

## DISCUSSION.

### MIND AND BODY—THE DYNAMIC VIEW.

It requires a certain temerity to reopen the perennial problem presented by the apparent dualism of mind and body. It might appear that the last word worth saying had long since been said. It is, however, indisputable that the point of view of psychology, and, to some extent, of philosophy also, is changing. At least its language is changing and this change is distinctly favorable to a new statement, if not a solution of this problem. Accordingly, a number of valuable contributions to the literature of this subject have appeared within the last few months and the evidence that a monistic construction is desired by nearly all is cumulative. As Professor Moore says: " 'Life' experience is one inclusive activity of which consciousness and habit—the psychical and the physical—are, to the last analysis, constituent functions."<sup>1</sup>

The present tendency on the part of the physical sciences to escape from the shackles of a material hypothesis offers a 'psychological moment' for philosophy to capture the entire forces of both combatants.

In advance attention must be called to the fact that there is no dualism in any one science, neither can there be. Biology has no body-soul controversy; neither has psychology, as such. It is only when we attempt at the same time to use both sets of criteria that dualism arises. The psychological subjective-objective dualism is a polarizing of what is and always must be a single activity into two aspects, it does not create a pair of incommensurables. It follows that this inquiry very naturally assumes the form indicated in the article entitled 'Mind and Body,' by J. Mark Baldwin.<sup>2</sup>

"The distinction between phenomena of mind and body, considered as distinct types of presented phenomenal change, requires the use of two distinct categories of construction, the genetic and the agenetic. Physical science it is which interprets the agenetic. Its explaining concept of cause is illustrated only and always in transformations of energy. On the other hand, is the special realm denomi-

<sup>1</sup> *Univ. Chicago Contrib. to Philos.*, Vol. III., 1.

<sup>2</sup> *Princeton Contributions to Psychology*, III., 2.

nated 'subjective.'" (The author adds that 'life processes are really genetic,' an admission which will greatly influence our attitude toward the distinction between genetic and agenetic as here defined.)

The problem is formally set in the following inquiry: 'Can we hold each set of phenomena to its own legitimate construction, and at the same time, reach a comprehensive conception of the concomitance of mind and body under which the scientific formulas appropriate to each may be given full value?' (*Ibid.*, p. 38.) This question becomes more pertinent if this author is correct (as we believe him to be) in saying 'that the present forms of the interaction theory involve a confusion of categories, due to the failure to maintain a consistent level of mental development.' (*Ibid.*, p. 39.)

"Philosophy asks: How can we think reality in one thought? In terms of our present discussion, how can body and mind, being what we have come to think them to be, live hospitably housed together in one phenomenal group of facts?" These questions are such as to arrest our fullest attention and awaken our keenest interest. This statement of the problem is most helpful and necessary to further progress, but the answer given in this place is tentative and exploratory. That a single and simple solution is ultimately expected is indicated by the italicised phrase: 'All this means that the world is, after all, one and that the categories of mental construction, derived in a process of evolution by actual treatment of the world, *cannot finally reflect processes in essential contradiction with each other.*'

This is, in fact, the criterion of congruousness, which is the last appeal and unanswerable argument of monism. The universe is an organism and contradictory categories could not have developed under a law of evolution. It is quite disappointing, therefore, especially after an appeal to an '*all-comprehensive and completely full experience*' as the content of 'æsthonomic idealism' to learn that 'psychological parallelism then is, from the point of view of science, our positive catch,' even though there is 'hope for a theory of correlation of these characters which will yield a higher adaptation in the whole realm of science.' This is the more disappointing in that the one-sided and unsatisfactory nature of a simple scientific solution has just been insisted on. But Professor Baldwin modestly refuses to expose to view the statement of the metaphysical solution designated as *Æsthonomic Idealism* and we are left with one foot on biological foundations and the other on psychological conclusions but with the door of hope open before us. It was inevitable that others should take advantage of this fresh statement of the problem to attempt this next

step which is to land us with both feet upon some monistic construction.

It is, at any rate, certain that the correlation sought cannot be in either of the partial realms. Neither biology nor psychology, as such, can hope to afford a solution which involves both of them. The unity must be sought in a field large enough to include both.

Nevertheless, it is important for our purpose that we should get the formulated results of both to be carried up into the higher sphere. In order to secure this material a brief survey of these contiguous fields will be necessary. It must be noted in advance that the net result in each of these cases is of one kind; there are no incommensurables or incompatibles in either sphere. These appear only when the ultimate data of biology on the one hand, and psychology on the other, are attempted to be compared (and this attempt is made in terms of one or the other of these sciences) that incompatibility appears. The suggestion is obvious that the incompatibility arises from the methods and not from the content — or, in other words, from the impossibility of attempting psychological structures with biological tools, and *vice versa*.

We may also anticipate our conclusion in so far as to call attention to the way in which the problem set for us by Professor Baldwin is disposed of by the so-called 'functional school' of psychologists who save us the trouble of further discussion by denying the existence of any problem. But it is notorious that, a quarrel once on, it is a work of supererogation to show that there is nothing to quarrel about. It is when the quarrel is over that the proof of its futility is balm to our wounds.

The most concise and intelligible statement of this functional solution which the writer now recalls is that given by Professor Bawden in *THE PHILOSOPHICAL REVIEW*, XIII., 3, May, 1903. "Mind, as here viewed, is the totality of the functioning of matter (in so far as function may be said to imply end or purpose). The psychical is the *meaning* of the physical." "Mind is simply a collective idea for all the psychic functions of an organism — and the psychic functions are coextensive with the growth of an organism. Mind is not an entity behind the process of consciousness, it is that process itself. Mind is just as truly a growth as any other living thing." "It can be a growth only if of the nature of a process. Mental life is a continual synthetic construction. It is simply a name for the orderly continuous functioning of an organism under conditions of tension in adaptation" (p. 308).

Professor Bawden uses for the theory thus stated the title 'Functional Theory of Parallelism,' to which the present writer objects on

several grounds, two of which may be mentioned. First, there is an implied recognition of a material substrate — of a something of which the mental activity is a 'function.' Second, the theory is not one of parallelism except as one returns to the artificial dualism of isolated sciences. Or, to make the criticism general, the view point is that of psychology while the subject is germane to metaphysics. That this writer has himself recognized and pointed out the remedy for these supposed defects may be gathered from his article in Vol. I., No. 3, of *The Journal of Philosophy, Psychology and Scientific Methods*. "Under the name of energy, motion is now regarded as itself the essence of reality, and the idea of brute, lump matter drops away. In place of a static we get a dynamic theory of the nature of reality" (p. 63). Professor Bawden also points out the paradox insisted on by Professor Baldwin. "The solution of this apparent paradox lies in seeing that consciousness, taken apart from the organism which is conscious, is not an entity or thing or even a process; it is simply a meaning or significance. \* \* \* After abstracting the psychical by definition, from the physical, there still cling to our psychological statements of the nature of consciousness traces of our conceptions of material objects. \* \* \* Any thinking or speaking is a polarizing into two aspects in thought of what is an undivided unity for action. This, of course, is a methodological not an ontological dualism; hence, it is paradoxical only for him who forgets its methodological origin."

But these are passages by the way, and we may return to our own survey. As we have already seen, the difficulties in the historic attempts are due, in a very large part, to the attempt to combine in one discussion the methods and data of two or more diverse methods of investigation. Usually the biologist, who essays to discuss the relation of mind and body, is unable to complete his analysis as a biologist simply; he cannot forget that he is also a person, with experiences of his own which he feels sure are also repeated in the lives of the objective units he is discussing. He cannot divorce his *biological* discussion from its *psychological* interpretation.

This is, of course, implied in the very nature of the topic, for any discussion of the relation of mind and body implies the use of the tools or methods, as well as the data of two sciences, and the question at issue is just the inquiry whether these data are commensurable and whether these methods and tools can be employed in the same discussion. As a biologist I cannot consistently inquire as to the relations between mind and body nor can I, as psychologist, properly discuss the body, except as an image presented to sense. The question

reduces to this: Is it possible for the sciences of subjective and objective phenomena, respectively, to present to philosophy the results or interpretations of their research in common terms so that the unification (the real business of philosophy) can be completed.

First as to *biology*. One of its results is the recognition of living individuals. This is no easy matter nor can the discrimination be considered complete. Colonies and social groups imply lateral connection which appears in various forms throughout the series and the existence of which we must suspect in cases which by their nature prevent us from definitely recognizing it. Individual men are such units and biology busies itself in recording the complicated synthesis and coördinations of energy displayed therein. Reciprocal communication between part and part, mutual reaction of function upon function demonstrates a 'vital' relation of unity. No new force is discovered and, of course, no other than a physical force could be recognized if many existed. This may be claimed as matter of definition, for any phenomenon recognized by physical science would be *ipse facto* physical.

But there has been talk of a vital force. Such a term could only be a name for a coördination or a bond. Such a relation is a truth—a truth of the highest importance, and may well be worthy of a distinct name—but it is not a fact of the same order as heat, light or weight.

The recognition of a living unit is a fact of the same kind as the formation of the judgment of 'substance' or 'object.' 'A living object' is such a constant group of coördinated experiences as not only persists in established relations but proves adaptable to changes in the environment by reactions thereto without destroying the essential coherence of these experiences. A living thing is a construct similar to any other thing. One would not say that the inanimate object was created by cohesion, though that may be a name for a part of the observed coherence of attributes. Neither shall we gain by saying that the animate body is created or maintained by a vital force. Any given object, *e. g.*, any given man has his own individual formula descriptive of the totality of the reactions (or shall we say the trajectory or career). Not that we could express this formula by any means but such a formula could be conceived as possible.

Now our investigation of the individual man results in our determining certain partial elements in this all-inclusive formula. We get a little idea of the energetic phases resulting in circulation, respiration, innervation, etc. Sometimes we are fortunate enough to be able to

subsume several minor formulæ under one more general or more inclusive. We never doubt that the possibility exists of a synthesis which would show all these coördinated in one career. Of course it is soon discovered that many individuals are wrapped up in any one subject and that units of a higher order (species, etc.) can be formed — unities which are formulæ for a vastly more complex coördination yet presenting themselves to us in such wise that we are often able to approximate nearer to a total formula or statement of the career than is possible in case of the individual.

Now *as biologists* we observe the acts of the free individual and discover fundamentally no difference in kind between the secretion of bile, the peristalsis of the digestive organs and the most complicated free motions of prehension, locomotion, etc. There is biologically no difference between the act of the phagocytes preying on bacteria in the tissues and the Indian hunter in pursuit of bear and the Wall-Street broker preying on simple-minded citizens — each of these acts is beautifully adaptive. So far as we know, the image on the retina is as real an 'occasion' for the prehensile phenomenon that follows as the carbondioxide stimulus on the respiratory center is of the respiratory spasms which result.

We can biologically observe that the liver secretes bile; we can equally observe that action in the vicinity of the fissure of Rolando is followed by adaptive motions in the muscles of the limbs and that a stimulus in Broca's region is followed by reaction of the vocal organs. But it would be entirely incompetent for the biologist to say that brain action produces thought. Adaptive reaction is no proof of mentality as usually understood.

However, we are all born psychologists and, even though we deny the soft impeachment, we cannot escape this congenital peculiarity. We feel and sometimes we fancy that we think. We may now-a-days be a little afraid to admit volition but we still feel quite sure that other people are responsible for at least part of their actions.

These same physical phenomena, reported to our biological observation in terms of visual, tactual, auditory, and other reactions, are reported by the subject in terms of something which he alone can possess, viz., a subjective reaction, let us say a pain. But let us suppose that the subject of our study is also a trained observer. He might report to us as biologists the conditions of his own body as observed by him, that is, as he feels it, sees it, hears its vital movements, etc., and this information, if reliable, would become a part of our biological formula just as it would if we ourselves or some inde-

pendent observer had recorded it. In addition, this subject might report data which we could by no means know anything about, *e. g.*, a pain, or peculiar sensation, and he might locate it with reference to the previous data. This is also valid biological material — this information is so important that frequently a surgeon will not hesitate in bringing a life into jeopardy by an operation upon such testimony alone. He, at least, has no doubt that that particular sense of tenderness and pain indicates a modification of the normal biological processes in, let us say, the appendix vermiformis. But he does not make the mistake of trying to excise the pain — he is a consistent biologist and to him the pain is diagnostic simply. Even the so-called empiricists in medicine do not commit that mistake (except verbally). That is the pet sin of current psychology alone. To the biologist the reported pain is as objective a phenomenon as the tympanic reaction to palpitation or the cessation of peristalsis.

The reported 'mental' reactions of a higher type, with all the adaptive interrelations, fit into his formula for the life so long as they are descriptive data only. From his own experience (as psychologist) he may clothe these reports in a garment of reality, for he has felt the like, but, as a biologist, they are just other forms of reaction, like the contraction of a muscle. The experience of joy or a minor pleasure is connected with circulatory, muscular and nervous activities, and one is a fact to be catalogued like the others. So it appears that the whole field of descriptive physiological psychology is a purely biological science and is to be cultivated with the same tools as any other department of biology. A great deal of unrealized hope and of futile effort might, perhaps, have been saved by an adequate realization of this classification. Whatsoever a man (biologist) soweth, that shall he also reap.

But meanwhile we must give the psychic its due. None of these biological achievements would have been possible but for the subjective reaction which has not only made it possible to perceive and to assemble data, but on the accuracy and adequacy of whose forms the possibility of all classification depends. It is not merely that the objective world reveals itself to us, but we have created this objective world in accordance with forms inherent in our subjectivity. It is not merely that our personal experience has stamped each elementary reaction with the certificate of reality without which it would be valueless, but the very form of the apprehension of the external world has been the product of the form of our subjectivity.

It appears, therefore, that so long as we persistently abstracted the

content of experience and the organization of it from the act of receiving and organizing the matter seemed simple, but when we ask ourselves, as sometimes we must, how it happens that we react as we do to the external world and not equally and indifferently otherwise, the difficulties of the problem appear.

*Psychology* may now examine the problem and attempt a solution from its own point of view. We now have to do with experiences as avowedly *ours*, *i. e.*, immediate realities. We have a multitude of presentations differing in *mode*. This difference we can never understand, we can only feel it. No Weber's law or periodic formula will explain why we feel light, taste, pain, etc. These are the data out of which all that we know is to be formed. There is nothing else. But a succession of different modes would never give us the contrasting perception of difference vs. identity on which all our psychological development rests. Here the old psychology demands its own, claiming that such recognition of difference (to put it simply) between presentations of sense in sequence implies a *tertium quid*—a soul—in which the comparison must be made. Just as, it is claimed, we cannot determine whether one figure is identical with another until it is measured by or in a third thing, so we cannot detect difference until the two compared elements are brought mutually into relations to another.

To this it may be replied that the ultimate test in geometry is *superposition*. In last analysis the demonstrations reduce to applications of this law of superposition. This analogy, if of any value, tends rather to the other conclusion that the perception of difference arises from the reaction between two presentations (or their several energetic grounds) superposed in such wise that the overlapping or non-agreeing part forms a new percept. Yet here too we imply a continuum. It is not a conscious continuum. There must be a somewhat persisting through a greater or less span of time which not only somehow preserves some counterpart of one impression, but receives a new one in such wise that the new one is different from what it would have been but for its predecessor. Things are going on that are not reported in consciousness—things which determine the mode of consciousness at this moment, and which preserve the effects of the energy involved in some preceding form of consciousness.

We have the curious anomaly then of living in a sphere (psychic) the grounds of which are indubitably in something else. This something else has been called the soul. The little rivulet of consciousness on the wave of which rides present experience is all that is open to examination. We strive to ascertain whether relations (cause and



effect, shall we say) can be discovered between elements in this wave of consciousness and others in other portions of the stream. But how do we now know anything even of the existence of these other events? Evidently the ground of their reproduction lies in the structure (*i. e.*, activities) of this *tertium quid* or soul. It appears entirely incorrect to speak of relations between successive acts of consciousness—the relations are between the total acts of which consciousness is one of the ‘meanings’ or modes. There is then no such thing, strictly speaking, as association of ideas. Is consciousness then but a feeble reflection of an inaccessible light and are such relations as we discover between successive flickers of the reflection dependent for their explanation on the reactions of the hidden light? Something like this, apparently.

This deeper light may be studied only through these imperfect, intermittent, one-sided, reflections—how imperfect only the trained psychologist can fully appreciate. And yet (lest we forget) these flickering reflections constitute our psychic life, *fide* current definitions. To say that they can by any means directly influence our inner light is absurd. No more could we kill our enemy by stabbing his shadow or feed our friend by offerings before his statue. Yet undoubtedly objective events do affect the psychic manifestations. This process might be illustrated by the actor who shoots the apple from the head of his unseen assistant by aiming with aid of a mirror, or by the Japanese fleet securing accurate aim at Port Arthur by wireless messages from vessels at a different angle.

We do not seek to communicate directly with our friend’s thought but we strive to send our message through eye or ear to that somewhat from whence the thought arises. Here is undoubtedly a formal expression of some sort of parallelism but it can hardly be called a psycho-physical parallelism. Physically we did not find any reason for assuming anything psychic at all. Why should we say that this psychogenetic somewhat is physical?

But perhaps it is not wholly clear that the conscious process does not react on the body. Let us look at it in another way. I feel fear and because I feel fear I react in a certain way. Not at all. This statement is contradictory to all that we know of animal activity. I feel fear because certain activities are coördinated in a peculiar manner, or rather, certain coördinations or equilibrated forms having been induced, I feel fear. Fear may be but one of the expressions of that coördination, and there are others, some of which issue in running away, screaming, etc. Fear is the reflection, shall we say, of a con-

flagration having many phases? The fact that I feel fear is not the 'cause' of my running away.

I communicate the occasion for my fear, 'a burglar,' to my neighbor. Did I communicate my fear to him? Not in the least. Neither did I communicate running away to him. The great wave dashes upon a rock and passes onward in a hundred eddies, but the sound that is produced at the same time did not produce the eddies. (Let us not push this figure too far.)

Psychology may construct a geometry for the relations between the various experiences and rest content that the expression corresponds to valid relations existing in the unknown ground of consciousness. But these elementary experiences are only immediate data—our only way of knowing this 'ground'—the rest are only formulæ for arranging them. Judgment is such a formulating activity but is not it determined by something inhering in the same ground? Is there any external reason why we should formulate the concept 'substance,' for instance, or does such formulation express but a phase of the constitution of the 'ground'? It would appear that the mechanism for testing truth as much as that in which 'reality' inheres, is something back of consciousness or of which consciousness is only one expression. The form in which my judgments are cast is a fact to be dealt with as much as the existence of mode itself, and each act of comparison or identification has a certain mode or feeling tone which stamps it as 'ours' rather than another's, and thus adds 'reality' feeling to the fact of thought though it in no way vouches for the 'truth' of its content.

It becomes apparent then that both biology and psychology become conscious of limitations and so are aware that there are facts outside of their boundaries which are nevertheless necessary to the full understanding of the living individual. Biology assembles observations of the behavior of the individual. No one observer is able completely to observe and so part of the information is reported by others and among the others there may be even the subject of observation himself.

The facts assembled by his own effort and that of his fellow laborers and even, to a certain point, by the observed individual are of the same kind, but the last mentioned is able also to report phenomena inaccessible to the others, yet these unique data fall into congruous relations with the others and supplement or confirm data of the direct or objective sort. Their validity it is foolish to deny and they become part of the biologist's material (pain, animal behavior, etc.).

The method of securing this information does not trouble the biologist who remembers that all of his data without exception were derived by inference from psychic acts or modes of experience. Psychic and physiological data come to us over the same route. It is when we seek to interpret these that we find it necessary to resort to a most complicated contrivance in our own mental activities for outward projection in one case and inward reference in the other. We are informed by the genetic psychologists that there is a stage prior to this polarization of experience in the development of the individual. If this be so we have really encountered nothing so far justifying us in setting up so fundamental a distinction as that between mind and body. The most we can say is that we discover in ourselves a difference between simple psychic acts (*i. e.*, immediate experiences) and the arrangements, relations, and inferences we are forced to make of them apparently as a result of some orderly or organic mechanism underlying or including the power to experience. Two things remain unknown and unknowable from the standpoint of both biology and psychology, viz., the reason for the modes of simple experience and for the forms of judgment based on them.

The problem is now appealed by both parties to a higher court. The trouble has been lack of jurisdiction in each case. It cannot be said that either department has found justification for separating body and soul. Each has recognized its limitations and, at first blush has been inclined to lay all the blame for the 'other' it discovers or postulates upon the rival science.

The trouble all along has been that the judge is also *particeps criminis* and the biologist can no more divest himself of psychological infirmities than the psychologist can forget that he is also human and so biological.

Metaphysics is therefore called upon to reconcile the residual and unassimilated results of both. Biology asserts that its field is a unit and everything harmonious so long as it does not consider the source of its information, but the moment that question is raised, it is forced to admit that all it has in the way of data is a mass of inferences or judgments the form or validity of which it can in no wise explain, and that these judgment are based on immediate experience in various modes, the differences between which are as unexplained as is the nature of consciousness itself. Biology therefore relinquishes this problem to psychology with some asperity to make of as much as possible. (It may be confessed that it is not very much that is made of it.)

Psychology catalogues experiences and names the forms of judgments and diagrams the observed relations, polarizing them into subjective and objective without finding any inherent difference between them and discovers that there is no direct relation between one experience and the next. As one feeling does not cause another there must be some kind of organic nexus behind experience. One thought does not call up another any more than the secretion of bile to-day produces a similar act to-morrow, both sets of phenomena are 'explained' as related to some organism or continuum. Psychology is prone to suspect biology and to think that a brain is the thing back of thought in which all psychological manifestations are bound together. When convinced of the futility of this suggestion it gives up the quest, simply concluding that the bodily phenomena are 'parallel' to the mental. This is nothing but a polite way of confessing defeat, or of keeping out of the quarrel.

One common element may be recognized in the midst of the obscurity of this discussion, viz., *forms* of activity. It is not the *fact* of energy but its *mode* that presents to science its multifarious material.

So when asked to arbitrate this dispute metaphysics offers some such result as is briefly given in the sequel.

But first a word as to the nature of energy. Of energy, in the nature of the case, nothing can be known except as expressed in the form of activity. Nothing is to be gained, therefore, by postulating matter or other entity, different from or behind activity, as a *cause* or ground of activity. As stated above, to us energy is known and *can only be known by its form or mode*. Behavior is the thing. Energy is the term representing the fact (all facts known or possible) concerning behavior. Dynamic realism definitively abandons the search for the unknown *ground* of behavior and claims that for any human philosophy the activity itself is the ultimate. It especially declines to be deceived by any analogy requiring us to know what by nature and definition must ever remain unknown, viz., matter, a something itself incapable of action, but the ground of all action.

But energetic form may be viewed in two ways. Otherwise expressed, all activity in a world of reaction expresses itself in two classes of modes, one which we may call intrinsic, the other extrinsic. This is a direct result of a law, which is clear enough from the physical side but has hardly been sufficiently appreciated in philosophy; namely, that activity is meaningless without resistance. Any expression of energy *in a universe* is dual in its manifestation. We could perhaps imagine, or at least, speak about unimpeded energy or 'pure

spontaneity,' which would possess only an intrinsic mode. Its meaning would be for itself alone. No such *manifestation* of energy is possible. Physically, action and reaction are constantly associated and equal. A single or isolated force is impossible. In metaphysics, reality is the reaction of objective and subjective — the 'affirmation of attribute.' Morally, the solution of the problem of good and evil, from this point of view, is that the real good is a doing or striving, and the evil is the condition of such strife; this is good in the making but evil if unvanquished. (See Paulsen's System of Ethics.) Metaphysically speaking, every being in every phase of its career has a double meaning — a meaning for itself and a meaning for the universe. Illustrations are apt to be misleading or unconvincing, but let us use a psycho-geometrical analogy. We may suppose that a certain type of being is represented by an elliptical orbit or trajectory. This activity will impress itself upon adjacent (in Lotze's sense) energetic modes and the form, extent, and result of this activity will depend on the nature or mode of the activity in question (here represented by an elliptical trajectory). The resulting readjustment may be supposed to extend indefinitely. The universe as a whole is different from what it would have been but for this particular energetic manifestation. This is the extrinsic side. Now this being is known to the observer, not by what it is, but by its extrinsic effects, by the impress it makes on the universe, or, more particularly, on the immediate environment of the observer.

But there is another way in which our ellipse must be viewed. As a result of its activity upon the world, the world has reacted upon it. The trajectory is thereafter a different kind of ellipse for having reacted with the rest of the universe. Its intrinsic nature has altered. Its locus formula would have to be rewritten. The inner meaning is constantly changing. The next time a reaction takes place the effect will be different from that of the former activity.

Now suppose, as we must, that certain sorts of trajectories or modes (not to say all of them) express this intrinsic form in terms analogous to consciousness. This psychic mode is the intrinsic meaning corresponding to the given locus formula.

A still further suggestion could be hazarded: It might be supposed that a certain degree of complexity would be necessary in order to reach any particular type of conscious expression. Then, if there were complicated systems of equilibrated energy (say human bodies) which were subject to cyclical or rhythmical variations, it is possible for the equilibrated unit to drop from a state of extreme complexity,

with an intrinsic mode of consciousness, into one not intrinsically capable of consciousness in any given form. Later on, in another phase, the activity could again rise above the 'dead-line' into that phase whose intrinsic form is psychic. In the interval below the 'dead-line' we say the subject sleeps. What the 'genetic modes' of the equilibrated unit might be no one can tell till he himself experiences them.<sup>1</sup>

But how does it happen that we feel our conscious life as a continuum? So far as our feeling it is concerned the question does not need to be asked, for we have no mechanism for recognizing the hiatus, but there is that behind which bridges the hiatus yet to be accounted for. It might be said that the intrinsic form varies sympathetically in response to every influence and retains such segments of past experience as serve to connect all in a present unity of experience.

The ground for our confidence in the general correctness of the data of mind is to be found, especially from the evolutionary point of view, in the belief that all these forms of energy have been evolved by interaction and that the influence of one part is justly and adequately expressed in every other part. This is what we mean in metaphysics by describing the universe as an organism. On this basis alone a monistic interpretation is possible.

The view just expressed cannot be called parallelistic except by doing violence to the usual form of statement of parallelism and,

<sup>1</sup> Perhaps the most apt physical illustration of the idea of psychical equilibrium advocated by the present writer may be gained by the study of the gyroscope. I am not aware that the mystery of what Foucault called the 'fixity of the plane of rotation' and what Tait and Thomson describe as 'gyroscopic domination' has ever been adequately explained but we may easily convince ourselves that composite motions of revolution may be so adjusted as to acquire a high degree of independence of external influences (such as gravitation) and to present great resistance to impacts from without. Such a system becomes gyrocentric.

The formula given for the estimation of the angular velocity, etc., of the gyroscope is sufficiently complex and we can only faintly imagine the difficulties in the way of constructing a formula covering all phases of gyroscopic interaction—of wheels within wheels. But when one contemplates the complexities which must characterize the gyrocentric activities coöperating to produce the type of equilibrium required to produce a thought imagination is quite at fault.

There can be no doubt that the concentric equilibrium produced is capable of offering a very high resistance to external impacts in some directions while being, like the gyroscope, exceedingly sensitive in its responses to influences in other directions. In other words, the nature of the response is directly a function of the form of the equilibrated forces.

similarly, it can be classed with 'identity' systems only at considerable hazard of misconception. We prefer to speak of it simply as dynamic.

In details it is very hard to present this view in such a way as to give to it the same pleasing objectivity which accompanies the idea of a material brain grinding out thought as a mill grinds out flour. If we admit that the complicated equilibrated organism of our being developed under the law of evolution it need not surprise us that the reaction corresponding to sensation of redness is an invariable counterpart of some particular orderly happening in what we call the objective world, nor yet need we consider it impossible that, under the same law, that peculiar conscious reaction which we call a judgment of 'substance' (always some particular substance) corresponds with coordination having a constant value as representing an objective thing. So on indefinitely. The most complicated coördinations of our mental life have a meaning which expresses a real (evolutionary) correspondence with other things in the universe (objective realities not otherwise known to us). Even the much discussed concept of 'freedom' must have its value — it is somehow true. However much its philosophical interpretation may trouble us, if we are consistent evolutionists and fully grasp the meaning of the word 'dynamic,' we must accept its practical implications as genuine.<sup>1</sup>

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<sup>1</sup> The MSS. of this article was received March 28, 1904. — ED.