himself at an early age very much attracted by the teachings of Nietzsche, whom he has since made his special subject. Indeed it can be said that he was actually the first scholar to discover Nietzsche, and to realize the importance of this new thinker, whom he has explained and interpreted, according to the judgment of Nietzsche's closest friends and disciples, better than any one else. The writings of Professor Lichtenberger are many and their variety shows a remarkable breadth of learning, ranging from studies of medieval legendary lore to modern philology, from the appreciation of romantic

poetry and music to the history of contemporary German civilization. The following list will give an idea of the labors of this French scholar: 1891—"Légendes des Niebelungen"; 1895—"Histoire de la Langue Allemande"; 1898—"La Philosophie de Nietzsche"; 1898—"Wagner, Poète et Penseur"; 1905—"Henri Heine, Penseur"; 1907—"L'Allemagne Moderne et son Évolution"; 1912—"Novalis." During his stay at Harvard Professor Lichtenberger is giving two courses, one on Nietzsche and the other on "Renan et le Nihilisme Intellectuel Contemporain." The former is open to the public.

WITH the appearance of its October number the *Mid West Quarterly* begins its second year of publication. It may be said without affectation that it has been a means of communication between the universities and the thinking public from which communication both factors ought to benefit. It was established that serious literature might find a journal, serious literature which is not the expression of minute research nor over-detailed speculation. It is rather a magazine of cultural opinion; its articles have ranged from logic to history. The man who is not a professional schoolman, but who, nevertheless, does not deem himself thereby excluded from thought ought to find in its pages a continuous stimulation. So too ought the university man, who is in greater danger of losing his soul, to find a constant reminder that he is really living in a society and in a society with more than one interest. This satisfying of a diversity of interests will make the *Mid West Quarterly* distinguished among its fellows which restrain themselves by defined programmes. It is not held to one kind of opinion nor to one kind of expression. The radical as well as the reactionary is welcome to its pages. By some readers this will be thought a lack of "editorial policy," by others it will be thought the perfection of editorial policy. However one looks at it, he can not fail to sympathize with any effort to fit the university into life, and if the *Quarterly* does that alone, it will have accomplished a great deal.

ON October 19, Dr. C. E. Ferree, of Bryn Mawr College, gave a lecture before the Section of Astronomy, Physics, and Chemistry of the New York Academy of Sciences on the Efficiency of the Eye under Different Conditions of Lighting.

FREDERICK G. HENKE, PH.D., Chicago, professor of philosophy and education in Willamette University, Salem, Oregon, has been appointed acting professor of philosophy in Allegheny College.

AT Oberlin College, Dr. George R. Wells has been promoted to an associate professorship in psychology and Dr. E. M. Kitch has been appointed associate professor of philosophy.

THE Congress of Neurologie and Psychologie, which was to have convened in Berne on September 7, has been indefinitely postponed.

J. CROSBY CHAPMAN, PHD., Columbia, has been elected assistant professor of experimental education at Western Reserve University.

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THE POWER BEHIND THE THRONE

NEVER in human history has visible authority been so widely and so thoroughly discredited as at the present time. Not that the monarchies of the world are necessarily tottering, although some would have it so. Not that the recognized constitutions, written or unwritten, of the world's democracies are become or are fast becoming so many dead letters, although open unconstitutionalism and its attending violence are by no means confined to the more southern Americas. Not that formal creeds and visible institutions or traditional rites and symbols no longer have any honor and power among men, although unconventionalism is plainly an affection of every department of human interest from the highest even to the lowest, from the conduct of the spiritual life to the conduct of the physical life.

But simply and emphatically I would say this. The formal is now subordinate to the vital, as never before. Visible form, positive law and order, enthroned authority, with all the attending artifice and machinery by which men have so long been disciplined and educated, is yielding to the urge of a real life that at last insists on being wholly free. Not more truly than ever before, but more openly, more with human understanding and by human consent, nature rules. And nature—how commonplace to say it—has always been the power, or at least the scepter and instrument of the power, behind the throne. Now boldly appearing in her rightful character!

The change is easily misunderstood. Already it has been seriously misunderstood in many quarters; in thought and in practical life; and this, probably because it is only at its dawn, not by any means at its high noon. Some may even insist that I have risen from the complacency of the old order quite too early for any significant view of the coming day. Yet I think not; and the misunderstanding, already serious, as I have said, is my—what shall I call it?—my alarm-clock. Thus so many are already restless with fears of pending disaster and decline. They jump to the conclusion that the change is in the direction of what is only material and sensuous. They dream that visible and enthroned authority in all

its many and various forms is meeting or is on the point of meeting a sudden and horrible death. But really does the dawning rule of nature mean decline or advance,—something material or something spiritual? Is visible authority, too, henceforth to have no place?

Certainly the material side, involving decline and even destruction, has been very obtrusive. Pulpit and home, book and newspaper, stage and street, the painter's canvas and my lady's dress, the composer's score and the people's songs, the counting-room and the market-place, have all had their flagrant parts in the license of the time. Intelligibly, if not intelligently, all have joined in this protest: "The age of formal discipline is past; the day of mere machinery is no more." And good people, human life over, have been greatly shocked.

Now five hundred years ago in a great Protestant uprising men were also setting themselves against formal and vested authority, but, for good or for ill, the movement of that time was insignificant in comparison with the movement of to-day. To-day's Protestantism surpasses that of the fifteenth century by as much as to-day's science and to-day's industry, which in their large way and with their soulless rationalism have also thought to render life institutional, to make it formal and mechanical, just for being so much more comprehensive, have been more tyrannical than medieval church or state ever dreamt of being; or, again, by as much as the mathematical method and spirit, only a sort of generalized and dehumanized legalism and dogmatism, have been more rigid and coercive than the old-time tenets and codes. It was one thing to assail an institution. It is quite another thing in the cause of vitality and freedom to assail reason itself. Visible authority has no resort left when reason, its last citadel or its holy of holies, has been invaded and profaned. To-day's Protestantism, then, and the violence of it, are very radical.

And, once more, the material side has been obtrusive. Offensive license has seemed to be the only meaning of to-day's rule of nature. But, emphatically, now as five hundred years ago, there is another side and all people who are not blinded by being either hopelessly bad or too drowsily good can see it. Why forget history? Violence even at its worst, I venture to say, has always been so much cost of a well-nigh priceless treasure. Often, it is true, breach of the law may have been the law's undoing, but also it has been the only way to the law's fulfilment in independent life and character. Moreover, Christendom has not come to her present license precipitately, whatever the casual observer may be inclined to suppose. Back of to-day's Protestantism, radical as it certainly is, there is the deliberation of centuries. Only gradually, as precise dogma has been tempered by art, St. Augustine, for example, by Fra Angelico; and as art, so bound at

first to creed and institution, has been in its turn freed by naturalism and science, and these, finally, by the still greater breadth and the still greater depth of recent anti-rationalistic philosophy and its wandering, but also penetrating, informality of life and thought—only gradually, I say, has Christendom come to her present state. Her license, slowly and deliberately developing, is thus, as may be reasonably supposed, quite as truly the lawlessness of her best life, of her great spirit at last in the fullness of time set free from formal restraint, as that of a mere material violence. The material violence may indeed be, as was said, the cost, but not less also the opportunity. Throughout history has not cost, or price, been at once the root of all evil and the medium of all good? Could the spirit ever be truly free, if the flesh were bound? Not more certainly did the god Jupiter belong to the thunder and the lightning than the freed spirit of Christendom belongs to the present license and destruction.

The deliberate gradation is the important point; important by dint of the slow and cumulative preparation for freedom which it implies; and I must dwell upon it. Step by step the liberation has come about; the liberation and the growing violence attending the liberation. But what have been the steps? Partly I have already indicated them. In terms of the history of culture they have been, in order, formal and positive law; art with its graceful license under the formal law; rationalistic science; and philosophy with its seer's license even under the forms of reason; these cultural disciplines showing, as self-control and the power of it have come to Christendom, a gradual opening of conscious, voluntary human life to nature and her freedom. Other terms, however, may be used, proceeding from a somewhat different viewpoint and showing in particular not only the advancing culture and candor, but also the growing hardship and struggle, at once the ever greater freedom of the law and the ever more radical character of the violence by which for good or for ill the law has been broken. Thus there are what in another place[1] I have called the great battles of civilization; five in all, as follows:

1. The violent meeting of bodies, commonly with the use of arms and armor; when men, military and legalistic by nature rather than by clearly conscious intent, fight each other directly and in the open and for conditions and ideas not less external than their ways of fighting, for territorial domain and for local and visible forms and institutes of all sorts.

2. The subtler offense and defense, personally, of striking dress and pointed manners and, socially, of the fine arts and a cunning diplomacy, more sensuous than intellectual in its appeal; when men,

[1] See an article, "Five Great Battles of Civilization," in *The American Journal of Sociology*, September, 1913.

although still only imperfectly controlled physically, since they are not at all unlikely to carry weapons, however well concealed, and to draw them on occasion, have nevertheless acquired considerable self-control and the consequent harmony of an inner life as well as also a surrounding world that is harmonious, albeit still tensely and stormily so, and when, accordingly, they do their fighting, in large measure, not openly and directly, but at once inwardly and mediately.

3. The quietly rational game of standard methods and instruments; when men, their impulses and emotions at last under excellent control, have all the poise and the resulting power, personally, of conventionalized manners and dress and, socially, of once warmly and sensitively cherished institutes, become only useful means or instruments, and once sensitively living forms and rites become only the most prosaic symbols and cults, and when the world about them from itself being sensuously stormy and tense has shown its continued sympathy by also turning prosaically lawful and lifelessly mechanical—the world, obviously, of the rationalistic science and the coldly calculating industrial competition of our modern times.

4. The heroic adventure, showing philosophical boldness in both thought and life, of personal attitudes and of an equally broad and free natural life; when on every side, just as now, or at least very soon for Christendom, visible restraint or mediation of every sort has lost its power and, breaking away from law and order, from reason and form, or at best insisting only on the spirit of these, ununiformed men venture abroad boldly and assertively into a natural life that is at once too big and too deep for any formal expression.

5. The closing fight, finally, hardest of all and most worth while, for a free soil in the natural body; a fight with which the long arduous process of liberation, nature's *via crucis,* reaches its great climax, and with which also, if man only justifies the promise of his former triumphs, spiritual and material are at last fully identified or reconciled *in actual human achievement.*

So, as seems to me, has Christendom been fighting her way to the upper heights of civilization, her present pending battle being the fourth in the series. Yet some one objects to this view, declaring that in my optimistic passion for progress I am strangely oblivious of conspicuous and most disturbing facts. Open war, for example, of the sort represented by the very first battle, is far from lacking in these times,[2] and marks of reversion to more recent ways of fighting are plentiful. It is, then, inexcusable to claim such progress as I have seemed to insist upon. It is worse than idle to suppose that in any respect the past, near or remote, has been left behind or outgrown. But I am far from claiming or supposing anything of the

[2] This article was written before the present war broke out.

sort. Progress does not consist in leaving behind anything, but in carrying all things along and in growing, so to speak, not out of them, but into them. The present, in other words, does hold and ought to hold all the factors of the past, depending for its progress over the past on the values put upon them, on the control exercised in their use, on the mediate, instead of the one-time immediate, rôle which they have come to have; and the process of the battles, to which our present time is contributing its somewhat advanced part shows no dependence on eliminations at any one of its stages. Reversions, seeming or real, will come and must come, but, coming, they only help to force the issues.

But the process of the battles does show three things that are essential: Constant enhancement of man's inner life—due to the developing self-control; increasing power in the changing medium of expression; and violence or lawlessness of an ever subtler and more radical sort. Indeed, it matters not whether one sees the process in terms of the successive cultural disciplines or in terms of the sequence of battles. From either standpoint those three things, to say the least, need only mention to be quite apparent. Towards the close, it is true, when the acquired medium of expression, from comprising in order such things as law and open war, art and cunning diplomacy, science and competitive industry employ, has finally come to embrace the full free life of nature, all three may be quite hidden in an apparent reversion to mere naturalism. Naturalism, however, is or at least may be a very different thing towards the end of a civilization from what it was at the beginning. At the end it should be judged only as the climax and fulfilment of what has been long preparing. For all that the casual view may see, when the steps leading to it are overlooked, it may appear outwardly quite primitive and childish, quite instinctive and immediate, but in reality it must be or at least may be deeply spiritual, richly mediate, splendid in its inheritance of control and harmony and power. It is one thing to be able to use positive laws and humanly fashioned weapons; another to use the more mediate and more efficient devices of polite manners and the fine arts; still another to use rationally and objectively accurate measures, methods, and machines, all bringing men, if not yet to a vitally intimate, at least to a formal and mechanical acquaintance with nature and her applicable power; it is the supreme thing to use, or rather, the term use being too suggestive of some formally devised and so compromising tool, to *live* by right of understanding and developed character and will the unrestrained life of nature. In other words, man is great, of course, as a maker and user of laws and as a maker and user of machinery, but greatest when he has fought his way to the freedom and power, the inestimable power, of adopting nature as the medium of expression for his life.

And, going back, gradual and deliberate in its coming, the greatness of a life of just such supreme mediation, with the wealth of inner life that it must involve and also, as has to be added, with the proportionate danger of violence which the unprotected or unclothed naturalism must incite, is at last on the horizon of Christendom's dawning day. Witness, simply, to sum up, the present radical Protestantism; the rising open rule of nature; the insidious and subtle forms of violence of the times; and the history of Christendom's disciplines and battles.

But now, hoping that I have made it clear that there is at least as much spirituality as material character, as much possibility of progress as danger of decline, in the current wide-spread discrediting of enthroned authority and the attending lawlessness, I would take up another point quite as significant and certainly not less difficult to handle. Christendom, as has been said, is entering or is soon to enter the fourth great battle, or is, in general, preparing to meet nature at closest quarters and without apparent benefit, whether in offense or in defense, of any formal devices. Of her coming struggle, then, I would ask a crucial question: Who or what is to be the arbiter?

In the past, of course, each battle has had its peculiar arbiter. Might, brutal but constructive might, came first. Then artistic beauty, stronger among men even than sheer might. Then reason and its accuracy and mechanical efficiency. Now what? There can be but one answer to this question: Creation. Creative life, as creative as the life is free, as creative as at once spiritual and natural, is the new arbiter. Does not nature by coming forward from behind the throne, by asserting openly and with a radicalism hitherto unknown the supremacy of the vital over the formal, by becoming the medium of the freed spirit, make creation the only possible test of success?

Whence my second point: A time of creation must be momentarily at hand. Several centuries may make up the moment of which I speak; I feel no need here of measuring time by the clock; but, however long, into that moment Christendom has already entered. Her time of discipline is at its end. Her time of creation is at its dawn. Whether, in spite of all her history has given, she is ready for the supreme ordeal, who can say? Those who have most faith can only wait and watch, as the struggle, perhaps—as words are used—a death-struggle, proceeds to its still uncertain issue.

In former times great moments of creation have always brought into human life and its civilization the rude and alien under all the many guises in which this may appear, invading hordes of men being only one of the guises and being not necessarily the most important nor necessarily military in organization or purpose. Nature ruling, the spirit being free, the whole world must be thrown open, tradi-

tional divisions and boundaries and barriers of all kinds becoming no longer effective. A civilization's best spirit, if truly free, must be ready to receive strangers. Indeed, until strangers have been received, the liberation is not accomplished. So in the past the problem of creation, arising at the time of the liberation of the spirit, has always been also the problem of the coming of what is alien, and to-day few will deny that Christendom's problem is also that of such invasion. The opening of the Panama Canal is focusing attention upon this fact. Moreover, as heretofore, the alien which invades is really more than just what comes from foreign parts; and this, even if one escape the crudeness of thinking only of invading armies and merchants and articles of commerce and give some thought to invading customs and ideas. Alien invasions are always quite as much from within or from beneath a visibly, formally expressed civilization as from outside in the ordinary sense. They mark the appearance in a people's life of elements and forces long concealed there and suppressed or, if expressed, then only very privately, as well as the arrival of strange men and things and ways from far countries. As for the present civilization of Christendom, this, made transparent or diaphanous in many ways, but notably by what newspapers and magazines have been calling "publicity" and "muckraking," is now facing, not merely the many unusually serious problems of ordinary foreign relations, but also those of its own inner alien life. Christendom is at last become so openly foreign to itself that already in many respects, in politics, in morals and religion, in industry, in art, and in intellectual life, it finds itself disarmed when confronting foreigners.

And with an alien life thus pressing upon Christendom from within as well as from without, both the time of creation must very surely be at hand and there can be no lack either of positive material or of effective motive. Obviously creation without positively foreign material would be vain or empty and, should the foreign come from abroad and not also appear in and of the life at home, the creation would be blind; it would be only a result of wholly external fate, not in any way a result of native achievement; only the outcome of a supplanting revolution, not of a creative evolution. Material and motive, then, are both provided for. Men, too, competent to direct and inspire, are as certain to be born as life in general is sure to express its environment.

Nature rules. After centuries of discipline the spirit of Christendom is free or is soon to be set free. The life of Christendom being now manifestly foreign to itself and open to what is foreign, creation is at hand. And Christendom, if justifying her history, will meet the demand of the time by aiding whatever is foreign at home

or abroad to express itself naturally. Willing nature's life is the secret of creation in all history.

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THE PSYCHOPHYSICAL BASIS OF MORAL CONDUCT

WITH the increasing complexity of civilization the demands made upon the individual for a more perfect adjustment to society become correspondingly stronger. Consequently he often wishes that there were an established science of conduct with principles sufficiently valid and universal to enable him to regulate his behavior with reasonable assurance of its propriety in each instance. Therefore the demand for a scientific system of ethics is greater in our age than it ever has been before. This does not mean, of course, that such a system would make for more morality, but it would clear up many misconceptions with regard to such things as responsibility, reward, and punishment by establishing the *Ursprung* and *Ziel* of conduct.

That the *summum bonum* is the aim of all human endeavor is readily acknowledged by hedonists and idealists alike. The difference between the two schools lies in the definition of the highest good. The idealists claim that it is transcendental, extra-personal; the hedonists that it is inherent in the very nature of man. To hold with the former is to conceive the elements of ethics as objective in the sense that they are beyond the sphere of human influence, that they are immutable because impregnable to the assaults of a changing human nature, of a changing consciousness. Hedonism, however, does not rob these elements of their objectivity. It simply maintains that inasmuch as ethical concepts develop concomitantly with human intelligence their objectivity is inherent in human nature.

In this respect it appears that the hedonists are more logical than their opponents. For it is as idle to speak of duty, responsibility, obligation, etc., as extra-personal as it would be to talk of motion, adhesion, and gravitation as extra-material. Because these qualities inhere in bodies and are interlinked with the constitution of matter does not make them any more "subjective" than bodies themselves. Is chemical affinity any the less objective because it is to be found only in connection with atoms and never apart from atoms? Likewise with the hedonistic standard of conduct. Pleasure and pain do not lose their objectivity because they are part and parcel of consciousness. If, especially, it can be demonstrated that

they are the directives—the north and south poles—of the stream of consciousness, then they can not be relegated to a secondary rôle in a scientific system of ethics.

Spencer's doctrine that the good is coincident with development, and development is in the direction of greater psychophysical satisfaction, is not overthrown by Moore's attack, when the latter asks, "How do we know that evolution is in the line of progress? How can we tell whether development is good?" In reply it may be said that development is simply the name we have for the process of change from a conscious-arousing condition of less pleasantness to a conscious-arousing condition of greater pleasantness. And so long as we are able to say that state *A* is more agreeable than state *B*, or that it does not entail as much physical or mental disagreeableness as *B*, then no further arguments are necessary, nor can they be given, to prove that development is good.

If we wish to be scientific, we must conceive mental development as a process that starts with certain instincts and impulses biologically explained. The rise to active intelligent individuality takes place as a result of coordinations between stimuli and reactions. Gradually ideas (first the simple and later the complex), which at the outset were evoked by the environment, become more and more predominant as guides of action, because of their capacity to economize physical energy. Finally they achieve complete control over the activities of individual and race in accordance with the principle of natural selection. Thus our ideas ultimately come to the point where they commence to shape our environment and control our impulses. In short it is a circular process.

If we start with one of the lowest organisms, say the amœba, the first condition of consciousness met with is mere sentiency. It is not known whether this creature is able to experience what we call pleasure and pain. All we note is that it reacts negatively to injurious agents, *i. e.*, agents that are detrimental to its organic existence; but to make any deductions therefrom concerning affective states of consciousness is to run the risk of committing the psychologist's fallacy. In higher animals and in man, we know that such negative reactions are due to pain. Now, the essential cause of the states of consciousness corresponding to pain in every organism is intereference with any of the normal processes of which the organism is the seat.[1] This biological law is very important, for although meant to explain only physical attitudes, it is not unlikely that it may explain mental ones also.

There is one condition in reasoning to which, I think, all men will agree, though they disagree about everything else, and that is con-

[1] Jennings, "Behavior of Lower Organisms," page 332.

sistency. If, as a result of our study, it should appear that there is not much difference between the behavior of man and that of lower animals, then it must be admitted that either animals possess intelligence, foresight, and moral intuition, or else the attributes that go by these names are abstractions—a peculiar set of symbols that stand for certain psychophysical states, call them tropisms or what not, from which man is as little able to escape as he is from the law of gravitation.

Idealistic philosophers attach great importance to the fact that man is able to regulate his life on the basis of representative knowledge. And because the genesis of this knowledge is not as clear as we might wish it to be, it is claimed that moral attributes must exist objectively and independently of the judging consciousness. We find, however, that what corresponds to representative knowledge obtains even in the sea urchin. For example, this tiny creature naturaly thrives in shadowy places, yet if a shadow is suddenly cast upon it when it is exposed to light, it will start a series of protective movements, we are told, as if it "thought" that an enemy were pouncing down upon it. Likewise "infusoria reacts negatively to chemical solutions that are not injurious themselves, but which would become so if they were made stronger."[2] We have here activity corresponding to that of a man who flees at the sight of a dangerous beast. The question arises, does it differ in kind from the activity of a person who tries to avoid bad company, or who seeks to make a good name for himself, who tries to save a fellow-being's life, or helps to stamp out an epidemic at great risk to himself? The sight of a bear, as Jennings puts it, is not injurious in itself, but as preceding possible injury it leads to negative reactions on the part of the man. Do moral sentiments operate differently? Do we shrink from falsehood, covet truth, abstain from theft, encourage art for other motives?

There are two possible reasons why the man in question runs at the sight of a bear. One is that his transcendental ego tells him to flee—he has intuitive knowledge of the danger; the other that man as such has had painful experiences with wild beasts, and therefore the present individual runs away to avoid similar injury. This latter reason seems more plausible; because, in the first place, it is capable of experimental proof, and, in the second place, it is seen to operate in the phenomenal world. The man is impelled to run by the emotion of fear.

Now most psychologists agree that emotions had their origin in sensation and that they are intimately connected with changes in the vasomotor system. Proof of this is that when certain kinds of sensations are abolished, say organic sensations, as in aboulia, their disap-

[2] Jennings, *op. cit.*

pearance is frequently accompanied by a diminution of some or most emotions.[3] Under such conditions it is conceivable that a person would not run at the sight of a dangerous beast; and indeed, the case of Mary Reynolds proves this.[4] But the strongest proof, perhaps, that the emotions are the outcome of sensation is that their various types can be induced by stimuli in the form of drugs. Thus anger can be evoked by eating certain kinds of fungi, courage by eating the fly agaric, and fear by taking certain emetics. But if such uniform states of consciousness can be aroused by material agencies, there are certain psychic ones that are no less efficacious. For the only difference between bodily and mental pain is that the sensation in consequence of the transmission of the stimulus from the periphery to the sensorium is lacking in the latter.[5] In general, it has been found that excess or defect of emotional reaction is due either to excess or defect of sense-perception, or to an abnormal condition of the emotion-arousing musculature.[6]

It may be worth our while to pause and reflect on the above facts. Why is it that sentiments of affection for and loyalty to the same object exist in such different degrees—if not kind—among different people? The mention of home to one person may arouse a host of tender feelings and fond recollections, whereas upon another it may produce no effect whatever. Assuming that the two individuals in question have been reared under the same roof, have received the same parental care, the same training, and so on, we are forced to conclude that the difference in response to the same mental cue is due to unlike psychophysical states, and not to "wickedness" in the case of the one and "virtue" in the case of the other. Now, if instead of "home" we substitute such things as church and state, beauty and truth, and ask why different people react so differently to them, are we not justified in answering that here, too, the cause is psychophysical and not transcendental?

The feeling tone resulting from a percept or idea differs from that produced by a sensation only in complexity. Therefore it has a greater number of varieties. The emotional tone may be likened to a checkered shadow cast by a leafy branch. As the shadow is never stationary, but assumes a distinct pattern with the flutter of each leaf, so does the feeling tone differ with every change of percept and idea produced by the environment.

The feeling of attraction towards persons and things usually

[3] Ribot, "Diseases of the Will."

[4] James, "Principles of Psychology," Vol. I., page 381.

[5] Lange, "The Emotions," Rand's Classical Psychologists, page 672.

[6] Stoddard, "The Peripheral Basis of Emotion," *Brain*, Vol. XXVII., pages 509 ff.

takes the form of interest, desire, and the like; whereas the feeling of intellectual pain or repulsion expresses itself in the form of dislike or contempt. Ideas of welfare, whether personal or general, being the offspring of pleasantness, are associated with feelings of satisfaction, while the reverse is true for ideas of harm.[7] As these ideas or feelings generally shape volition, it is obvious that they are the fundamental elements involved in every phase of human conduct. They enable us to determine good and evil according as the conduct they lead to is promotive of pleasantness or unpleasantness. Even if we accept Titchener's theory that affection is an original mental quality, just as sensation is, we are still in a position to infer that precisely as sensation and perception are the basis of our cognitive judgments, so is affection the basis of our value judgments.

A few concrete examples will illustrate how pleasure and pain function in creating certain ethical values. It will be generally admitted, I think, that pity or sympathy is a good thing—good because it is promotive of harmony and life. But how does this sentiment arise? Professor G. Stanley Hall has conducted a psychological investigation which gives a fairly reliable answer.[8] Having asked the question, "What are the things which in real life arouse the emotion of pity?" he received over two thousand answers, the majority of which named *hunger* as the chief factor. It is significant to note "that children of the poor who know what hunger is in their own experience, have far quicker and more effective sympathies in this direction than children who never felt the pangs of appetite themselves."

These results coincide well with the more recent ones obtained by Powlow in his experiments on modified reflexes. According to his school it appears that not only our temperaments, but even our ideals, are probably shaped for us by a host of organic sensations of which we are entirely unconscious.

In Professor Hall's investigation it was found that children pity physical suffering, whereas adults pity psychical pain. "This is as we should expect," says the author, "for in children the higher mental powers are still undeveloped." Adults, on the other hand, having become "hardened" to the material world, are not apt to think of physical vicissitudes so readily. All this is psychological fact. Here is how it manifests itself in the social world in the form of ethics and political philosophy.

Political parties, both in America and in Europe, are, generally speaking, divided into two groups: the radical and the conservative. The programme of the former is logically characterized by Socialism, *i. e.*, its aim is to increase the material welfare of mankind by legis-

[7] *Ibid.*

[8] Saunder and Hall, "Pity," *Am. Jour. Psy.*, Vol. XI.

lative means, to abolish poverty and suffering, and to give to every man, woman, and child unlimited opportunities for self-development. The programme of the latter group is more abstract: it is to preserve existing institutions, such as church and state, to cultivate patriotism, charity, honesty, commercial patronage, and the like. Evidently there must be a fundamental philosophic difference between the people who constitute these two opposing groups. What is that difference due to? Looking over the rank and file of each group, we find that, as a rule, those who support the radical movement are young men, whereas those who support the conservative issues are more advanced in years. It would appear then that the same causes which operate to make children pity physical and adults mental suffering, also determine the political doctrines that men hold at different periods of their lives.

The religious conscience, conceived by some as one of the highest moral values, also has its seat in the psychophysical nature of man. "The sentiment of pity," we are told, "has played a rôle of supreme importance in the spread of Christianity. A description of the crucifixion of Christ, whether verbal or pictorial, will throw an audience into the profoundest state of pity and win converts by the score."[9]

On the basis of the foregoing evidence we are safe in forming the conclusion that human conduct is not as ideational nor intuitive as it appears, but is rather the expression of numerous instincts and emotions, themselves without any other moral quality than that which attaches to them *a posteriori* according as they do or do not relieve conscious tension.

Still the objection might be raised: Granting that the behavior of lower organisms is determined by pleasure and pain, granting that they tend to persist in activities that produce the former state of consciousness and avoid those which produce the latter, granting, furthermore, that the evolutionary theory is true with respect to the origin of emotions and sentiments—still may it not be possible that the attribute of being motivated by physiologically conditioned feelings has entirely dropped out of human nature in the course of development, so that now we act on the basis of abstract principles—perform our duty for duty's sake, love art for art's sake, and cherish ideals for their own sake? This is an important question, and it opens up the problem of what I shall call the short-circuiting of affective states.

Let us approach this problem analytically, as we have done with the previous ones. My thesis is that pleasantness and unpleasantness determine human conduct unconsciously, *i. e.*, feeling is a fundamental ingredient of all higher thought activities, though we are un-

[9] *Ibid.*

aware of it. Stout expresses a similar view, though I doubt if he would make the same application of it, when he says that "just as sound of some sort is never wholly absent from our experience, so in all probability do we never have a momentary state of consciousness which does not contain pleasure or displeasure. In a word, our total consciousness is never entirely neutral."[10]

According to the hypothetical question we have put to ourselves it would appear that pleasure and pain drop out of our moral ideals just as the sensation of crawling is entirely eliminated from consciousness when we have learned how to walk erect. If this is so, then the idealistic system of ethics must triumph. But it is not so. The analogy chosen does not hold when closely examined. For at no time in our walking career can we become conscious of crawling or of the sensation of crawling, whereas in our higher mental activities we can discover an affective state of mind at any time we choose. Therefore, the relation between feeling and conduct is more like that between conscious and unconscious motor activity. Let us examine a performance which, commencing with active attention, is reduced to a mechanistic basis. Typewriting is a good example, for it is both complex and familiar, and it has been made the subject of a psychological study.[11]

In the initial stages of this activity we have to go through such steps as reading the copy, selecting the word, spelling it out, looking for the keyboard, locating the proper key, bringing the proper finger to it, striking it with the right tension—and all with the closest attention, with the highest degree of consciousness. Thus far the analogy corresponds to the early relation between feeling and behavior. The final stage in typewriting consists in fusing the numerous steps mentioned into one activity. These disparate activities are so closely welded into one performance that the expert typist is entirely unconscious of words in their isolation; instead of that he carries whole phrases and sentences in mind; again, he is unconscious of spelling the words; and finally, he ceases to be aware of the relation between his fingers and the keyboard. Yet who will deny that the words exist singly in his mind? Who will say that he does not spell them out? Who will claim that his fingers are not kinesthetically related to the keyboard? The proof is that if at any moment he be stopped and asked to tell what he has in consciousness, he will mention these elements which seem to be non-existent, because for the time being they are on the level of mechanized cerebration.

Likewise with feeling as related to moral conduct: every principle, every ideal, every abstraction on which we act, though it be as

[10] "Manual of Psychology," page 14.

[11] Book, "The Psychology of Skill."

pure and transparent as the ether, will nevertheless be found to contain a feeling of satisfaction or dissatisfaction when we stop to analyze it. Nor is that feeling merely a part of the motive. Together with all its complexes and various shadings it is the very essence of the motive,—just as the perception of the word, the spelling of it, the touching of the right key—each and all of them constitute the essence of the typewriting process. In short, exactly as unconscious ideational cerebration is at the basis of physiological skill, so is unconscious affective cerebration at the basis of moral attitudes and judgments. Or to state the matter more briefly, our feelings, no less than our sense perceptions, become syncopated and condensed, and are thus developed into abstract ideals of morality. But our moral instruction commences almost as soon as we are born, and it can not be subjected to laboratory experiment; hence the *Ursprung* and *Ziel* of ethical conduct can not be determined as accurately as of non-moral activities. Hence, too, the apparent *a priori* character of ethical categories.

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PHILOSOPHY AND SOCIAL ATTITUDES

THE belief that social progress is possible is widely current to-day. This is not merely an ill-defined, popular faith, but apparently a carefully formed opinion of serious thinkers in social philosophy. Sufficient evidence of this fact is available in the stimulating paper of Professor J. H. Robinson[1] published recently. It is generally conceded that the belief in the possibility of progress is a distinctly modern attitude of mind; one of the few marks that distinguish our own age from that of antiquity. This very fact, it seems to me, constitutes an interesting problem in social philosophy. What explanation can be made of a difference in attitudes so striking? It is, I believe, worth while briefly to examine these attitudes in relation to the fundamental conceptions current at the time. If such an inquiry does not uphold any particular thesis, it should reveal *how* social attitudes are related, whether intimately or not, to the dominant metaphysical conceptions of an era, and thereby throw some light upon the foundation of our own social beliefs. By way of beginning we may be excused for passing in review, as briefly as possible and in somewhat broad strokes, the social attitudes of man, past and present.

In remote times, at least as far back into the past as imperfect historical records, cultural traditions, and the infant science of

[1] This JOURNAL, Vol. VIII., page 253.

anthropology enable us to find our way, we are met with an overwhelming sense of man's helplessness. Human beings can do nothing of themselves. The gods, the fates, or some superhuman power stands back of all things directing their motions. Other factors count for nothing. This helplessness is especially marked in man, unless perchance he be so fortunate as to have gained the assistance of some one of these powers. This he was enabled to do by threats, prayer, or magic incantation; there were varied means. The great religions that have come down to us out of the past all bear clearly the impress of this sense of man's powerlessness before the forces of nature. It matters not where we turn, we always find abundant evidence to support this opinion. The traditions of all peoples tell the same story. Ancient literature likewise bears witness to this. Whether we read Homer's description of the battles before the walls of Troy, in which the real combatants were *gods, not men,* or the story of the masterly exploits of Beowulf, who was so powerful only because Wyrd was on his side, the conclusion is ever the same. Whatever man accomplished was really the work of some higher power. The Christian doctrine of grace bears the earmarks of its origin. It is the vestige of a more or less instinctive belief probably once universal.

This view grew into another one. It is strikingly different in clearness; for it is the product of many years of reflection. But the fundamental conception central in the old instinctive view is still retained in the new, *man's helplessness.* It has found different expressions and, while by no means the dominant view, it is variously adhered to even to-day. A central and fundamental conception is that of eternalism. It matters little whether we turn to India or Greece, this conception is always present. The universe is conceived of as in some manner permanent. The doctrine is known to us in its Greek form. It held a privileged place in Greek thought and is the dominant note in the Greek tradition that enslaved the mind of Europe. Sometimes it took the form of a denial of motion, as in the case of the Eleatics, but just as frequently the permanence found expression more nearly in keeping with our ordinary experience. There was change, to be sure, but even the change was nothing but an eternal round. There was motion, but this was of circles, a perfection of some kind. Even in the philosophy of the flux, impermanence is but another and far more adequate conception of permanence. The law of the change is changeless. In Greek science the geometry of Euclid is the splendid expression of this way of looking at the universe. Thus we have a world of perfect geometrical conceptions that do not exist in our world of perception, but they point to the perfect, the complete, the permanent world that lies beyond our experience. This is the true world of Plato and succeeding theologians. It is only

in the most recent years that mathematicians have passed out of the limited view-point of Euclid.

How deep seated the permanence conception is in ancient culture is evidenced in the Stoic and Epicurean "ways of life." These two doctrines of life, whose roots extended far back into the past, were consciously based upon different metaphysical systems, but both alike constitute excellent expressions of the Greek conception of permanence. The good of life, says Epicurus, is pleasure. This can be attained by living simply and prudently. One must not undertake to *multiply,* but rather to decrease his wants. Take the universe and the social order as you find them; they are what they are. Cull from life the few moments of joy that chance allots you and be content with this. Against this doctrine is pitted Stoicism. But it must be observed that the central thought in each is the same—*self-control.* Both alike urge upon man the necessity of bringing himself under some law of self-restraint, some way of life. It is foreign to their way of thinking that man should try to order natural resources or shape social changes to suit the needs of man. While the Stoa thought of the universe as in some fundamental sense beneficent and Epicurus regarded it as indifferent, both alike looked upon it as *unalterable* for man. Any change that took place must lie within the narrow confines of the individual himself. There was no belief in progress such as exists to-day. It can hardly be denied that such an attitude towards the world and the social order arises quite naturally out of the Greek doctrine of permanence.

Christianity springs, philosophically speaking, out of Greek science. Here we have the ancient instinctive view of the world buttressed by the science and philosophy of Greece. But there is a recession from the ethical position just given. It is not merely nature and the social order that lie beyond the control of man, but *human nature* as well. The unalterable character of each receives strong emphasis. The permanent imperfection of human nature is set over against the permanent perfection of the divine. The contrast is glaring. Not only is all thought of controlling natural forces lost sight of, if indeed ever thought of, but all power on the part of the individual to order his own conduct is positively denied. Only through God's grace can man gain salvation. To believe in man's own personal capability was to boast in the face of a jealous God. The belief in the baseness and imperfection of man seemed to increase the glory of divine perfection. Christian Platonism says that all men sinned in Adam and continue sinners. All men are saved through grace by believing. But even this act of belief is no achievement on the part of man; it is rather the result of God's action upon the heart of the elect, those chosen of God from the beginning.

Such is the ancient attitude. Rising as an instinctive response of man to nature, it found support in human reflection the world over. It dominated Greek science and philosophy in the day of their glory and has passed down through the middle ages on to our own day. While still familiar to us all, it is no longer the dominating conception. Thanks to an original predisposition of man to manipulate things, and to the accidental successes due it, a new foundation for science eventually arose. Since then the ancient view of the world has gradually lost its control over the minds of men. This change naturally did not take place suddenly—indeed, it is still in progress—but for purposes of convenience we may associate it with the change from the old astronomy to our own. Instead of a world made once for all with its cycles upon cycles, man found himself in a world free in space. There was gradual turning from the permanence conception of the world to the conception of a world evolving in space and time. This change was supported and no doubt accelerated by man's conquest over nature. As this power over natural forces—in large part due to accidental successes—has grown and increased, the fear of the gods has decayed. Natural phenomena that once awed man into submission to the ancient doctrine of his impotence, now served a different purpose; control over them witnessed to his own power and intelligence.

The best evidence of man's change of attitude is funished by that part of human thinking which is by nature most conservative. Religion has become enlightened. While she has not in the nature of the case shaken herself free from the accretions of time and tradition, she has come to look upon *man as the transforming power* and God as his co-worker. The emphasis has shifted. In olden time man was sorely perplexed over his relation to the unknown powers, to his God; to-day man faces really for the first time the question of social relationship on its own account. Instead of an overwhelming sense of his own powerlessness to do in this world of human interest, we are met with an untiring confidence. Instead of a passive willingness to await the goods that were indefinitely postponed to another world, remote in time and space, even though eternal in character, he has set to work in the full determination to reap for himself here and now, and to reap goods not fabulous and mythical, but those substantial goods that condition the worthy life. Even in religious circles eschatology has fallen into disuse.

While such is in a sense the conservative expression, it must not be overlooked that the permanence doctrine still persists in many disguised forms. Many socialists, for example, believe that progress is inevitable. While it is important that individuals play their part, it is not absolutely necessary; for it is of the nature of human society to unfold in a given direction. This is the significance of the term

evolution to many minds, whether in morals or in cosmology. Such a view underlies the social attitude of certain other groups as well as of many individuals. What man does is not altogether indifferent, it is better to work in harmony with the manifest tendency of things; but at the same time the progressive unfolding is inevitable. It underlies an easy-going optimism that is wide-spread. These attitudes are all alike—the old permanence doctrine in a new dress. The world is what it is from all eternity; our temporal sequences reduce in the last analysis to some form of unreality.

But while this is true, happily this is no longer the dominant social attitude, as eternalism is no longer the dominant doctrine in metaphysics. There is, then, a genuine contrast existing between the social attitudes of antiquity and of to-day. While the description in such broad strokes as those above is frequently vicious, there seems to be little reason to question the characterizations given; in general they are true. What conclusions, then, are to be drawn from such a survey? In strictest sense none. What one believes, what an age, or people believe, is most surely not a matter of bare logic. This we all know well enough. Logic is much more likely to be used to bolster up an ancient, inherited belief than to found a new and reasonable one. We could hardly maintain that these beliefs, these social attitudes, rested in any logical manner upon contemporaneous metaphysical conceptions. For this reason we really have no good reason for asserting that individual ancients did not believe in progress; indeed, it is quite possible that many did. But it must be remembered that what we are concerned with here is the *characteristic* social attitude, not that of individuals, and our problem is the relation that existed between this attitude and the dominant doctrine of the era. Even such a hurried survey as the one just given seems to point to an intimate relationship. While beliefs are instinctive in character, this does not mean that previous experience and reflection play no part. The social attitude is the expression of just these. At the same time the social attitude may itself become rationalized; or again the attitude and its rationalization may coexist as the emotional and rational expression of a previous growth in knowledge. In antiquity, when man's knowledge was very limited, this ignorance with its consequent sense of helplessness found expression in a corresponding theory of the world, permanence, which in turn conditioned future social attitudes. In modern times man's knowledge has greatly expanded. This fulness of knowledge with its consequent self-confidence has found expression in a new theory, temporalism, which in its turn conditions a new social attitude,—the belief in the *possibility,* not the *certainty,* of progress.

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REVIEWS AND ABSTRACTS OF LITERATURE

La Philosophie Bergsonienne. J. MARITAIN. Paris: Marcel Rivière et Cie. 1914. Pp. 477.

Even to a reviewer whose prejudices are unsympathetic with those of the author, this work is impressive in its just comprehension of the difficult and uncongenial conceptions which it discusses, impressive, too, in its elegant and powerful analysis. These peculiarly critical virtues are the more impressive, at least if the reader's prejudices are against supernaturalism, because they are exhibited in a work whose primary motive is avowedly vindication of the orthodox supernaturalist account of truth. In fact, since, in this account, the church is the exclusive repository and dispenser of ultimate truth, and human obtainment of truth is conditioned exclusively on a prescribed attitude toward the church, an attitude irrelevant to any specifically critical virtues, the latter are more than impressive when displayed in the course of such an apology; they are anomalous, implicitly repudiated by the motive of such an apology.

Consider the following passage: "The most general cause of philosophic errors consists in a certain inversion of the order of intelligence at its limit, by which, instead of trying to conform to reality, it does its utmost to conform reality to itself. At this point it will admit no reality but such as it already knows; it rejects all proofs but familiar ones; it declares everything to be explicable by those data alone which it has in its possession. And thus it reduces immeasurable truth to a miserable 'reservation' of the already known" (p. 463). This repudiation of judgment "at the limit" of intelligence, to state it more baldly, condemns the disposition to admit no reality but such as intelligence is constitutionally capable of admitting, to reject all proofs that are unintelligible, to believe that being "had" is common to all that is had—how little related otherwise, is immaterial, to this discussion of supernaturalism, since the author rightly distinguishes orthodox supernaturalism from natural, or human, or secular, intellectualism just by denial *categorical* (in which there is no degree) of discursive attainment of revealed truth through any community with data of experience ("possessions" which we "have"). Experience is one thing, it seems; revelation so completely another that the meaning of possessing it differs *absolutely* from the meaning of "having" any datum of experience. If one says "possess" in one case, one should eschew the word in the other case.

Why, then, supernaturalist apologetics? For, apologetics are rebuttal of critical attack, and must, somehow, *apply* to it. If they apply, they are therein intelligible; if not intelligible, their applying is a vain thing. Now, one can not intelligibly relate the absolutely sundered, not even by antagonism. More than once our author holds Bergson assiduously to recognition that "truth is one" and one the way of truth; and that way, in page after page of vigorous Thomism, is maintained to be the way of intelligent understanding. The question is, why should such gallant, straightforward effort of intellect end in surrender to an ancient superstition essentially subservient to an ancient tyranny.

To show that Bergsonism is radically incompatible with the articles of creed essential to true and spiritual membership in the Roman Catholic Church—this object is never detached for a moment from the author's intention, and he who reads the book with an eye single to its light on the obscurities of Bergsonism will pass through many shades of amusement and impatience at the diligence of the arraignment of Bergsonism before the bar of Thomism. Certainly the arraignment is efficient. And at the same time, be it said, full justice is done to the distinction between "the Bergsonism of fact and the Bergsonism of intention." Part III. concludes the work with a studied elaboration of this distinction, and confesses that "if we take the doctrine not by itself, but in relation to the particular and contingent conditions of its conception, its truly fundamental principles appear rather as results, external necessities, dominations, to which the philosopher felt bound to submit; and from this point of view the main features of the doctrine become a very clear intuition of the vanity of mechanistic materialism and a determined disposition toward the philosophy of life and spirit" (p. 441). While the two Bergsonisms are "not absolutely incompatible so long as the second remains mere intention," they are, however, truly different, and in reality contrary to each other, the first destroying what the second would fain establish" (p. 442).

Whatever offense the secular-minded student of Bergson may take either at the pretensions of this book to limit human aptness naturally to "have" its data, or at the erection of scholasticism as the arbiter of truth, he must be grateful, in spite of all, for so discerning an exposition of the difficult and original doctrines of Bergson.

There are three independent studies, the first consisting of seven lectures delivered at the Catholic Institute of Paris, also published serially in the *Revue de Philosophie,* and treating Bergsonism in its *ensemble* from its own strategic viewpoints—its conception of philosophic method, its critique of intelligence, its conceptions of intuition and duration, of God, human nature, and freedom. The seventh and last chapter of this part throws upon all this darkness *"la lumière thomiste."* The first part is two thirds of the book. The second (published formerly in the *Revue de Philosophie*) is devoted to Bergson's evolutionism. The third part, on "The Two Bergsonisms," is an article published formerly in the *Revue Thomiste.*

The book commences with a sympathetic account of Bergson's outlook upon philosophy and the manner of his induction into his problem. Modern philosophy is product of the "rationalist" method, which the author explains to mean the pretension of individual reason to judge everything, irrespective of theological authority or philosophic tradition, or even technical competence, and to conform reality to itself instead of itself to reality. It is such a conception of philosophic method against which Bergson has reacted. His reaction has misled him into confusing an abuse of intelligence with its legitimate function of analysis.

His philosophic method arises from a radically original notion, that man's characteristic function is not knowledge, but physical construction. Knowing, for man, is painful and unnatural. An atrophied rudiment of this faculty is discoverable in us, however; by a strenuous "dilatation" of this "inner sense" we *can* achieve a very poor and elusive, but, so far as it goes, a true, immediate perception of one sample of reality, oneself, to wit. In such a performance there is sensible contact with what traditional philosophy calls our substance. What is thus seized is a "lived," a completely personal, private, unique bit of knowledge, nothing that, to speak strictly, is *statable.* One has to resort to metaphoric adumbrations contained in such images as "flux," "current," "duration," in order to suggest the nature of it. Bergson proposes to call this (avowedly unnatural) state of consciousness "intuition." Instead of substance, it reveals the nature of reality to be *pure becoming* or transition. Now, every statement, strictly speaking, falsifies this fundamental truth; for every statement is a judgment, postulating the law of identity, a law without valid meaning, for lack of static or substantial *being.* The "being" of intelligence is an illusion brought to pass in human consciousness through its domination by intelligence. A whiff of true knowledge by intuition shows reality becoming, never being. Becoming, then, is the source and essence of reality—creature, creation, and creator. And so the fact of intelligence and its illusion of stability in matter will have to be explained by this creative evolution of universal becoming. Well, the feature of this process that accounts for them is simply its interruption or inversion by an antagonistic principle which, somehow, is not antagonistic in the sense of being an independent opponent, but—in short, in some other sense! By this inverse process one phase of the universal onrush becomes more or less statically related to another: thus the illusion of rest and solidity in what is truly universal movement and flow.

"Aristotle's luminous and fecund distinction between potential and actual being" the author finds solvent to every dialectical difficulty with problems of becoming and motion. For instance: "All the argumentation of Zeno rests on the hypothesis that between two points there are an infinity of *actual* points," that space, that every continuum, is infinitely *divided.* But certainly not! Divisible, yes; not divided. Confusing the potential and the actual is the crux of the paradoxes of Zeno. But Bergson's answer to Zeno, that "all real change is indivisible change," makes the same confusion, supposing that, to say a continuum is undivided is the same as to say it is indivisible. Could not Achilles, if he wished, make two steps, or three, etc., *ad infinitum,* where in fact he made one? Does one reply that no such steps *are* the step which they are alleged to divide? Of course they are not! What of it? If you divide an apple into halves you annihilate the undividedness of the apple: is this supposed to prove that it was indivisible? It proves, on the contrary, that its undividedness was just the potentiality of its division.

The same Aristotelism overcomes the enigma of relativity. Being is not derivable from becoming; hence, precisely, the nihilism and bank-

ruptcy of a metaphysic of "absolute" becoming. But becoming, movement, change, passage from one to another state of *being,* one the potentiality of the other, derives, from the being of the states themselves, precisely the reality of these.

And by the same principle intelligence knows without deterministic paradox the freedom of the will. The free act "matures," in Bergson's own account, by the evolution of a process. Bergsonian "intuition" can see in this nothing but a *spontaneity,* which levels down human "freedom" into a character belonging even to inanimate nature, not to speak of the lower animals. But see in the willed act the actualization of prior intelligent potencies, and freedom becomes *undetermined by any particular good,* determined only by that absolute and universal good for which human nature, and human nature alone of all nature, is formed (formed in the strict Aristotelian sense, as well as any other sense: *i. e.,* the absolute and universal good is the "form" of human nature, its true actualized being). Sensible intuition knows the particular only. Intelligence alone knows universal good, and the intelligent will of man is, therefore, unique in the indetermination of its genuine freedom.

Such are fair samples of the author's vindication of legitimate intellectual analysis in the realm of life and motion. That the philosophy of intelligence is not characterized by disability in this realm, especially that it has not, as historic fact, been characteristically "fascinated by inert matter," that it does not run naturally to a geometric and materialist conception of reality—a universal mathematic—is sufficiently attested by the greatest of intellectualist philosophies. "Is not the philosophy of Aristotle and of Saint Thomas before all a philosophy of life, motion, becoming (albeit a philosophy of being), in so much that the doctrine of potentiality and actuality, which dominates it throughout, is born of the intellectual apprehension of motion; in so much that this philosophy has been charged with deriving its concepts too much from the things of life, and with exaggerating the importance of *spontaneity* and production of the *new* in the universe; in so much that its deepest analyses are applied to change, in its eyes the essential characteristic of our world" (pp. 46, 47)! It is characteristic of Bergsonism, on the other hand, to regard an abused or difficult instrument as worthless or as meant for a use other than its own.

This is seen in Bergson's regarding products of analysis as alien or "external" to that which is analyzed. As if, even if the *idea* is external to the object, it follows that the element of the object known by the idea is likewise external. As if the Parthenon were external to Athens! Bergson's critique applies not in the least to analysis, but to the absurd metaphysic which denies either the substantial *unity* of an *essential whole* or the *reality* of the relations between distinct parts forming an *accidental whole.*

The alleged immobilization and breaking up of the real by the concept is met by the scholastic distinction between the order of knowledge and the order of being. The simplicity and fluidity of an object can lay no conceivable constraint upon the states of mind by which they are known,

such that these must, also, *in their being,* partake of a corresponding simplicity or fluidity. Nominalism and radical empiricism are at the bottom of Bergson's critique of the concept. The concept for Bergson is an imaginative schema, an impoverished sensible percept stripped, so to speak, to its fighting weight (*"affectée à un usage pratique"*) and attached to a name. Bergsonism regularly confuses imagination and thought. Its critique of intelligence applies to imagination. Thus it accuses thought of seeing everything in space—which imagination does, but thought does not.

Bergson's "genesis" of intelligence could not be true, since the subject-matter is thus falsely conceived. An organ, a "thing" subsisting in a living being, may be accounted for by a process of evolution. Any such organic product of evolution moves in the concrete and particular, it deals with objects of sense and imagination. The function of intelligence is not action on matter, but knowledge of the formal essence of being. Thereby it were impossible that it should be true in one order of being and in another false. It is either universally true or universally false. We have, in this genesis of intelligence, and its restriction to an exclusive realm of being, an example of a characteristic vice of Bergsonism, to "hedge" between any yes and no, to try to save them both by an apparent yes together with a real no. Generally there is transition so subtile and agile that yes and no seem reconciled.

Intelligence is as essentially intuitive, in the proper meaning of the term, as Bergsonian "intuition." For the proper meaning of the term is immediate knowledge. As a fact, all we know is expressible, somehow or other, intelligibly. Of course, to admit this, Bergsonism would be required to maintain that all we know is false. If I conclude, "Man is free," from a rational demonstration, intelligence alone is concerned, not "intuition." But either the judgment expresses an intuition, and then the latter is just an intellectual perception, like the rational conclusion; or else it does not; but then the contradictory judgment, "Man is not free," is equally false because equally conceptual. The truth, that is, lies between—between yes and no.

Bergson's essential departure from traditional intellectualist philosophy is in the denial of being, the affirmation that fundamental reality is not, but becomes. And this spells bankruptcy. Hegel recognized that it is to conceive of the intimate nature of things as a realized contradiction. To deny the principle of identity as a fundamental law of reality is evidently to affirm that contradition is the very heart of reality, since the principle of non-contradiction is only the obverse of the principle of identity.

The search for God by means of the intuition of becoming ends, whatever the will of the searcher, in pantheistic atheism. The creation of human souls is a subdividing, into individuals, of the vital impetus, due to the antagonism of matter. Thus, in a sense, are souls ever being created which yet, in a sense, preexisted. And thus Bergsonism is a monism in which there is no *radical* distinction between spirituality and materiality.

Such persistence after death as Bergson attributes to the soul is nothing more than the physical inertia of an impulsive force in which souls, no longer individuated by material bodies, flow together into the totality of that impulse. A miserable counterfeit of Christian immortality!

Bergson approves of the distinction, by the philosophical systems, between soul and body, of their belief in the reality of the human person, the privileged place of this creature in nature, and his survival of death. But the attempt by intuition to establish these truths results only in words. Of the spiritualism of this philosophy all truth has evaporated; there remains only the monism of pure change.

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The Unconscious: The Fundamentals of Human Personality, Normal and Abnormal. MORTON PRINCE. New York: The Macmillan Company. 1914. Pp. xii + 549.

This work represents Dr. Prince's latest views in the field of psychopathology, a field in which he has done so many years of able work in America, despite indifference and adverse criticism. The book, which is written in a clear and careful manner, is designed to be an introduction to psychopathology, and, naturally, as such, deals almost entirely with the phenomena of unconscious mental processes. This is as it should be, for the unconscious is not only an important problem of abnormal psychology, but is preeminently *the* problem. Any discussion of the unconscious must necessarily lead into ramifications where elementary principles are bound to be abandoned. The book is based upon Dr. Prince's previous contributions to the subject, particularly his papers in the *Journal of Abnormal Psychology,* and it presents in an exceedingly lucid and well-ordered manner his own views on the mechanisms and functions of the unconscious. These views reveal a strong leaning to the French school of psychopathology, particularly as exemplified by Janet. As those who are familiar with the literature, and the active workers in the field can readily see, such views differ essentially and fundamentally from the conception of the unconscious as given by Freud and which has dominated the valuable and important psychoanalytic movement. Thus any criticism of the unconscious as given in this book must of necessity be compared with the psychoanalytic conception.

This difference can be summed up in a few words—namely, that while Dr. Prince's conception is broad, it is not deep enough; it does not take into complete consideration the profoundest wishes and desires of human personality. There is too much stress laid upon the unconscious as a distinctly neural process and not sufficient upon its psychic character,—too much upon the individual as a clear-cut entity, and too little upon the development of the individual, and the formation of adult characters from infantile mental processes. Such a conception as Dr. Prince gives, for instance, could be useful only to a limited degree in such universal applications on which the Freudian view lays so much stress, such as, for instance, the psychology of childhood, myths, folk-lore, literature, wit, etc.

Dr. Prince claims, too, that in the psychoanalysis of dreams and psychoneuroses symbolisms are artificially made by the analyzer, whereas as a matter of fact, the symbols are inherent in the dream or psychoneurosis and it is the duty of the analyzer to find them out and interpret them. That all dreams represent the fulfilment of wishes is also doubted, as the observations of the author have led him to believe that a dream may also be the expression of antecedent doubts, scruples, and anxieties. Dreams are for him a type of hallucinatory phenomena, possessing the same mental mechanism as hallucinations. From the Freudian standpoint this view is very questionable, as all dreams, if sufficiently analyzed, will be found to contain a hidden unconscious wish, of which the dream itself is merely the symbolic expression. Considering the importance of psychoanalysis, the scanty references to Freud, and particularly to his theory of dreams, are rather surprising in a book which is devoted to a general discussion of the unconscious.

Dr. Prince, however, has done a most admirable thing in that he shows conclusively, in contradistinction to the experimental psychologist, that all the facts of consciousness can not be reached by ordinary introspection, even in the hands of trained observers, and, secondly, that the phenomena of abnormal psychology can be correctly interpreted only by those who have had a long training in this field of research and a wide acquaintance with the mechanisms of the unconscious, in the same way that a correct interpretation of a Wassermann test or an Abderhalden reaction requires an intimate acquaintance with the theories and technique of either immunity or defensive ferments.

ISADOR H. CORIAT.

BOSTON, MASS.

JOURNALS AND NEW BOOKS.

THE PHILOSOPHICAL REVIEW, July, 1914. *The Psychological Doctrine of Focus and Margin* (pp. 389–409): B. H. BODE. – The conflict in contemporary psychology between the introspective method with consciousness as its subject-matter and the scientific method holding to a psychology without a consciousness is due to deep-rooted misconceptions. The introspective views, that consciousness is indefinable, but open to description, that the distinction between focus and margin is made on the basis of clearness and obscurness, that the distinction represents the sensory given and a marginal meaning, are inadequate. The distinction is explained by an analysis of thinking which represents the potentialities of the not-given as positive qualities of the given. *Pragmatism and Science* (pp. 410–429): WARNER FITE. – For pragmatism reason is dependent on desire. Desire is expressive of needs. The question is, therefore, one of the logic of needs. Instrumentalism stops short with practical needs, being disposed to emphasize "bread and butter" needs, holding that intellectual and spiritual needs are but these in disguise. But, it is maintained, needs, though practical and intellectual, are at the same time *social.*

Such a view must lead to a complete humanism. *Bergson, Berkeley, and Philosophical Intuition* (pp. 430–438): A. C. ARMSTRONG.—An examination of the address entitled *"L'Intuition Philosophique"* delivered by M. Bergson at the last meeting of the International Congress of Philosophy. Bergson illustrated his thesis that philosophical construction, itself the expression of philosophical intuition, is independent of time and circumstances by reference to the philosophy of Berkeley. Evidence, in opposition to Bergson's view, is adduced from *The Commonplace Book* to show that much of Berkeley's constructive work is in direct response to contemporary thought and problems. *Reviews of Books:* Alexius Meinong, *Abhandlungen Zur Erkentnisstheorie und Gegenstandstheorie:* WILBUR M. URBAN. Philip H. Wicksteed, *Dante and Aquinas:* LANE COOPER. Alfred Fouillée, *Esquisse d'une Interpretation du Monde:* WILLIAM ERNEST HOCKING. J. G. Fraser, *The Belief in Immortality and the Worship of the Dead, Vol. I.:* IRVING KING. Ostwald Kulpe, *The Philosophy of the Present in Germany:* M. PHILLIPS MASON. *Notices of New Books. Summaries of Articles. Notes.*

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NOTES AND NEWS

THE fourteenth annual meeting of the American Philosophical Association will be held at Chicago, Illinois, on December 28, 29, and 30, 1914, in acceptance of the invitation of the Philosophical Department of the University of Chicago. The Western Philosophical Association will meet in Chicago at the same time, and all sessions will be participated in by both associations. The Political Science Association also convenes at Chicago, and on December 29, in the afternoon, this association will join the two philosophical associations in a discussion of the subject of Democracy and Responsibility. Tentative arrangements have been made for a dinner and the presidential address at the Quadrangle Club on Monday evening, and on Tuesday evening there will be opportunity for dining with the lawyers, and for hearing the presidential address of the Political Science Association by Professor John Bassett Moore. In addition to the

joint discussion with the Political Science Association there will be a discussion by the two Philosophical Associations of the subject selected by the Executive Committee of the American Philosophical Association as the main topic at this meeting. This subject is "The Interpretation of Justice, with Special Reference to Problems Forced to the Front by Present Economic, Social, and Political Conditions." Leaders will be selected for this discussion, but it is especially urged that all members of the association give the subject their earnest consideration and offer papers on it if they wish. In addition to the two main discussions there will be the usual opportunity for a number of papers on miscellaneous subjects. Members of the association are requested to send to the Secretary, not later than December 7, the titles of papers which they wish to read and also multiple copies of abstracts in order that discussions may be arranged. Papers are limited to twenty minutes in reading, and abstracts to four hundred words. All titles sent to the Secretary are, together with the abstracts, submitted to the Executive Committee, that it may make up the programme. Membership blanks will be furnished on request, and should be so filled out as to give full information regarding the candidate's qualifications. They should be sent to the Secretary by December 23. In order that various details concerning the meeting may be arranged, members are urged to inform the Secretary if it is their intention to be present. At a later date information will be given concerning trains, hotels, and other accommodations.

(Signed) E. G. SPAULDING,
Secretary.

PRINCETON, N. J.

A SOCIETY for the study of the psychology of religion has just been founded in Nuremberg, the official organ of which is to be the *Archiv für Religionspsychologie.* Its committee consists of Messrs. A. Dyroff (Bonn), W. Stählin (Egloffstein, Oberfranken), H. Faber (Tubingue), O. Külpe (Munich), G. Wunderle (Eichstätt i. B.), A. Fischer (Munich). Membership in the society is open to all who are interested in the subject. A membership fee of 10 marks a year is charged and this fee entitles the member to receive free of charge the *Archiv für Religionspsychologie.* All inquiries should be addressed to the Secretary, Herrn Rep. Lic. Faber, ev.-theol. Seminar, Tubingen.

THE twenty-third annual meeting of the American Psychological Association will be held on December 29, 30, and 31 at Philadelphia, Pennsylvania. Upon invitation of the psychologists of the University of Pennsylvania the meeting will take place at that institution. The association will be affiliated with the American Association for the Advancement of Science, the American Society of Naturalists, and the Southern Society for Philosophy and Psychology.

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PSYCHOLOGY AND SCIENTIFIC METHODS

HISTORY *VERSUS* VALUE[1]

TWO principles are generally relied on as axiomatic in the popular philosophy of the day, viz., (1) that nothing is explicable except in terms of its history, and (2) that the value of anything is independent of its history. In the popular mind these two principles dwell side by side in millennial peace. But the mission of philosophy is to bring a sword as well as peace. It must not only reconcile contradictories, but it must also find contradictions where none would otherwise be suspected. Nor is it difficult to see in the two principles before us, in spite of intermixture of blood, the representatives of the two warring houses of empiricism and rationalism.

Unbounded faith in the omnipotence of the historical method is typical of nineteenth-century thought, just as faith in naïve rationalism is held to be typical of eighteenth-century thought. Such distinct representatives of popular thought as Carlyle and St. Beuve express it in aphorisms such as: "History is not only the fittest study, but the only study. It is the true epic poem and the universal divine scripture"—and "History, that general taste and aptitude of our age, falls heir in effect to all the other branches of human culture."[2] Though this wave of historicism was in its inception closely related to the romantic movement, and was supported by the authority of Schelling and partly by that of Hegel, it became in its conscious maturity predominantly positivistic,[3] realistic, and empirical, intimately related to the apotheosis of induction and distrust of reason which came in vogue after the first third of the century. In reaction to the boldly *a priori* Hegelian method of writing history and the vagaries of the *naturphilosophie* of Schelling's followers, there followed a general ideaphobia which reached its height when papers by Helmholtz and Clausius on the correlation of forces were rejected by orthodox physical journals as too metaphysical.

[1] Read before the American Philosophical Association, December, 1913.

[2] Carlyle, "On History Again"; St. Beuve, "Nouveaux Lundis," I., 103.

[3] *Cf.* Comte, "Cours de Philosophie Positive," VI., esp. chs. 1–6.

The empirical and realistic temper of this historical movement shows itself clearly in the writings of its acknowledged leader, Ranke, according to whom historical method consists not in passing judgment, but in gathering all the available data and finding the facts or events as they really happened.[4] "First of all we must understand the world, and then desire the good."[5] To attain this understanding we must distrust the employment of abstract principles, for "the spirit which manifests itself in the world is not of so conceptual a nature" (*begriffsmässig*).[6] The characteristic ontology of this mode of thought finds expression in Ranke's repeated assertion that "the genus appears only in the species."[7]

The triumphs of this point of view have led to the belief that all questions can be settled by appeal to history. Hence more or less lengthy historical introductions to all sorts of axiologic discussions are quite the fashion. As a rule it will be found that the historical introduction is very much like the chaplain's prayer which opens a legislative session or political convention: very little of the subsequent proceedings are decided by reference to it. But there have not been wanting brave souls who have taken the historical faith quite seriously and have actually attempted to make the historical point of view replace or supersede all independent method or standpoint of valuation. In our discussion as to the general relation between a theory of value and a theory of existence,[8] it is well to take note of these actual attempts to carry out the denial of the claim that the order of value is relatively independent of the type of existence we call historical.

We might, in passing, note as significant the fact that the more developed a science is the less use it makes of history. Thus history has no applications in mathematical investigations, and next to none in physical researches. With the recent growth of experimental and scientific methods in biology and the realization of the inadequacy of von Baer's supposed law about the parallelism between ontogeny and

[4] See the preface to his first book, "Geschichte der romanischen und germanischen Völker" (1824), and the appendix to the same, "Zur Kritik neuerer Geschichtsschreiber." *Cf.* his "Sämmt. Werke," Vol. 34, page vii. For Ranke's attack on Hegel see his "Weltgeschichte." ("Sämmt. Werke," Vol. 9, page xi).

[5] "Weltgeschichte," Vol. 9, page 236.

[6] *Ib.*, page xi.

[7] "Sämmt. Werke," Vols. 49–50, page 152. For useful collections of Ranke's theoretical views, see Nabaldian, "Rankes Bildungsjahre und Geschichtsauffassung," and O. Lorenz, "Ranke die Generationslehre und die Geschichtsunterricht." *Cf.* Wundt's "Logik," II., page 352 anm.

[8] This was the topic set for the general discussion at the above-mentioned meeting of the American Philosophical Association, and this paper was intended as a contribution to such a discussion.

phylogeny, the historical point of view has been losing the importance it once had in the study of life phenomena. However, we are to concern ourselves only with the values which are the study of the *Geisteswissenschaften.*

I

I. *Economics.*—In the economic field the question whether economic history can, of itself, give us a theory of value has been the object of a long controversy lasting over sixty years. In the middle of the nineteenth century, when the classical school of economics seemed to be suffering from intellectual anemia, the historical school arose first in Germany and then in England, in protest against the whole abstract or deductive procedure in this essentially human field. I am acquainted with no argument for humanism in philosophy which was not in effect applied by the historical school to the field of economics. Thus it was pointed out that the economic man is a mere abstraction, having no exact counterpart in time and space, that actual men are not selfish calculating machines, that economic action is a response to a total situation in which diverse uneconomic factors enter, and that economic systems are not static, but constantly changing, etc.[9] In the light of these considerations, it was boldly asserted by men like Knies and Hildebrand, Cliff Leslie, Ingram, and others that the abstract deductive method of valuation must be abandoned, and that only by historical methods can we get at the essence of these phenomena.[10] I need not on this occasion examine the counter-attack by the Austrian school, though Menger's "Untersuchungen über die Methode der Sozialwissenschaften" deserves to be better known among philosophers as a keen analysis of scientific method, and particularly noteworthy for its demonstration of the indispensable character of abstraction or isolation and deduction in all scientific procedure. For our present purpose it is sufficient to point out that when the leaders of the historical school came to such topics as the nature and function of capital, money, and credit, they invariably resorted to deductive or mathematical methods.[11] This was not, let it be noted, a mere personal failing or relapse into old or

[9] Comte, "Cours de Phil. Positive," VI., chs. 2–3. List, "Das Nationale System der Polit. Oekonomie" (2d ed.), pages i, li. Roscher, "Grundriss" (1843), preface; also "Grundlagen" (1877), I., pages 26, 31 ff. Hildebrand, "Nationalökon. der Gegenwart," page 209; also "Jahrb. für Nationalöknomie, etc." (1863), pages 5 ff, 137 ff. Knies, "Polit. Oekonomie von geschicht. Standpunkt," III., § 3, page 237.

[10] List, *op. cit.*, pages lix–lx, page 17; Knies, *op. cit.*, page 35; Cliff Leslie, "Essays in Political and Moral Philosophy," page 189; Ingram, "History of Political Economy," pages 237 ff; Ashley, "English Economic History and Theory," preface.

[11] Knies, "Geld und Credit," Pt. II., Ch. XII., § 2.

accustomed habits, but, as their followers now admit, a retreat from an untenable position.

Schmoller, the acknowledged leader of the present or newer historical school in economics, who was at first inclined to subordinate economic science to economic history,[12] now admits the indispensable character of the deductive method.—Nay, he goes so far as to admit that history has done less to extend the theory of economics than have its practical applications.[13] Similarly, the most creative mind of the newer school, Karl Bücher, whose investigations have opened up new fields in the relation of economics to psychology and anthropology, says, "The only method of investigation which will enable us to approach the complex causes of commercial phenomena is that of abstract isolation and logical deduction. The sole inductive process that can likewise be considered, namely, the statistical, is not sufficiently exact and penetrating."[14]

There is thus to-day an acknowledged consensus among economists that the attempt to make history supersede abstract or deductive methods of valuation has hopelessly failed.[15] Nor is the reason for this failure far to seek. The historical school was misled by the crude inductive theory of science according to which a collection of facts can of itself establish a theory. As even a chronologically ordered series of facts can not of itself establish causal relations,[16]

[12] "Zur Litteraturgeschichte der Staats- und Sozialwissenschaften," page 279.

[13] "Grundriss, etc.," I., pages 122 ff, and section 14 of his important article in Conrad's "Wörterbuch" (3d ed.), Vol. VIII., page 458. *Cf.* Toynbee, "Ricardo and the Old Political Economy," page 10.

[14] "Industrial Evolution" (tr. Wickett), page 148.

[15] It may be pointed out that even the more moderate hope of the newer historical school that a vast collection of monograph studies in economic history will supply a wider basis for economic theory has proved vain; and the foremost students of economic history admit that their work is only of secondary or indirect help to the student of economics. See Conrad's address in Vol. II. of "International Congress of Arts and Sciences," page 211. Veblen, reviewing Schmoller's Grundriss, says: "There seems no reason to regard this failure [of the historical school] as less than definitive." *Quarterly Journal of Economics*, Vol. 16, page 74. *Cf.* A. Voigt, in *Zeitschrift für Sozialwissenschaft*, N. F., 3 (1912), pages 241, 311, 383. Below, *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, 5 (1907), pages 482 ff. Hasbach, *Archiv für Sozialwissenschaft*, 24 (1907), page 29. Tönnies, *Archiv für Systematische Philosophie*, I. (1895), pages 227 ff. Pierson, "Principles of Economics," I., pages 33–36.

[16] For the possibility of causal laws in this connection, see Marshall, "Principles of Economics," I., Ch. IV., § 3, and Wagner, "Grundlegung d. polit. Oekonomie," I., § 83. As to the possibility or impossibility of "laws" in history, see Xenopol, "La Théorie de l'Histoire," Ch. IX., and K. Menger, "Untersuchungen," pages 146 ff. *Cf. Bulletin de la Société française de Phil.*, July, 1906, and July, 1907.

economic history can not be written except by one already trained in economics, just as geologic history can not be written except on the basis of established physical and biologic theories. By extending the sphere of known facts, economic history, doubtless, supplies us with an improved check or control over our economic theories. We are thus able to say that certain generalizations based on present-day conditions are not of absolute validity. But in itself history does not suffice, either for the settlement of controversial questions of economic policy, or for the establishment of an adequate scientific theory of value.[17]

II. *Jurisprudence.*—The contrast between eighteenth-century rationalism and nineteenth-century historicism was first and most sharply drawn in the field of jurisprudence. In opposition to all eighteenth-century attempts to change actual legal institutions in accordance with the rights of man (deduced from rational principles) the historical school of jurisprudence founded by Eichhorn and Savigny maintained the supreme or exclusive importance of historical study. Law, Savigny maintained, is always the expression of a deterministic development of a national spirit (Volksgeist). Hence history is not merely a collection of examples, but "the only way to attain a true knowledge of our own condition."[18] Hence, also, all legislation, like the Napoleonic code, not based on a complete knowledge of the history of law can be only worse than useless.[19]

A close examination shows that the pillars of this faith are four characteristic dogmas, viz., determinism, organicism, evolutionism, and relativism. (1) Since the past completely determines the present, "the idea that each generation can make its legal world for good or ill according to its power and insight is the essence of the unhistorical view."[20] (2) Law is not a separate affair, but is like language, the expression of the organic national spirit. Hence there can be no free borrowing or adaptation of the law of one people by another nation. (3) As each national spirit develops, it must pass through certain stages and (4) what is created in one stage can not be adapted to another. Hence legal institutions must be studied, not with reference to general or abstract principles, but with reference

[17] Gide et Rist, "Histoire des Doctrines Economiques," IV., Ch. I.; Lifschitz, "Die historische Schule der Wirtschaftswissenschaft," pp. 140–198, 254–288; Max Weber, *Zeitschrift für Sozialwissenschaft*, 1904, pages 374 ff, and *Jahrbuch für Gesetzgebung*, etc., 1905, pages 1324 ff.

[18] See Savigny's introduction to his *Zeitschrift für geschicht. Rechtwissenschaft*, I. (1815), page 4.

[19] Savigny, "On the Vocation of our Age for Legislation and Jurisprudence," sections 6 ff.

[20] Savigny, *Zeitschrift*, etc., page 4.

to the particular time and place under which they arose and functioned.

Much has been and is still to be said about these doctrines; but it is certain that though the historical school has been in the ascendency for nearly one hundred years, it has never succeeded in harmonizing them so as to present a consistent doctrine. If determinism is taken seriously, how can we attach any practical importance to the *historical knowledge* of jurisprudence? If we accept the doctrine of organic connection of all social institutions in the national spirit, how can we explain the fact that people *have* successfully borrowed each other's laws? For our present purpose it is, perhaps, sufficient to point out that history itself does not bear out this faith in the exclusive importance of the historical approach to jurisprudence. No one can dispute that under the influence of eighteenth-century theories of natural rights, the constitutional law, the criminal law,[21] and a good deal of the civil law of the world was radically transformed and improved. The Napoleonic code, framed by men who, as Savigny clearly showed, were grossly deficient in legal history, has successfully spread and has become the basis of the law of most of the European countries, various African communities, all of Latin America, Quebec, and Louisiana, and has exercised influence even on the German Civil Code,[22] while all the labors of the historical school, excellent though they be in point of thorough historical scholarship, have little to show that is at all comparable. The crude, unhistorical rationalism of Bentham stirred into life reformative forces in all branches of the common law, but the Anglo-American historical school (founded by Maine) has not a single reform or constructive piece of legislation of any magnitude to its credit.[23] Indeed, the historical school has been a positive hindrance to any improvement or enlargement of the law,—precisely because those who think of new problems exclusively in terms of historical analogies get tangled up in their own traces and think that what has been must remain forever.[24]

How can history help us to evaluate the laws of to-day or of proposed changes? How, for instance, are we to be guided in determining proposed penal legislation? The answer of the historical school is: that is sound which is in harmony with the general European or American tendency as revealed by history. But this test

[21] List, "Deut. Strafrecht," I., § 7.

[22] *E. g.*, in the doctrine of possession, § 932.

[23] Legalists sometimes draw a sharp distinction between law and legislation. But no one can really understand law apart from law in the making.

[24] It is one thing to understand how the complicated rules of evidence grew up, but quite another to answer the question whether the whole body of such rules might not advantageously be wiped out to-day.

taken seriously either bars all real changes, or else leads nowhere in particular. All real changes must be contrary to what has hitherto prevailed.[25] A historical study of the Roman law, or of our common law, may reveal to us exactly what Roman jurisconsults or English judges said and meant. But unless we are to suppose these worthies were endowed with omniscience, how could they have foreseen and solved all the perplexing and complicated problems which modern life presents? The actual efforts of the historical school to govern modern conditions with ancient texts has resulted, as Jhering and Pound have pointed out, in a series of pious juggling of irrelevant texts and old decisions made with reference to bygone conditions, or, more frequently, in an ultra-rationalistic shuffling of concepts—*Begriffsjurisprudenz*—which is none the better because it is unconsciously metaphysical.[26]

The historical school has thus not succeeded in eliminating the abstract methods of evaluation of the old natural law. By setting up the system[27] of the Roman or the common law as the embodiment of absolute principles valid for all times, it has simply substituted a conservative natural law for the old revolutionary or reformative one, presupposing the values of conservation instead of the values of creation or change.[28]

III. *Politics.*—The claims of history as the only basis of enlightened politics have been put forth so vigorously by historians like Freeman and Droysen,[29] that it has almost become an accepted com-

[25] Somlo, *Archiv für Rechts- und Wirtschafts philosophie,* Vol. III., pages 510 ff; Kantorowicz, *Monatschrift für Kriminalpsychologie,* Vol. IV., pages 79, 92 ff.

[26] Jhering, "Scherz und Ernst," especially essay entitled "Im juristischen Begriffshimmel"; Pound, *Harvard Law Review,* Vol. 25, pages 598–604; Ehrlich, "Grundlegung der Soziologie des Rechts," pages 295 ff.

[27] The "system" of the Roman law is a rationalistic construction due to Donellus in the sixteenth century.

[28] As to the failure of the historical school to avoid a "natural law" of its own, see Begbohm, "Jurisprudenz und Rechtsphilosophie," pages 280 ff; Stammler, "Die Methode der geschichtlichen Rechtsschule," pages 4 ff; Stammler, "Lehre von Richtigen Recht," pages 118, 135–136.

That the historical school has not really succeeded in refuting all standpoints of "natural law," can be seen in the present revival of "natural law" theories among jurists of the most diverse schools. See Ch. II. of Cosentini's "La Reforme de la Législation Civile"; Jung, "Das Problem des natürlichen Rechts"; Saleilles, in *Revue Trimestrielle du Droit Civil,* I. (1902), pages 80–98, and Charmont, "La Renaissance du Droit Naturel."

[29] Freeman: "Historical study does more than anything else to lead the mind to definite political creed." "History of Federal Government" (ed. Bury), pages xiv–xv. Droysen: "Especially is historical study the basis for political improvement and culture." "Principles of History" (tr. Andrews), page 56.

monplace. But the fact that history has always readily supplied weapons to all parties, democratic, monarchic, etc., has induced most modern historians to discard the hope of organizing the lessons of history into a systematic science of politics and to content themselves with aiming simply at discovering the truth as to past events.[30]

In practise, also, the knowledge of history is of comparatively little direct use to the statesman.[31] It is only a hopelessly amateurish spirit that would guide the policy of the United States by parallels drawn from the history of the Roman republic, just as the doctrinaire leaders of the Russian Revolution of 1905 expected Russia to go through exactly the same stages as France did after 1789.

Sometimes, indeed, we find a question of policy, like the veto power of our courts over legislation, argued almost entirely on the basis of history, viz., as to what were the actual intentions of the Fathers of 1789. But this argument, it need hardly be pointed out, derives all its force from the political maxim that it is well to do only what our fathers intended. It is doubtless a theoretical gain when the study of history destroys the naïve illusion that we can always wipe out all the institutions of the past and start out anew on a rational basis. To suppose, however, that what has been must always remain is equally vain. What is needed, and what history alone can not supply, is a quantitative social science which will deal not with absolute flexibilities or immobilities, but will enable us to compute the strength of social inertia and that of the forces available for change.

IV. *Ethics.*—In the attempt to make history the basis of ethics, we may distinguish two stages, the theologic and the biologic.

The attempt to derive theologico-ethical values from history begins with Augustine and his disciple Orosius, and continues to the middle of the eighteenth century in such works as Baron Bunsen's "God in History." Without doing injustice to the powerful intellect of St. Augustine, we may safely say that the attempt to make the facts of history prove the truth or validity of Christian ethics is convincing only to those who are determined to be convinced beforehand. To the devout Christian it may be difficult to see in the decline of the Roman Empire anything but the effect of the moral corruption of the ancient world, but the anti-Christian makes out just as strong a case for the contention that the decline of Rome was due to the introduction of Christianity and the spread of monasticism.

[30] Fustel de Conlange, "Études Historiques," page 11. F. York Powell, in Langlois and Seignbos, "Introduction to the Study of History," page xi. "Science has no other object than the truth, and the truth for its own sake, without regard to the consequences, good or bad, regrettable or fortunate, which that truth may have in practise." Gaston Paris, quoted by Masci in the *Rendiconti della Reale Accadamia dei Lincei,* XXII. (1913), page 376.

[31] Morley, "Notes on Politics and History," page 103.

Though the theologic coloring has now definitely disappeared from our histories and it is no longer in good form to use such phrases as, "And thus we see the hand (or finger) of God in history," the essence of the method persists with the slight change that biologic terms have replaced theologic ones. Instead of the City of God or "the far-off divine event to which all creation moves," we have the goal of progress, and instead of Providence we have the struggle for existence. But whether we use the old terms or the new, history remains a branch of apologetics, an attempt to justify the powers that have been victorious. The essence of the matter is the dictum of Schiller, *Die Weltgeschichte is das Weltgericht, i. e.,* the belief that if the facts of history are allowed to tell their own tale, they will, like the poetic justice of the old-fashioned drama, always show the suicidal character of injustice and the ultimate triumph of the worthier types of civilization. This belief seems to me to rest on a peculiar dullness to the pathetic and tragic elements in history, such, for instance, as the crushing of several types of civilization in western Asia and eastern Europe by the brutal power of Genghis Khan, the loss of Bohemian independence, or the crushing of the finer civilization of Poland and Finland by the semi-barbaric power of Russia. There is something inexpressibly brutal in the dogma of necessary universal progress[32] which is simply the old dogma that this is the best of all possible worlds in a temporal form, to wit, that every change in the world is a change for the better. Like other forms of brutality, this glorification of the historically actual is due to a lack of sympathy or imagination which prevents us from seeing all the finer possibilities, hopes and aspirations, at the expense of which the triumph of the actual is frequently purchased. The doctrine that right always triumphs is but an insidious form of the immoral doctrine that what triumphs (*i. e.,* might) is always right.

In terms of cold logic, my point is that all attempts to derive ethical values from history really presuppose or assume the very values to be derived. Suppose history capable of showing that certain courses of conduct lead to national extinction. That of itself can not give us an ethical rule except on the assumption that national existence should always be desired. As a matter of fact, a great deal of the seeming success of evolutionary or biologic-historical ethics in suggesting solutions of moral problems is due to the unconscious as-

[32] I speak here only of the idea of *necessary* progress. As for the claim that the facts of history show that on the whole humanity *has* made actual progress or improvement, I can only say that our knowledge of the past is too fragmentary and our social sciences not sufficiently advanced in quantitative determination, to enable us to add the diverse gains and losses with any degree of justifiable confidence. Our control over nature has, doubtless, increased, but that the value of life has thereby been always enhanced is extremely doubtful.

sumption which underlies all these attempts, that mere life (*i. e.*, biologic duration) or else the type of life which is the mode to-day, is the highest or most valuable end. It is sometimes said that history, the story of human success and failure, is the great laboratory of the ethics student. But unless we are in possession of some standard as to what we should consider success and failure, the experiments in our laboratory can have no meaning to us.[33]

The argument that the history of human morals is always an evolution from the simple to the complex, and therefore enables us to perform a real analysis of the complex judgments existing to-day, seems to me to rest on a very doubtful *a priori* basis. There is little historical evidence for this belief in the inevitable progress from the simple to the complex. When knowledge of the past increases, we find that progress is often in the direction of simplification.

At the last meeting of this Association, Professor Cox urged the teaching of an ethics that should be "an objective study of what has happened, not in the least of what ought to happen."[34] In support of this view, he urged that if we find, as a matter of fact, that certain things always happen, it is absurd to ask, ought they to happen. But this only means that the ethical point of view is inapplicable unless there be a real or imaginary choice. If the teaching of ethics can, as Professor Cox supposes, make people more ethical, he must assume the existence of real choice.

We may conclude, then, that nothing has yet been advanced that refutes the argument of Sidgwick, that the history of ethical opinion or practise can not be the decisive factor in determining its validity.[35]

V. *Religion.*[36]—In religion, the historical method has frequently been regarded as primary by orthodox and heterodox. Take such controversies as the historical existence of Jesus of Nazareth, or the question of a historical succession of the Bishops of Rome from St. Peter to Leo the Great. They seem to have far-reaching religious bearings, but can any one pretend that the religious values of these

[33] It should also be observed that laboratory experiments are of phenomena that can, with a measurable degree of accuracy, be indefinitely repeated. But historical facts are so complex that few historical situations are in any measurable sense alike. Nevertheless, history, as offering a field to which ethical concepts are to be applied and by which they are to be tested, is indispensable to the study of ethics.

[34] This JOURNAL, Vol. X., page 346.

[35] "Methods of Ethics," III., Ch. I., § 4. "Philosophy, its Scope and Relations" (especially the lectures entitled "Philosophy and Sociology").

[36] The genetic fallacy in the supposition that the history of art can supply the answer to the questions of esthetic valuation or critical appreciation, seems to me so clear that I shall pass over it. I may refer to K. Lange's "Das Wesen der Kunst," pages 13 ff, and Babbit's "Masters of Modern French Criticism."

questions would have arisen in the mind of an impartial student, for example, a Buddhist? As a matter of fact, the dogmas in question arose prior to all questions of historical research.

Religious liberals frequently claim that history is fighting their battle; and, doubtless, so far as orthodox religious teachings assume certain historical dogmas, modern historical research puts difficulties in their way. The history of Old and New Testament religion, based on the methods of the higher criticism, certainly removed extraneous artificial difficulties in the way of accepting their religious teachings. But can any one maintain that the higher criticism tends to make converts for Judaism or Christianity?

Problems of religious value can not be determined exclusively by history because the latter is dependent on psychologic and metaphysical consideration in determining what is held valuable in religion.[37]

VI. *Philosophy.*—Finally, we come to the history of philosophy. Since Hegel's attempt to present the history of philosophy as a rational system, the belief in the philosophic value of the history of philosophy has never lacked adherents. Indeed, in Germany there has been a marked tendency to sink all philosophy into its history, and in many of its systematic treatises the systematic part is a sort of appendix to the historical portion. Without denying to the history of philosophy a high value as a part of the history of culture or civilization, we may flatly deny that the truth of philosophic doctrines is dependent on their chronologic order.[38] Is it any argument for or against the truth of their teaching that Epicurus came after Plato, or that Sextus Empiricus came after Aristotle? I fail to see an argument in Epicurus that Plato has not met, or attempted to meet. Philosophic doctrines, in truth, have no necessarily continuous existence, and it can easily be shown that few of the great philosophers were acquainted with the writings of all their important

[37] Troeltsch, "Religionsphilosophie," in "Festschrift für Kuno Fischer," page 142.

[38] Those who believe that the history of philosophic doctrines can determine the question of their truth have seldom faced courageously the problem as to the nature of truth to which their position leads. If every philosophic system is an advance on its predecessors, we seem to be driven to the dilemma that either the historian's own point of view is the absolute truth and all previous systems but partial embodiments of it, or else that all views (including that of the historian) are true only relative to their time or epoch. Hegel alone seems to have had the courage to accept the first alternative and view his own philosophy as the final revelation of the absolute, so that henceforth no more history of philosophy would logically be necessary. The difficulties of the second horn of the dilemma are the familiar ones inherent in all theories which assume the relativity of knowledge.

predecessors. The attempt to present the history of philosophy as an independent continuous stream following out an inner necessary dialectic has many esthetic charms, so that it will always be attempted, but it has no claim as genuine history. Whatever philosophy be, it is not merely a branch of archeology.

II

In speaking of history up to this point, we have been assuming that there is such a thing as historical truth which is to be found in accordance with definite methods of historical search—that, *e. g.*, the existence of certain laws, economic practises, or ritual observances in the past is to be determined by definite evidence, and the fact that they are revolting or shocking is irrelevant to the consideration of their historical existence.

Such an ideal of history, however, is, as a matter of fact, difficult to maintain, for history is a fine art (a branch of imaginative literature) as well as a science. The actual data of history consists of contemporary facts in the form of remains and documents. Historical science consists in criticizing this material, *i. e.*, in applying the laws of probability to it. The result of this process is to fix a number of points through which the historical curve is to be made to pass. The invention of such curves must be the result of creative imagination closely akin to the dramatic imagination. The historical material, as it issues from the fire of scientific criticism, never of itself presents a complete picture. It either offers too little (as, *e. g.*, in the early history of Russia), or it offers too much (*e. g.*, modern Prussia). In the former case the historian has to supplement the facts before him with hypothetical ones—in which process he is obviously dependent on his general philosophy of life or schema of relative values; and in the second case, he must select from the great mass of facts those which he considers most important, which again involves a process of valuation—since importance is distinctly a category of valuation. Hence we can understand the fact that no great historian has actually succeeded in making the objective or the scientific motive eliminate altogether the tendency to edification; and all historians, consciously or unconsciously, make their histories preach the gospel of the particular party or epoch to which the historian belongs.

Now, there are two attitudes which may be taken to this personal or subjective element in history. We may try, as the scientific school of historians is doing, to eliminate or minimize it by definite rules, or we may glorify it as a principle, as Droysen, Treitschke, and

patriotic historians generally have actually done.[39] The attempt to do both frequently passes to-day as the evolutionary or genetic method in the social sciences. I have no opportunity in this paper except barely to indicate somewhat dogmatically that the genetic or evolutionary method in the social sciences represents an unstable mixture of incompatible elements of rationalism and empiricism.[40] Popular Hegelian dialectics, fortified by the analogy of biologic principles that are fast being discarded by those engaged in actual biologic work, gives a general formula of progress with distinct stages through which all social institutions must necessarily pass. Thus the family must everywhere have passed through the stages of promiscuity, group marriage, matriarchal and patriarchal clan, etc. Industry must everywhere have passed through the hunting, nomad, agriculture stages, etc. All this is bewitchingly simple, but the student who has been brought up on the mathematical and natural sciences finds in the mass of desiccated anthropological anecdotes that fill our treatises on social evolution nothing that can be called scientific evidence for the actual or necessary existence of these stages. Social evolution through necessary stages is a mythology, not as picturesque as the old theologic mythologies, but equally effective in quenching the thirst for genuine knowledge with the Lethean waters of the esthetic imagination.

Two concessions to historicism appear from the above survey: (1) that it has certain pedagogic value, and (2) that it may effectively negate values set up by absolutistic and unhistorical systems. Both concessions, however, ought to have a *caveat* attached to them.

1. That the historical or genetic method has alluring pedagogic value in such fields as economics, ethics, or philosophy can not be denied. Instead of analyzing a subject and dealing with its abstract elements (which always requires intellectual concentration), we clothe them with historical existence and present them as the necessary stages in a temporal process. The gain thereby is so great as frequently to justify some loss of accuracy and distortion of facts;

[39] "That bloodless objectivity which does not say on which side is the narrator's heart is the exact opposite of the true historical sense." Treitschke, quoted in Gooch "History and Historians," page 150. The requirement in the Prussian or our own public schools that history should be taught so as to foster patriotism leads as a matter of fact to the subordination of history to national apologetics.

[40] For criticism of evolutionism in the social sciences see Stammler, "Wirtschaft und Recht," pages 662 ff; Vierkandt, in *Zeitschrift für Philosophie und Philosophische Kritik*, Vol. 127, pages 168 ff; Diehl, in *Jahrbüchen für Nationalökonomie*, Vol. 83, pages 823 ff; Tönnies, in *Archiv für Sozialwissenschaft*, Vol. 19, pages 88 ff; Sidgwick, "Philosophy, its Scope and Relations," lectures 6–9.

and we say that the letter killeth, but the spirit reviveth. A certain amount of conventionalization seems absolutely necessary in all teaching; but the danger of the genetic method, like that of legal fiction, is that the teachers themselves may grow to believe it true. Thus the myth about the stages of industry, hunting, nomad, agriculture, etc., is taken so seriously that an attempt is made to build a system of education on it (I refer to the culture epoch theory). Again, it is its pedagogic attractiveness that causes so many people to believe the baseless dogma that all history is an evolution from the simple to the complex. The slightest familiarity with the facts in the history of language or law shows that if any absolute generalization must be made, it should rather be that we are dealing with growths in the direction of simplification.

2. Historical arguments frequently seem most effective against absolutistic theories of value. Thus if it is claimed that an aristocracy alone can give us good government, it seems relevant to point out the eggregious selfishness and inefficiency of the English, Polish, and Venetian aristocracies. But the adherent of aristocracy is not thereby silenced, since the follies of former aristocracies may be ascribed to any one of the numerous circumstances under which the aristocracies of former days functioned, but which no longer exist. There is doubtless a strong probability that any one who, through history, becomes acquainted with beliefs and practises other than his own, will no longer affirm with such unquestioned assurance that his own beliefs and practises are the only ones possible, or even the best possible for every one at all times. In this respect history, like human geography, widens the social and intellectual horizon. But no one seriously questions the value of history as a genuine method of extending the span of our experience. Doubtless, also, the wider experience will enable one, as a rule, to judge more wisely in questions of value. But to expect that on any controversial question of to-day the teachings of history can be decisive, seems vain. The contention of some leading teachers of history, such as Professors Robinson and Seignbos,[41] that history favors the values of change or reform by curing people of the morbid dread of change, can not be accepted as universal. History seems impartial and readily supplies aid and comfort to both sides. Any one with sufficient enthusiasm for half-truths (which characterizes most controversy in this field) can readily give the appearance of finality to the contention that rationalism is revolutionary, and historicism, with its tendency to glorify the actual, is the refuge of the conservative. In politics ardent reformers or revolutionists are almost always firm believers in principles, while

[41] Robinson, "The New History," pages 252 ff; Langlois and Seignbos, "Introduction to the Study of History," pages 320–21.

the conservative is always drawing lessons from history that these things have never been and are not, therefore, practicable. In jurisprudence, both German and American historical schools find their reason for existence in their opposition to the revolutionary codifiers. Professor Robinson cites the use of history by the socialists, but this instance is rather instructive the other way. Socialism as a concrete human movement reflects, of course, the mixed and complicated motives which characterize actual human conduct. Political Marxism, however, is a fixed philosophy capable of definite analysis. Now the Marxian programme was, in his mind and in that of Engels and of all their orthodox followers, sharply opposed to the older revolutionary socialism of St. Simon, Fourier, etc.[42] Marx and Engels laugh at these rationalists who would establish all things on principles of reason and thus rest the world on its head. They insist, over and over again, that the past can not be wiped out and that only through history can we see the future. The consequence of this was that under the influence of the Marxian political programme socialism ceased to be really revolutionary. As a political doctrine it no longer asks its adherents to do anything to bring about the social revolution, but only to keep the faith and wait for the catastrophic day of judgment—a political quietism like the Lutheran or Calvinistic distrust of good works, and an abounding faith in the omnipotence of the economic deity. Indeed, Marxism became dominant in the socialistic movement only after the failure of the revolution of 1848 and of the Paris Commune, when events showed the inferiority (in open conflict) of disorganized though enthusiastic revolutionists to a disciplined soldiery. In countries like Spain and Russia where, for various reasons, the revolutionary embers continued to smoulder, Marxism never received the same ascendancy which it did in the more peaceful countries. Revisionism and syndicalism to-day indicate that socialists are beginning to be dissatisfied with a religious peace purchased at the price of practical political disenfranchisement.

The foregoing survey touches more ground than I can satisfactorily cover in the time allotted to me. But perhaps I have indicated enough to suggest the conclusion that historicism, like its sister materialism, while professing empiricism, is really the offspring of vicious rationalism. Both are obsessed with the dogma that only the factual can have true being. The attempt to banish real possibilities from the world results in the common dogma of determinism. But if everything which is to-day is completely determined by its past, there can be really nothing new to-day. And if there be nothing new

[42] See especially Engels, "The Development of Socialism from Utopia to Science."

to-day, neither was there anything new yesterday, and history is lost in rational mechanics.

The denial, on the part of historicism, that there may be any order of values independent of historical sequences, is ultimately based on the nominalistic dogma that only particular entities in time and space are real. But values, like mathematical relations, may involve characteristics independent of the time order. This independence does not, of course, deny their intimate union in our common life, but it warns us against straining the principle of parsimony by trying to sew the vesture of the universe out of a single piece of cloth, or trying to weave that cloth without having the threads cross each other. Value and historical existence are independent of each other in the same sense that the two blades which form a pair of scissors are independent of each other. Both are necessary and intimately connected, but neither can absorb or, by a process of sublimation (*aufhebung*), transcend the other.

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REVIEWS AND ABSTRACTS OF LITERATURE

Schopenhauers Erkenntnislehre als System einer Gemeinschaft des Rationalen und Irrationalen: Ein historisch-kritischer Versuch. HEINRICH HASSE. Leipzig: Verlag von Felix Meiner. 1913. Pp. 217.

The title of this book indicates its purpose and scope. The author has very carefully collected and arranged quotations from Schopenhauer's various writings, and from these has attempted to discover or construct a more or less coherent "system" in which knowledge through the ordinary channels is brought into correlation with a kind of awareness of a different sort and from another source. On the whole it turns out that Schopenhauer was very much more explicit in stating the antithesis and opposition between these realms than he was in coordinating them. It is, however, abundantly evident that he places the chief emphasis on the non-rational or non-reasoned, as this gives us not mere knowledge about reality, but introduces us to an intimate participation in this very reality itself.

As this question has been the storm center of recent discussion between neo-Hegelians and various so-called pragmatists, Hasse's careful exposition of the great opponent of Hegel may help to give some historical background, and perhaps, also, some light on this very live issue.

The author tells us in his short "foreword" that he completed his book on Schopenhauer just one hundred years after the appearance of the "Vierfachen Wurzel." In many other ways he indicates that he is an admirer and consequently a sympathetic expositor of Schopenhauer. He states explicitly that he has no stomach for the usual superficial hunting of contradictions, but that he is much more concerned to discover, if pos-

sible, the real harmony. Near the end of his book, however, when he is summing up the results of his inquiries he has to confess that it has been a pretty difficult task to bring into agreement the two sides of Schopenhauer's teaching, so radically are they opposed the one to the other.

In stating the relation of Schopenhauer to Kant, the clear and careful statement of Kant's position by Alois Riehl is closely followed and acknowledged. Nevertheless, one feels a little disappointed to find that Kant's teaching is referred to only so far as is necessary to state the problem he formulated for Schopenhauer. One would perhaps expect some notice taken of the fact that Kant also wrote a theory of the beautiful and a book on the will in which in his own way he made at least some attempt to meet the difficulty that confronted Schopenhauer as he became aware of the negative results of the famous "dialectic." The limitation of all our "knowledge" to the realm of the phenomenal in the teaching of Kant gave to Schopenhauer the call to go on the quest of the Holy Grail, the attempt to reach in some way the transphenomenal.

In the interpretation of Schopenhauer many hints are taken from the writings of Raoul Richter, to whom the book is dedicated. The polemical part of the book is reduced to the smallest dimensions by simply stating in the footnotes where well-known Schopenhauer expositors are in harmony with or differ from the author. A pretty complete bibliography on Schopenhauer might be collected from these footnotes.

The book is divided into three somewhat unequal parts. In the first part, after discussing the relation of Schopenhauer to Kant, an attempt is made in a general way to close in on the various meanings of "knowing" in the writings of Schopenhauer. The second and largest part of the book begins with a detailed exposition of the various kinds of knowing of a non-discursive or direct immediate character which is followed with an outline of Schopenhauer's account of the mediated or discursive processes. The significance of the non-discursive would be much more appreciated by the reader if the order of presentation had been reversed. When it is clearly understood how formal, analytic, and hence, lacking, the ordinary logical processes are, according to Schopenhauer, then we begin to see why he was so anxious to extend and magnify the non-discursive. Probably, too, for a similar reason the point of view of the pragmatists would be less open to misunderstanding if they took more care to put in the foreground their comprehension of the logical processes. At any rate, all Schopenhauer had to say about the discursive was merely introductory to his attempt to unfold the substitute that superseded and excelled it, the non-reasoned immediacy of direct grasp of intuitive awareness of a non-rational character. The presentation of the various forms of this immediacy of awareness makes up, perhaps, the most valuable and interesting part of Hasse's exposition of Schopenhauer. Seven different classes of these intuitions are noted. Intuition of a rational character, then six different kinds of "irrational" intuition are discussed, viz., intuitive awareness of self, intuitive grasp of the external world, intuitive knowing in the realm of the beautiful, intuitive knowing in the ethical realm, divination knowing, various forms of insight or vision that are peculiarly opposed to the

ordinary, matter of fact, "natural" ways of knowing. Perhaps the Scottish word "By-ordinar" might help to designate this peculiar way.

In the last division of the book a strenuous effort is made to join together and harmoniously relate the various forms of knowing, reasoned and non-reasoned, and the difficulties encountered and noted make in themselves a somewhat enlightening criticism of Schopenhauer's "system."

Although the book is called a historical-critical study, the author explains that as his purpose is purely philosophical he will refrain from the usual historical references that after all in the case of Schopenhauer are pretty well known. It is, however, a little odd that the author omitted or overlooked the fact that Schopenhauer accepted the first edition of Kant's critique and scornfully rejected the second edition as very inferior. That the more explicitly constructive functionings of consciousness are more dwelt on in the second edition gives us a clue to the preference of Schopenhauer for the first edition. While in both editions a knowledge of the transcendent is rejected, in the second edition a much more thorough-going attempt is made to establish a constructive immanent transcendental organizing knowing. For this Schopenhauer has no sympathy; it is a return of the washed hog to its wallowing in the mire.

The author makes considerable use of the less known earlier writings of Schopenhauer and prefers the Grisebach editions.

On the whole, Hasse's attempt to expound Schopenhauer from the sympathetic standpoint is successful and dignified, yet one is tempted to smile when he gravely tells us that Schopenhauer can point with "justifiable pride" to his philosophical explanation of highest Christian truths that had been indeed suggested in the Bible but only in the form of fables.

When Schopenhauer makes some use of folk lore and ingenious philological interpretations as corroborations of his own views the author seems specially anxious to absolve Schopenhauer from any leanings toward the "simpleness" of the doctrine of "Common Sense." He brings forward the evidence to prove that Schopenhauer, like Carlyle, was convinced that ordinary mortals were "mostly fools." We had to look to the philosophical genius to enlighten us. Only to very exceptional people and in unusual moods was there revealed glimpses of truth that came when least sought. In the case of other philosophers, however, who made claims to intuitional insights Schopenhauer is shrewd enough to remark that the assurance that these people have is simply subjective and carries with it no guarantee of its validity.

The summary of results at the end of the book gives a useful condensation of the views of Schopenhauer, with a clear indication of the many ambiguities and the numerous seeming if not always real contradictions. The fact that Hasse refrains from criticism as far as possible, and only when hard pressed admits faults in the writer he is expounding, makes his work all the more helpful. It does not escape him that intuition is indeed a slippery term leading a reader to slide in many directions, and that at least three or four entirely different things are meant by the term "will," that great city of refuge for Schopenhauer. In the exposition of Schopenhauer Hasse usually deals with the will under the term psycho-

logical. Why a description of the processes of volition should be any more psychological than a description of the processes of cognition does not appear. The book is to be welcomed as a scholarly and helpful addition to the growing Schopenhauer literature.

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I Presupposti Formali della Indagine Etica. LUDOVICO LIMENTANI. Genoa: 1913. Pp. 532.

This is an inquiry into the most general concepts of ethics, a discussion of those facts of individual and of social life which warrant us in making of ethics a separate science, the facts, namely, of obligation, the recognition of good and evil, etc.

The experience expressed in saying "I ought or I ought not," says the author, is "original, characteristic, and irreducible." The mere feeling of obligation, however, does not in itself determine the content of the good, neither is the good in itself able to create in us the feeling of obligation. But the conception of duty and of the good are inseparable and correlative.

The general concept, duty, is abstracted (or hypostasized) from various specific experiences of obligation, and to call that "the good" towards which this generalized feeling is directed is to adopt a subjective criterion of morality. On the other hand, to judge a thing as moral because it brings "good" or "goods" is to rely upon a purely objective criterion. The author conceives "duty" and "the good" as different aspects of the same fact, duty being the universal form of which the good is the universal content.

A chapter on the psychological meaning of "tendencies" notes the inseparability of "valuation" from "tendency." A tendency is defined as a rhythm of will, it is a name for the fact of recurrent similarities in voluntary action. Valuation is a corresponding rhythm of feeling; it marks a permanent disposition for certain sentiments to recur.

The author calls his position a psychological and sociological pluralism. The universality of ethical norms is a "fiction." It is not possible nor desirable to set general rules of conduct. Arising from individual psychological differences and from the social division of labor, there appears a variety in moral attitudes and this variety is defensible. The author suggests the interesting notion of a moral division of labor. Among other conceptions discussed are "human nature," "moral evil," "ideal and real." Concerning the theory that the ideal is a reconstruction which eliminates the differences in the conflicting reals, the author says that when two forces are in conflict their very reality is the reality of the conflict, and that to eliminate their differences is to annihilate both. In discussing the criteria of moral valuation he says that the moral act is the expression of a conflict, and the more vivid the contrast of forces the more apparent is the moral nature of the act. He does not, however, wholly accept the position that the goodness of the act is measured by its difficulty, but recognizes that the good act must be an expression of the good character.

The book, as a whole, is rather critical than constructive. It seems to the reviewer somewhat lacking in organization, and its value is that of an interesting programme rather than that of a system of thoroughly considered conclusions.

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NOTES AND NEWS

THE following is from the English periodical *Nature*. Comment would be superfluous. "There is a tendency among popular philosophers and supernaturalists just now to suggest that modern science is crude materialism against which a spiritual reaction is to be encouraged. Some justification might have been found for such a view a generation or two ago, but the dogmatism of those days, both of men of science and theologians, has given way to a more liberal spirit, and all who are seeking earnestly for truth are considered to be worshippers at the same shrine. We are glad, therefore, to direct attention to a series of addresses upon the mutual relations between science and religion to be delivered by scientific men of distinction at Browning Hall, Walworth Road, S.E., during the week beginning on Sunday next, November 22. The addresses are intended for working men and women, students and teachers, and they will be delivered by Sir Oliver Lodge, Professor J. A. Fleming, Professor W. B. Bottomley, Professor E. Hull, Dr. J. A. Harker, Professor Sims Woodhead, and Professor Silvanus Thompson; all seats will be free. There is, of course, no conflict between religion and science; one is the expression of an instinct, the other is a spirit of inquiry into the character and meaning of all things, visible and invisible, in the universe. It is particularly important at the present time to show that science is an uplifting study, and not merely the handmaid of material advance. Ruskin described the difference between science and invention long ago, but it is forgotten by most writers, and we trust that the addresses to be given at Browning Hall will do something to remove mistaken popular impressions as to the aim and meaning of scientific work."

IN commemoration of the completion of the Panama Canal a series of meetings for scientists and scholars is to be held during the first week of August, 1915, at the Panama-Pacific International Exposition, San Francisco, California. Various learned societies are making their plans to hold special meetings on this occasion, among them being the American Association for the Advancement of Science. General addresses by eminent American and European authorities are being prepared, and in addition there will be many simultaneous or alternating meetings for the presentation of papers in the principal divisions of scientific knowledge. Many of these sessions will be held at the Universities of California and Leland Stanford.

THE American Psychological Association met in conjunction with the Section of Anthropology and Psychology of the New York Academy of Sciences on November 23. The following papers were read: "Some Aspects of Emotional Reactions," Dr. Wayne P. Smith; "Motor-Emotional Expression of an Infant," Dr. Garry C. Myers; "The Logic of Intermediate Steps," Professor H. L. Hollingworth; "Experiment *versus* Court Decision," Mr. Richard H. Paynter; "Demonstration of Psychological Apparatus," Professor C. Homer Bean.

MR. WILLIAM HARPER DAVIS, one time assistant in psychology at Columbia University, and assistant professor of philosophy and psychology at Lehigh University, for three years Secretary of the American Psychological Association, has opened an office for the sale of all kinds of books in Room 1232, Real Estate Trust Building, Philadelphia, Pa.

THE first annual philosophical lecture of the British Academy was delivered at Burlington House on the afternoon of December 9 by M. Emile Boutroux, member of the Institute of France and professor in the University of Paris. The subject was "Certitude et Vérité."

ON account of the war it has been agreed by the University of Chicago and the ministry of public instruction in Paris to postpone the lectures arranged to be given at the Sorbonne by Professor James Rowland Angell, head of the department of psychology.

THE following appointments have been made in the department of psychology at the University of Illinois: Dr. Homer B. Reed, instructor; Dr. Joseph E. DeCamp, assistant; Miss Anna Sophie Rogers, graduate assistant; Miss Helen Clark, fellow.

THE president of the Aristotelian Society, Mr. Arthur J. Balfour, was unable to give his address at the opening of the session on November 30. Mr. Bernard Bosanquet gave the inaugural address in Mr. Balfour's place.

PROFESSOR JUNE E. DOWNEY, of the University of Wyoming, has been granted a sabbatical year's leave of absence. During Professor Downey's absence Dr. Carl L. Rahn will have charge of the department of psychology.

RADOSLAV ANDREA TSANOFF (Ph.D., Cornell), formerly Sage fellow of Cornell University and instructor in philosophy at Clark University, has been appointed assistant professor of philosophy at Rice Institute.

DR. SIDNEY E. MEZES, president of the University of Texas and previously professor of philosophy at that institution, has accepted the presidency of the College of the City of New York.

DR. THEODOR LIPPS, professor of psychology and philosophy at the University of Munich, has died at the age of sixty-two years.

DR. THOMAS A. LEWIS (Ph.D., Johns Hopkins) has been appointed professor of psychology and education at Denison University.

DR. E. P. FROST, of Yale University, has been appointed professor of psychology at the University of Tennessee.

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ERRATUM

Page 676, line 2 of paragraph numbered 5, for "soil," read "soul."

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