III—REFLEXIONS SUGGESTED BY PSYCHO-PHYSICAL MATERIALISM.

By Prof. S. S. LAURIE.

IN the laboratory an investigator looks till he sees. The report of a discoverer is verified by his cotemporaries. They confirm the insight of the discoverer; they also now see for themselves what he saw. The formulated record is thereafter one of the accepted constants which the learned world assumes, and from which it takes other steps in advance. But it is almost a truism to say that no man is likely to make a discovery of a fundamental character in any department of knowledge who works on the record of the past as embodied in a series of word-formulas. He must first repeat the investigations that support the formulas and see the reality itself, and not merely comprehend the words symbolic of the reality. In seeing that, he will detect what is really going on in nature and become alive to the true significance of what has been attained, and so be directed to the question next in order. Thus alone will further truths reveal themselves to his patient contemplation. For the mere words of a formula may lose their living meaning, acquire connotations which have no claim to respect, nay, even ultimately obscure the very truth they are intended to make clear.

It is the same in the philosophy of mind—the record of the facts of self-consciousness and of the relation of self-conscious subject to experience or object. Here, too, the task of the investigator is to look till he sees, to face the reality and give a true report. It is not an easy matter. For the element of mind is invisible, intangible, non-measurable: it is also a common or universal element, and has to be dealt with as an abstract: the mind, in short, has itself to be fixed on mind which is ever coming and going, while the sensible phenomenon alone seems to remain in a series of infinitely numerous particular, and in themselves non-significant, experiences. If it be incumbent on the student of physical science to be ever returning to the reality which formulas crystallise, still more incumbent is it on the student of mind to disencumber himself of phrases and forms of expression simply as such, and by independent contemplation strive to see for himself the realities which phrases and words were invented to

symbolise. If he does not do this, he becomes the victim of terms and his cleverest exertations are only smart dialectic, and, as such, unfruitful either for verification or for further progress.

One great advantage arising from every fresh emphasising of philosophic positions is that they compel even those who think they have finally formulated their own scheme of thought to endeavour to look at fundamental problems once more, and endeavour again to state what they see, or think they see. The recent physico-psychology, for example, though it introduces no new thought, yet, by giving more definite form and more logical statement to one way of looking at the problems of individual mind, and by consequence of human life and destiny, compels us, in loyalty to truth and truth alone, to revise even those conclusions which have gradually and unawares been assuming an axiomatic certainty to our own minds. If in doing so we fall back on certain very elementary facts and truisms, the reader will pardon our doing so. Indeed it is quite necessary to do this as long as the question of the relation of mind and brain remains, either psychologically or metaphysically, open.

If we keep physico-psychology in its most recent form strictly within its own mechanical lines and deny to it access to another and wholly antagonistic scheme of thought, I would venture to put the materialistic case on my own responsibility thus, without specific reference to any individual writer. I am concerned here with a possible, if not an actual, "position" alone.

1. The Physics of Mind has to accept, as we all have, the facts of experience, *e.g.*, consciousness, self-consciousness ego or personality, will, purpose, and it has further to explain them. It does so, in its recent and most thorough-going forms, by regarding these facts, and all that we have hitherto called 'mind,' as epi-phenomena of those phenomena which we have been in use to call 'matter'. So we may, within the domain of sense, call the electric flash the epi-phenomenon of that which constitutes electricity whatever it may be.

2. Inasmuch, however, as without the epi-phenomena, it is confessed that the material phenomena could accomplish nothing save that which is itself phenomenal or material and not epi-phenomenal or mental, it must be granted that the epi-phenomenal is of more significance and reality than the phenomena which give it birth. As Aristotle might say, the natural process exists for the 'soul'.

3. Without the epi-phenomenon, what we call philosophy, law, politics, poetry, art would be non-existent save as molecular movements within a prescribed domain which by common consent is called 'matter'. The sole phenomenal *reality* would be the material substratum of all that seems to flow from the facts and energies of mind; but these facts and energies would remain locked up in the prison of matter—a dead potency which could never become actual were it not for the mental epi-phenomena. Consciousness according to this conception would be another name for the *true significance* of material movements as reflected out of themselves; but consciousness as such, much more a 'conscious subject,' would be illusory realities, if indeed we could use the term reality at all.

4. If it be, then, that nothing in the sphere of 'mind' can happen until the phenomenon has passed over into the epi-phenomenon, till there has been a transition from molecular vibration to consciousness, self-consciousness, will, purpose, &c., then assuredly we may say that the mental with all its characteristics is at least reinstated as the sole important fact of experience, while its material antecedent, also a fact of experience, sinks into insignificance. However it may come about, there still is mind—a seemingly infinite effect of a finite cause or series of finite causes.

5. Arrest the molecular vibrations before the point of transition to the 'epi' and there would be no mind, there would be nothing but the said vibrations.

It is evident that it would never do to let the 'epi,' *i.e.*, consciousness or mind, be wholly dependent for its start in life on the molecular movements of matter, and *then* to set up for itself as a substantive entity involving self and will and purpose, including among its varied purposes the inspection of its own birth-tissue. From the physical point of view we may as well have a substantive conscious entity at once to start with *ab initio* as grant this new birth from matter.

Notes, Queries and Suggestions. Not only have we then a wondrous effect of nerve-tissue movements, *viz.*, consciousness or mind, but these nerve-tissue movements being within the sphere of matter are subject to dynamical laws, by the aid of which they work out thoughts and plans which yet may never become truly thoughts and plans, because they may have to stop at home. There are certain rules or laws of sequence and of combination among particles of matter which produce here a White-chapel murder and there a Hamlet. A vision under the microscope of the molecular net work which issued in the

murder and the molecular network which issued in a Hamlet as it stood prior to its transition into the consciousness of the respective agents, would be worth paying for. The (so-called) purpose and will which are necessary to both epi-phenomena would be found to run like a thread through all the various and subtle tissue combinations which exploded in the various acts and scenes of the respective tragedies. Is it not so? I ask for information; as Toole says, "It is not a riddle". I am very far from dogmatism, being no longer young.

It is presumed that the dynamical rules of composition and separation, &c., are not casual: that, like the rest of nature, the organic cerebrum moves towards a definite result or terminus (I must not, I believe, call it 'end'). Thus an infinite number of material stimuli are received by a specific material cerebral organism, and the rest follows. Consciousness is not, remember, to be allowed a place *within* the series: the colours of the sunset might as well interfere with the setting of the sun.

To bring *into the series* an 'epi' in any form would be fatal to the whole theory, to bring in *such* an 'epi' as the admittedly all-important consciousness would be to constitute *it* a dominant factor in the result, and the whole fabric of cerebration, as the sole reality of which consciousness is a mere superfluous spectator, would fall to pieces.

And yet it would seem to be mighty difficult to get rid of the 'epi' as a factor in the series. The cerebral state and its existing poetic, historical, critical, benevolent or murderous dispose of particles is the resultant of stimuli innumerable proceeding not only from the material shows of things but still more from the written and spoken words and the acts of our fellow-men. When I see one man knock down another while a certain expression, which I have been taught to call ferocious, is visible in his face, there is consciousness not only of these outward facts but of their interpretation in the unseen world of what I have been taught to call feeling and emotion. I feel indignation at the spectacle. This indignation is an intense state of consciousness brought about by a prior consciousness (which I call knowledge) of the true meaning of the physical facts before my eyes. Here, however, I am under a delusion it would seem. The appulse of the physical facts on my cerebral cells is certainly followed by a consciousness of these facts: my interpretation of them, however, as *meaning* anger, violence, injustice, is not consequent on my consciousness of the facts, nor of any as-

sociation of *prior consciousness* in the past with my *present consciousness* of these facts: nor is the resultant consciousness 'indignation' consequent in any way on my consciousness of the meaning of the facts. [Note that I am giving my own version of a *genuine* physical theory of mind.] The history is, on the contrary, simply this: the external facts produce certain molecular changes which reflect themselves into a passive mirror of consciousness,—a superfluous 'epi'. These molecular changes on prior occasions were followed by other molecular changes which have for *their* reflexion in the mirror an awareness of anger, ferocity, &c., and these again effect other molecular changes which are reflected in the same mirror as 'indignation'. Obliterate consciousness, and all the phenomena would have occurred just as they did. The 'epi' is only an epi, and has nothing to do with the sequence of feelings and emotions; it is a superfluity—a mere spectator of the drama of real life.

But these are complex cases. Let us take a simple experience. My nerve-filaments are set a-going by the presence of a horse and the epi called consciousness of a horse (a) follows. As it is a fine horse with a mark on its forehead which recalls a historic event, I am conscious next of Bucephalus (b), of Alexander the Great (c), of the Eastern Conquests (d), and the town Bucephala (e). The whole of this series is in truth a transference, by a law of mechanical association, of molecular cell-movements to other molecular cell-movements, so that if I were conscious of (a) and the cerebral b, c, d were arrested at the point of transmission to consciousness or the 'epi' and died back, (e) might yet effect a consciousness for itself, and then the consciousness which immediately followed (a) would be Bucephala (e) not Bucephalus (b). Consciousness must never enter the cerebral series as a factor, for it is beyond question that if the resultant of a cerebral process be the consciousness—'horse'—there before me in space,—and that if *that consciousness* originates by sequence, causal or associative, the idea of Bucephalus, then Alexander, and so on, then one consciousness *as such* can produce another. It matters not that the consciousness 'Bucephalus' has first to excite in the cerebral tissue a certain disposure of molecules which are the material basis of the 'idea' Bucephalus. Nay, this would strengthen the position I take up, for it would demonstrate that the idea, No. 2, originated by the sensation or idea No. 1, can act directly on the brain to the disturbance and re-arrangement of its molecular state. Consciousness, in brief, would now itself be a dynamic force expending itself on matter and interfering

with what ought to be pure mechanical sequences. It would then be, inasmuch as it was a source of energy, not a series of consciousnesses merely, but a conscious reality or subject.

A strict theory of physical mechanism cannot admit this for a moment ;—the physical must always precede and condition the 'epi' of consciousness. The 'epi,' in the case imagined, disappears as a *mere* 'epi,' because it is now a, centre of energy expending itself on other forms of the 'epi' and on matter itself. The strict theory requires that the 'epi' shall be to dynamic cerebration as are the flash and roar of the cannon to the extrusion and motion of the projectile and its crashing into the hull of a ship. But according to the above reasoning, it would be much more than the flash and roar ; it would be a distinct and definite interposition of a non-material element into a material sequence.

I am anxious, as a mere student, to present to myself a thorough-going physico-mechanical system in all its purity, and I find that consciousness as epi-phenomenon can never be allowed to enter into the series which results either in imagination or in action or in thought-products ; still less can a preconceived idea (the chief explanation of will according to Münsterberg) which sets in motion my activity towards a certain result, be allowed, as such, a place in the series which leads to the effecting of that result. The moment that consciousness in any form enters, as a factor, causal or associative, into a series, the purely physical, I repeat, is hopelessly vitiated by that fact. The 'epi' then which we have found to be the important thing—inasmuch as it is the end of all cerebral molecular changes, that for which the cerebral activity exists, the consummation of its activity—would be something confessedly *not matter which yet determined matter*. The effect would turn round on the cause and transform it into an effect in its turn.

I consider that I am entitled to present the case as I have done, for we must be 'scientific' above all things ; in other words, I suppose, 'exact' and true to experience. Do not borrow from biology to bolster up physics, or from mind, *i.e.*, consciousness and self-consciousness, to bolster up a dynamic physical theory. The supreme importance of *mind*, without which all would be a fiasco, is (I freely recognise) admitted ; but it is from first to last in all its forms and products an epi-phenomenon—a mere appendage of a dynamic phenomenon. (Is it the case that Hamlet as *conceived* is an epi and that it rises to the dignity of a phenomenon, a *real*, when it is printed in a book ?) I think that the calling mind an 'epi' is not a bad notion. It brings things to an issue. For it is manifest

that the theory is *not* that mind is *involved* in matter, but that mind and all its processes and products are caused by molecular movements of matter and *nothing else*, and that these carry out a series without the intervention of mind—consciousness or mind being merely an attendant aura or breath.

It surely must be so; for if I once admit that one consciousness *as such* can give rise to another consciousness without the intervention of matter, the case of the thorough-going physical automatist is lost. And, further, if I even admit that consciousness *a* can stimulate *matter b* so as to effect *consciousness b*, his case is lost. Again, if one consciousness can give rise to another, either immediately or mediately through nerve-tissue—one 'epi' to another 'epi,'—then assuredly there must be as much reality and substantiality and causal efficacy in the epi as in the phenomenon, *i.e.*, the molecular movement itself.

I do not wish to 'argue,' let it be understood. I am striving to form to myself a clear picture of an actual or possible theory. Here it is again in its highest and most complex form when Will and Purpose enter: Sophocles conceives the general scope of the "Antigone". What really happens is this: a complex of cerebral molecular movements finds itself in that physical disposure of parts which constitutes an Antigone-drama in its general scope as well as a prefigured completion, *i.e.*, the purpose of constructing a long series of molecular complexes which *constitute the dramatic poem*—"Antigone". The subordinate physical complexes which end in the completed drama are almost innumerable. It is only the *selected* physical complexes which are admitted into the constitution of the whole, and there are many other possibilities. Sophocles for example has flashed before him an 'epi' of Antigone compromising with the tyrant. The disposure of cerebral molecules which flash this out is somehow disturbed: they somehow do not fit into each other, there is a physical '*malaise*': another complex of cerebral molecules somehow forms itself because of this mechanical disturbance (the angles perhaps of some molecules not jointing comfortably into certain others and so effecting by inherent tendency to movement another arrangement), and Antigone then appears defiant and not compromising. This attitude of Antigone does not please *Sophocles* better, but it is a more pleasing arrangement for the molecules, and *so* pleases him better. And so on it goes; mechanical complexes of matter contending with other mechanical complexes, while Sophocles looks on amused (this amusement being again another mechanical complex;

that specific adjustment of molecules which yields the 'epi' humour), until, at last, the series of mechanical complexes have arranged themselves in a completed drama which Sophocles falsely says was conceived and written by him, whereas it was a series of material complexes in a dynamical and divine dance which reflected the "Antigone" as an 'epi'; and not even this in *him*, for *he* as a conscious subject does not exist at all. He is only an animal organism with the power of flashing out consciousnesses in response to dynamical movements—these consciousnesses being also heterogeneous to their cause. From first to last, consciousness (even sinking the hypothesis of 'subject') has had nothing to do. It is a flash trailing on in the wake of a cerebral molecular procession.

Accordingly, the whole of the "Antigone" might effect itself as a complete drama without the intervention of consciousness at all: this last is mere surplusage. We can picture a network of nerve-filaments so arranged as to be really and truly the "Antigone". If we could cut it out and fit it into the cerebrum of a cow, there might be flashed into the cow the whole drama. A drama, mark you, which Sophocles (*i.e.*, the material complex phenomenon capable of flashing which we call Sophocles) had never had any consciousness of, though it manufactured itself somehow in his cerebrum. It was in the cerebral organism, doubtless, of the individual we call Sophocles, but only as cerebral—a potentiality of consciousness but not yet consciousness, and at a critical moment it was transferred to the cow and there and then upset the milking for that day.

This, of course, is very interesting and throws a new light on human history and our daily life and our fancied personal achievements; the fancy and the achievements themselves being also cerebral arrangements troublesomely irrelevant.

But this is all absurd, you say: nobody believes this: I answer, everybody must believe this who denies that one consciousness-flash as such produces another, either immediately, or mediately through a stirring of nerve-cells.

One word, in this connexion, regarding that intense excitation of consciousness which we call the Emotions: The same news (note the *same* news) communicated to two different persons at the same time (*e.g.*, the battle of Waterloo) produces two totally opposite effects—sorrow and joy. That there is a physical accompaniment of these emotions nobody doubts—there is in the one case a physical depression somewhere in the vaso-motor system which may be called physical grief,—a lively response in the other case which may be called physical joy. It is manifest that these op-

posite effects cannot depend on *mere* dynamic cerebrations, for these up to the point of consciousness are precisely the same in both cases. It is the satisfaction of the desires and hopes of the conscious subject, or the reverse, which acts in the material organism, while that again doubtless reacts on the conscious subject: or if not this, it is the presence in one man of a disposure of nerve-tissue and in the other man of a totally different disposure—the one taking kindly to the new stimulation, the other unkindly.

Again, we speak of the "bowels of Compassion," but we do not mean that the compassion which melts the eye and rouses to sustained philanthropic activity is an affection of the intestinal canal; nor could we correctly say that canine affection is an affection of the caudal extremity.

In any case, I think I must now take it for granted that one consciousness *as such* produces another *as such*, either immediately, or mediately by setting up a specific cerebral activity.

If this be so, then we have matter effecting a consciousness and also a consciousness effecting a material change. Whatever may be the ultimate explanation, there actually exists a duality and reciprocity of two energies which are indissolubly connected and each of which has (so far as we yet see) an equal right to be called reality.¹

The use of the word "energy," by-the-by, suggests another consideration emphasised by Höffding and many others. If the generation of physical energy in the cells *causes* Consciousness of this or that object in presentation, the energy must expend itself in that; there is dissipation without return. What then becomes of the doctrine of Conservation? Again, I do not know whether this question has been yet put—If consciousness and the object in consciousness (for there is here a duality) are simply suggested at the terminal point of the cerebral activity (the Cartesian "occasional causes") and at that point a new element enters which begins an independent life of its own, what becomes of the doctrine of Continuity?

Granting the force of the preceding argument as far as it goes, the psycho-physical materialist may yet throw us back on the initiation of elementary sensations and point to the fact that nothing of the nature of con-

¹ Mr. Stout points out to me that a similar line of argument is followed in Herbert's *Modern Realism*. I have since read this book and find it full of subtle and powerful criticism. I may add that I now recall that the same conception is worked out in a brief tale called the *Island of Seelenlos*, by A. P. Laurie.

consciousness occurs in the infant, until a material stimulus has reached the centre of its organism and the terminal of molecular activity. Whatever may be said of an awakened and experienced consciousness as "a going concern" (so to speak), the *initiation* manifestly lies with the excitation of cerebral cells.

I am disposed to admit that nothing happens *to begin with* save *after* some stimulus. An appulse on the nerve-tissue is needed in order to effect the first consciousness and so set mind a-going. The cerebral movements, it is true, do not always at first (and indeed this applies all through life) succeed in effecting a *sensation*, by which term we mean a feeling or awareness of a presentation (apart from its pleasingness or painfulness). The movement in the nerve cells has to struggle into life as if it were forcing a cerebral path for itself up to a certain goal, this goal being an elicited feeling-awareness—ail before this being indefinite feeling, a mere premonition of what is about to occur. The mother's breast is, or seems to be, *felt* by the new-born babe, and reflex co-ordinated action is probably all that is needed to explain the action of the babe in fastening on it. But a point comes when the vague and indefinite 'feeling' of the breast accompanying reflex action, gradually becomes a feeling-awareness of the said breast. There has been a progress here. What is 'sensation (or feeling-awareness) of the breast which is now 'object' to the infant? Call it the result of a prior molecular activity if you please: but also consider what *it is*. You say it is just a sensation—a new phenomenon of the phenomena of molecular activity, an *epi*-phenomenon or a post-phenomenon. But this is to content yourself with a word, and is not scientific. The truth is always in the reality, not in the symbol which merely serves to mark off the reality from other realities.

The *epi*, we may venture to say, in view of these facts, is more than a consciousness: it is a *subject*-consciousness. We may endeavour to explain away this 'subject' as much as we please and show that it is an illusion: none the less is it a fact, and a very near fact, of experience which has to be dealt with. What is the objection to saying that the *epi* which is consciousness is also a conscious subject? Only this, that no *sense*-impression of subject is conveyed into me. A whole philosophy is here assumed in face of the manifest fact that "subject" by the very nature of the case could not by possibility be conveyed into any organism without committing suicide on the road. This, however, by the way.

I wish (even at the risk of appearing stupid and being accused of a naïveté which amounts to crudeness to which I readily plead guilty), to find what it is exactly that I am asked to accept as the truth of experience. Do we mean that the feeling-awareness of a presentation (object), in other words, an elementary consciousness, is a feeling-awareness inherent in cellular tissue as such? If we mean this, then (so long as we distinguish between mind and matter) nerve-cells have in their essential nature a capacity for consciousness. We must then define a nerve-cell as a *conscious bit of matter* requiring an extraneous stimulus from another bit of matter to realise itself in its highest manifestation, *i.e.*, as mind. It would then be reasonable enough to say that mind and matter are always in the atom *ab initio* synchronous, when viewed under the category of Time. Nay, we should be compelled to go further than this, and inasmuch as the *raison d'être* and ultimate function of the dual activity is mind, we should be compelled to desert the category of Time in seeking to determine which of the two activities was the ground of the other and made it possible.

But it is not held, I understand, that consciousness is in, and of, matter, but that consciousness or mind is a post-phenomenon of the real phenomenon called matter. In short, matter functions mind—functions that which is higher than itself and heterogeneous to itself. But if consciousness *a* can *as such* function consciousness *b* through matter as vehicle, *as we have found it can*, then mind (in a going consciousness at least) functions matter!

It would appear then that we cannot escape from the *equipollence* at least of the two moments mind and matter, any more than under the category of Time we can escape from their synchronousness. They are synchronous, equipollent, and reciprocal. So far good. Grant this further step in the investigation.

Even the equipollency, however, is disturbed when we find that the *end* of the whole process is mind. Whether mind is the *prius*, the beginning, or not, it must be, all through, dominant, *because* it is dominant in the end—in the completed functioning of the two energies, matter and mind. Is it not so? Aristotle would say so. We thus seem forced to the further conclusion, as far as we have gone, that of the two energies in the process, while we can give priority in time to neither, we must give superiority or dominance to the mind-energy, since mind is the ultimate function of the whole process.

We are here face to face with a dualism of a peculiar

kind, for it is a dualism in which one of the energies, mind, takes causal precedence of the other, and we thus seem to be driven to the further conclusion that it is in truth mind that is functioning all the time, but through matter as its necessary vehicle or reflex or condition (call it what we will). In other words, Consciousness or Mind is striving under the conditions and through the vehicle of matter to fulfil itself as mind. The latter seems to be most in accordance with fact and to be the true scientific report.

But perhaps we are looking at the whole phenomena too much as manifested in a "going consciousness". Let us then go back to the beginning. The initial sensation (and consequently any number of subsequent sensations) is a consequent of a matter-movement without which it would never exist. True: but if the matter-movement is not itself mind (and an atom a conscious bit of matter), it could not effect mind. Even according to the theory of physical causation the effect is a case of identity, a transmutation of Energy. There must then, in the *initiating* matter-excitation, be a mind-element inherent; and it is the two together which effect a consciousness. In short, what seems to us a mere excitation of nerve-cells is in reality to be regarded as a *one* movement consisting of two 'moments,' matter and mind. When we speak of 'moments' in a one movement we mean that the one moment is essential to the other and that they reflect themselves into each other reciprocally as constitutive of a one. There is mind under material conditions, and matter under mind conditions *ab initio*; the result is a sensation or elementary consciousness.

The blind pup before me then is a conscious subject asleep and is as yet little more than a potentiality beginning to work itself out into the full explication of conscious subject—that is into a duality of subject and object. 'The feeling-awareness of an object would be a contradiction in terms if it were not a feeling-awareness of something *not* subject.

Now, we must, at this point of our inquiry, once for all liberate ourselves from a crude dualism which (so far as finite mind is concerned) regards conscious mind as an entity placed inside a "clay cottage" as Locke has it, or which imagines it as if it were a bird in a cage fluttering about to escape from externally imposed conditions, or as if it were an unspaced pea pirouetting in the centre of a complex nerve-organism. As an imagination this may serve for the crude mind. A conscious subject, however, does not reside *in* man, but man,

is a conscious (also a self-conscious) organised subject : by which is merely meant that he is a conscious real being.

We have then, let us conclude, in the first nerve-movement which elicits consciousness, a movement constituted of two moments in mutual reflexion and reciprocity. Let us posit this.

The *prius*, however, in the two moments when we abstract one from the other and conceive them, as we must, under the category of Time, seems to be the matter-moment. This is so : but only to sense ; because existing, as we do, under sense-conditions we must see the sensible or material first. The mind-moment in fact we do not see at all, because it is not an affair of the senses, but acquired by reflexion on the *total experience*. Nature, as material and sensible, always obtrudes itself on us first and to begin with. Our sense-organs always put in their claim to a first hearing ; but the history of philosophy is a continual protest against their exclusive claim, on the very sufficient ground that they cannot explain experience.

We have then, let us conclude, two moments, mind and matter, in the one movement, and these as one result in a consciousness : and the moments are necessarily in reciprocity ; but the matter-moment is to *sense* the *prius*. But in so far as they are two moments in one movement neither can be *prius*. The category of Time is here irrelevant, and, if it is to be applied at all, it must pronounce the two moments to be synchronous. Reciprocity carries with it the conclusion that the one moment is from the first, and all through life, necessary to the other.

But now, is there no ground, on the basis of the actual facts as yielded by the *total experience*, for taking a further step which carries us beyond the equipollence and reciprocity and synchronousness of the two moments, which as moments must be for ever indissoluble ? I think there are facts which compel us further.

The terminus, end, issue of the whole cerebral movement is confessedly Consciousness or Mind. All the elements, static and dynamic, in any thing or presentate whatsoever are where they are with a view to the life-function of that thing. Now the ultimate functioning or end of any organism is in a special sense "the thing," because it is its differentiation from other things, that for which the total concrete exists. Here now we have to call in for explanation of sense-experience the necessities of Reason. We say that in all the preliminary activities the functional end is dominant throughout and

ab initio. It is already in the *beginning*. Accordingly in the dual movement which issues in consciousness, Mind is *ab initio* dominant. It is mind which gives the whole series of phenomena (and it is in truth an infinite series which in its totality will probably for ever escape our ken) significance.

Is it not, then, a necessary conclusion that it is mind *by which* they are? Or, to put it more fully in accordance with previous phraseology, are we not forced to the conclusion that the matter-moment in its whole series is *by* mind as active and formative, and the mind-moment is not *by* matter but *by means of* matter as necessary condition?¹

I do not mean by this that matter is the vehicle of mind, nor that it is merely symbolic of mind,—not even, that it is a phenomenal ‘expression’ of mind. Dualism properly conceived is neither on the one hand two atomic antagonisms, nor on the other such that the external and sensible is a mere show—little more than a metaphor. It is not a ‘two’ but a *twofold*. Being *cum* Mind is ground and *prius* of the physical; but in Time they are synchronous. There is, in truth, a certain reality or substantiality in matter. This is, doubtless, a large and profound question, and I merely allude to it here that I may induce the reader to take up as regards consciousness and brain what impresses me as the true point of view.

It is, in truth, all a question of the point of view, and I wish to induce the reader to accept the Hegelian phrase ‘reflected into’ as fitly expressing the relation. Of the two relatively and reciprocally necessary moments which constitute the one movement, the mind-moment is reflected into the matter-moment as condition of its actuality and externalisation. In its ultimate statement the matter-moment is only Space and Motion. Mind effects itself under Spatio-Motor conditions. In the beginning, as in the end, mind is always dominant and first; but also in the beginning, as in the end, the reflexion into the ‘other’ (or matter) is equally necessary to existence and the real.

But the first or *prius* of experience, it may be objected, you have admitted, in the case of initial sensation, to be the matter-moment; and consequently, even granting a conscious subject, it is the matter-moment which elicits a consciousness in that subject, or (if you like) the subjectivity of the consciousness. Yes, to sense and observation under the category

¹ It is evident enough now, that the relation of cerebral cellular energy and mind energy is only a special case of the old and time-worn cosmic question of Mind and Matter, and that the ultimate solution of the question lies with metaphysics, not psychology.

of Time. But on an analysis of the *total* experience we are driven to a totally different mode of interpreting experience.

Further note a fallacy in the argument of the physiological materialist. He treats a *prius* as a cause. But the word cause, in any sense in which philosophy uses it, is alien to his system of thought: he borrows it for his purposes and does not return it to its owner. There can be to him merely a phenomenal sequence. From his point of view he is quite right: there is no cause anywhere, nothing but a sequent series of impressions and ideas. We beg him to hold by this consistently and then we may have a chance of forcing him into the acceptance of the true faith. There can with him be no cause; and the cerebral antecedent has nothing really to do with the mind sequent. There is one phenomenon, cerebral movements, and there is another phenomenon, consciousness. He is bound in consistency to deal with them as wholly separated and unrelated, though sequent, facts, and, having exhausted himself on the cerebral fact, to take up the new phenomenon, the mind-fact, and treat it as an isolated subject of inquiry having its own characters and its own laws. He will not, however, honestly do this, because he cannot shake off the causal category if he would; and, accordingly, he says that the cerebral *prius* determines the mind-*posterius*, first and last. To 'determine' is to bring about a result: the *prius* accordingly is an efficient and productive and regulative *prius*. His theory of knowledge, however, does not allow him this: sense can never give anything but sequence. Hume settled that point for ever. The physiological materialist, as a phenomenalist, cannot play fast and loose with a central conception like Cause. He must cross to the other side of the debatable line, and, with due form of law, become a citizen of the territory there, before he is entitled to the rights appertaining to citizenship.

There are many things which (like a ray of white light) appear simple which in truth are not so, as I have endeavoured to show elsewhere in the analysis of the act of percipience.¹ In truth there is nothing simple. So with the Causal Notion or Predicate. Much inevitable confusion has arisen from our not discerning that the causal predicate is in three moments, End, Form, and Kinetic Initiation. The functional 'end' of a thing or process is the cause, the formal or mediating movement is the ground of the end (the essence or differentiating determination of the thing), and the kinetic initiation is not a blind dynamic movement,

¹ *Metaphysica Nova et Vetusta*.

but a movement which already contains the form and end, while these also are contained in it.

To conclude; the dominant element and terminal issue of a cerebral movement is Mind, we have found: consciousness or mind is functional end: it is also functional form and functional beginning. Out of Time, the three moments are one: under the category of Time we have to think the one as *prius* of the other. And when we deal with things of sense, our life being a spatio-motor-temporal life, we see first that which we must see first. But that first is not therefore the cause of what is present to our total experience.

There are many phenomena of the relation and interaction of mind and cerebrum which are unexplained and are probably unexplainable. But if we look at the matter-moment as the reflexion of the mind-moment and necessary to its actualisation, we see how much that does happen may happen. The two moments are in reciprocity. Joyful news may cure a disease and the prospect of misfortune may cause one. We do not need the facts of hypnotism to teach us that matter may affect mind so long as we have experience of having eaten too much or too little. The (so-called) insoluble problem in truth is here before us—the universal problem of dualism. Accepting, as we do in the above argument, that matter is the reflexion of mind into externality (the forms of Space and Motion), we yet see clearly enough (we hope) that a crude dualism involving two independences is untenable. The “Occasional Causes” of Descartes is a brilliant suggestion and nothing more and may be passed by. If again we accept the doctrine of a parallelism of two independences, we are then involved, by the facts of our experience, in the positing of a pre-established harmony, and this again carries with it a necessary harmonising One. A fair-seeming theory, but not (it seems to me) a true record. For we have to regard the matter-moment as receiving somehow, in its function as reflect of mind, a quasi-independence, and so not merely reacting on mind but *acting* on it. So in Nature we daily see the material conditions *as such* acting on the plant to the depression of its life, nay, even to its extinction. All the more ingenious attempts to solve the general problem proceed on the suggestion of a parallel and independent series of events—the one mental, the other material. Mr. Herbert Spencer, for example, sees in the total experience “subjective and objective faces of the same thing”. There is a certain plausibility in this, but what is “the thing” of which the material process and the mind-process are dual and parallel

phenomena? If this 'thing' or "Ultimate Reality" is causal in its operations in such a way as to preserve the parallelism, we are brought back to pre-established harmony; for parallelism prohibits communication between two lines. Mr. Shadworth Hodgson differs from Mr. Spencer (it seems to me) only in so far as he omits this "same thing". "The series of states in the one [consciousness or feeling] are the same with the series of states in the other [material process] only on its other side or aspect; and each series is complete in itself, containing an interminable succession of causes and effects, belonging to itself and not borrowed from the opposite aspect of the phenomena" (as quoted by Mr. Herbert). And yet Mr. Hodgson, I understand, recognises the *causal influence* of mind on cerebrum and the motory system and so throws over Spinozism. The two "series" could not then be parallel: they would be lines that are always crossing and recrossing each other. Then again, it seems to me that (though there is, doubtless, a sense in which every event of mind or consciousness is a 'phenomenon') we confound philosophical thinking, on this particular question at least, if we do not reserve the term for the sensible alone, inasmuch as the whole interest is as to that which is *not* phenomenon. If Mr. Hodgson escapes Mr. Spencer's "same thing," Mr. Spencer on the other hand would tell Mr. Hodgson that a "unit of feeling [consciousness] has nothing in common with a unit of motion,"¹ and that causative communication is impossible (*vide* Herbert).²

Then not only have we this action of the *matter-moment* on Mind as a fact; but we further see that consciousnesses, which are the issue of the dual movement, reflect themselves back into the cerebral tissue, and remain there for future use. This being so, they can by mere dynamical excitation and interaction be thrown back into

¹ *Principles of Psychology*, i. 62.

² Spinoza, I may remark, does not say that mind and body are two aspects of the "same thing," but that they are *una eademque res* conceived under the attribute of Extension and Thought (partiii. prop. ii. Sch.). And this, so that the concatenation of things is one and the same under whichever category they are viewed. But we must remember that underlying the whole of Spinoza's demonstration is the ultimate ground — *sola substantia*, of which Mind and Matter (Extension) are the two necessary attributes. We can scarcely admit that mind and brain are "one and the same thing" *conceived* under different attributes. We must amend this, so far, at least, as to say *existing* under different attributes, and this at once throws us back on Dualism—a dualism moreover in which the mind-moment and matter-moment are equivalent, and neither of them is the *præ* of the other in Time, nor yet Causally.

consciousness, and influence (nay, where the excitation is intense, determine) thought, will, purpose. The total experience of Mind seems to become (so to speak) materialised in brain. But in all such cases, cerebral movements *as such* are not effecting consciousness *as such*, but only particular kinds of consciousnesses, or it may be affecting the whole tone and colour of consciousness, for the time being. The brain is charged with Mind, through a long series of mind-activities.

The recognition of these facts of reciprocity might explain many phenomena normal and abnormal. Some difficulties remain, in connexion especially with hypnotic experimentation, but when these assume their final scientific form, they may yield to a rational explanation. I confess I see little in recent experimentation which was not anticipated, in principle, at least, by James Braid of Manchester.

The conclusion to which we are forced is that the cerebral molecular wave, vibration or movement (call it by what name we will) whereby the consciousness of an object in presentation is effected, is *itself* a movement in two moments, *viz.*, mind and its necessary reflexion into matter: a movement, further, of which mind is the dominant and ground moment and fact. The resultant is consciousness, feeling-awareness of an object, *i.e.*, Mind *qua* Mind.

There is not a two-sided active process of which one *side* may be called subjective, the other objective (this is mere phraseology); but a one mind-fact and process which reflects itself into a material process as mode of its actualisation; but this in such a way as to give a quasi-independence to the material fact and process so that it reacts on the mind-process (of whose *actuality* it is the condition).

A particular consciousness no sooner springs into being than it instantaneously reflects itself into cerebral tissue, as condition of its actualisation as a consciousness; just as Being *cum* Mind cosmically finds its actualisation only by means of the second moment of the universal concrete, *viz.*, matter.

The movement in cosmical experience is a movement upwards from the lower planes of Being *cum* Mind to the higher plane of Being *cum* Mind; and the movement, hitherto unconscious and blind, now becomes consciousness of things—that is duly reflects into itself, as a mirror or point of reflexion (so to speak), the world of appearances. Mind still further, in the supreme act of self-consciousness, doubles back on itself, and this is the starting-point for the still higher and more remarkable evolution which we find alone in man.

[It may be said that the above suggested explanation is merely a "point of view" and nothing else. That is true: but I submit that in fundamental conceptions all we can do is first to read ultimate facts correctly and thereafter to place ourselves at the "point of view" which best explains them. A point of view is in this sphere analogous to the hypothesis in physical investigation which establishes its truth by its power of explaining experience.]

Consciousnesses reflecting themselves into cerebral equivalents are, I have said, deposited there. This is a fact. Thus, the matter-moment which from the first has a certain independent activity is charged more and more with mind, and by repeating the movements under dynamical conditions (in which also, however, let us remember there is always mind), can of itself restore consciousnesses and maintain a dynamical communication and interaction among the cerebral equivalents of consciousnesses. Hence also dreams and reverie.

The dynamic cerebral matter-relations may, like all other matter, become disturbed, irregular and diseased *relatively to that of which it is the reflect*, and carry mind with it for the time. There being a necessary reciprocity between two moments in a one movement, it is easily conceivable that consciousnesses may fail so to emerge as to find the requisite physical energy into which to reflect themselves with a view to an actuality, and so die back. In the same way the molecular activities in the cerebrum may be so disposed as to suggest a consciousness, in ordinary circumstances, but may fail to do so because the conscious subject is pre-occupied.

So far as illusions either self-originated or originated at the will of another are concerned, the wonder is not that they are possible but that they are not much more frequent.

I have asked the reader to look at the whole of this vexed question from the point of view of Mind reflecting itself into an externalisation as necessary condition of *actuality*—an externalisation which, by virtue of this very reflexion, acquires a certain independence in its outerness. I might now go on to deal with the next movement of Mind upwards—that which we call Self-consciousness, but that would cause me to exceed the limits of an article still further than I have already done.

One word more: I have assumed throughout, though I have endeavoured not to intrude the assumption, that animals and men are *conscious subjects—res consciae*. I do

not think (spite of the remarkable union of Humeism and a spurious neo-Hegelianism) that we have made one step in advance of our forefathers who recognised, with the man in the street, a 'being here' conscious (a subject), and a 'being there' an external reality, and the resultant consciousness or presentation—now called quality, now sensation or idea, according as we regard it from the objective or subjective side. These are to be regarded as three moments in one act—separable in reflexion, inseparable in fact.

SUMMARY OF THE PRECEDING ARGUMENT.

A consciousness as such, we have found, leads to another consciousness [causally or by association], either non-mediate, or mediate though cerebral processes. A thorough-going and exclusively mechanical explanation of conscious experience is thus impossible.

The cerebral process has for its issue, terminus or end, consciousness or mind. Cerebral tissue accordingly, *either*, as matter, thinks, *or* must have a mind-element in it.¹ Matter does not as such think: therefore, the issue of its dynamical processes being mind, there is Mind in these processes. In brief and ultimately, an atom is to be conceived as mind-matter—a kind of Monad. Thus, even that which stimulates initial sensation would itself contain mind.

If matter as *such* could *feel or think*, then *matter would be mind* under the form of space and motion, and we should then be compelled to the same conclusions.

Whatever may be *prius* in sense-experience, the fact that mind is, by common consent, the issue and end of the *total* experience compels the further conclusion that mind is not only *in* the matter process, but is the dominant element *ab initio*, as well as in the terminus of the process.

A cerebral process is accordingly in two moments each essential to the other—a one duality. Mind is reflected into matter.

Matter, again, as essential to the total fact and the total experience, has, in so far as it is negation² of mind, a certain

¹ Prof. Clifford finds that he cannot explain the fact of consciousness without the help of "mind-stuff". It is impossible to criticise this position until we settle whether it is 'mind' or 'stuff' that is meant. Gassendi in criticising Epicurus talks of particles (seminal) which contain the elements of consciousness.

² Dualism, it must be granted, contains implicit the fact of a certain *limitation* of the Divine cosmic movement—a conception impossible to Spinozism.

independence and re-acts on mind. The dualism of the scheme of things *will not* be reduced by any ingenuity of speculation.

Effected consciousnesses, as the issue of mind and matter, also reflect themselves into the material organ, the cerebrum, and are deposited there. *They* are materialised, so to speak, and matter also is thereby so far further mentalised. It is charged with past results and processes as in and of mind.

Materialised mind or mentalised matter not only re-acts, but *acts*, *i.e.*, can not only restore by its own dynamical process former consciousnesses, but through dynamical interaction of its own parts and without stimulus *ab extra*, set up new simple and complex consciousnesses coherent or incoherent:—(automatism of the cerebrum).

Further, *ab initio*, the matter-moment *as such* (pure and simple) can, by virtue of its quasi-independence, affect the tone or colour and energy of consciousnesses; but cannot *as such* effect 'Consciousness'.

Finally, the Causal category, when applied to the two moments in a primary or elementary sensation, dismisses the fact that sense-experience is in time *prius* as of no account, and affirms the mind-moment as ground and beginning, just as it is admitted to be the end, of the whole process involved in the fact consciousness—that which alone gives the process significance and furnishes its *raison d'être*.

And still, the intertexture of mind and brain remains a problem.