

The Principles of Psychology

William James (1890)

CHAPTER VI The Mind-Stuff Theory, pp. 145-82

<http://psychclassics.yorku.ca/James/Principles/prin6.htm>

The reader who found himself swamped with too much metaphysics in the last chapter will have a still worse time of it in this one, which is exclusively metaphysical. Metaphysics means nothing but an unusually obstinate effort to think clearly. The fundamental conceptions of psychology are practically very clear to us, but theoretically they are very confused, and one easily makes the obscurest assumptions in this science without realizing, until challenged, what internal difficulties they involve. When these assumptions have once established themselves (as they have a way of doing in our very descriptions of the phenomenal facts) it is almost impossible to get rid of them afterwards or to make any one see that they are not essential features of the subject. The only way to prevent this disaster is to scrutinize them beforehand and make them give an articulate account of themselves before letting them pass. One of the obscurest of the assumptions of which I speak is *the assumption that our mental states are composite in structure, made up of smaller states conjoined*. This hypothesis has outward advantages which make it almost irresistibly attractive to the intellect, and yet it is inwardly quite unintelligible. Of its unintelligibility, however, half the writers on psychology seem unaware. As our own aim is to *understand* if possible, I make no apology for singling out this particular notion for very explicit treatment before taking up the descriptive part of our work. *The theory of 'mind-stuff' is the theory that our mental states are compounds*, expressed in its most radical form.

[p.146] **EVOLUTIONARY PSYCHOLOGY DEMANDS A MIND-DUST.**

In a general theory of evolution the inorganic comes first, then the lowest forms of animal and vegetable life, then forms of life that possess mentality, and finally those like ourselves that possess it in a high degree. As long as we keep to the consideration of purely outward facts, even the most complicated facts of biology, our task as evolutionists is comparatively easy. We are dealing all the time with matter and its aggregations and separations; and although our treatment must perforce be hypothetical, this does not prevent it from being *continuous*. The point which as evolutionists we are bound to hold fast to is that all the new forms of being that make their appearance are really nothing more than results of the redistribution of the original and unchanging materials. The self-same atoms which, chaotically dispersed, made the nebula, now, jammed and temporarily caught in peculiar positions, form our brains; and the 'evolution' of the brains, if understood, would be simply the account of how the atoms came to be so caught and jammed. In this story no new *natures*, no factors not present at the beginning, are introduced at any later stage.

But with the dawn of consciousness an entirely new nature seems to slip in, something whereof the potency was *not* given in the mere outward atoms of the original chaos.

The enemies of evolution have been quick to pounce upon this undeniable discontinuity in the data of the world, and many of them, from the failure of evolutionary explanations at this point, have inferred their general incapacity all along the line. Every one admits the entire incommensurability of feeling as such with material motion as such. "A motion became a feeling!" - no phrase that our lips can frame is so devoid of apprehensible meaning. Accordingly, even the vaguest of evolutionary enthusiasts, when deliberately comparing material with mental facts, have been as forward as any one else to emphasize the 'chasm' between the inner and the outer worlds.

"Can the oscillations of a molecule," says Mr. Spencer, "be represented side by side with a nervous shock [he means a mental shock], and the two be recognized as one? No effort enables us to assimilate [p.147] them. That a unit of feeling has nothing in common with a unit of motion becomes more than ever manifest when we bring the two into juxtaposition." [1]

And again:

"Suppose it to have become quite clear that a shock in consciousness and a molecular motion are the subjective and objective faces of the same thing; we continue utterly incapable of uniting the two, so as to conceive that reality of which they are the opposite faces." [2]

In other words, incapable of perceiving in them any common character. So Tyndall, in that lucky paragraph which has been quoted so often that every one knows it by heart:

"The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought and a definite molecular action in the brain occur simultaneously; we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass, by a process of reasoning, from one to the other." [3]

Or in this other passage:

"We can trace the development of a nervous system and correlate with it the parallel phenomena of sensation and thought. We see with undoubting certainty that they go hand in hand. But we try to soar in a vacuum the moment we seek to comprehend the connection between them . . . There is no fusion possible between the two classes of facts - no motor energy in the intellect of man to carry it without logical rupture from the one to the other." [4]

None the less easily, however, when the evolutionary afflatus is upon them, do the very same writers leap over the breach whose flagrancy they are the foremost to announce, and talk as if mind grew out of body in a continuous way. Mr. Spencer, looking back on his review of mental evolution, tells us how "in tracing up the increase [p.148] we found ourselves passing *without break* from the phenomena of bodily life to the phenomena of mental life." [5] And Mr. Tyndall, in the same Belfast Address from which we just quoted, delivers his other famous passage:

"Abandoning all disguise, the confession that I feel bound to make before you is that I prolong the vision backward across the boundary of the experimental evidence, and discern in that matter which we, in our ignorance and notwithstanding our professed reverence for its Creator, have hitherto covered with opprobrium the promise and potency of every form and quality of life." [6] - mental life included, as a matter of course.

So strong a postulate is continuity! Now this book will tend to show that mental postulates are on the whole to be respected. The demand for continuity has, over large tracts of science, proved itself to possess true prophetic power. We ought therefore

ourselves sincerely to try every possible mode of conceiving the dawn of consciousness so that it may *not* appear equivalent to the irruption into the universe of a new nature, non-existent until then.

Merely to call the consciousness 'nascent' will not serve our turn.^[7] It is true that the word signifies not yet [p.149] *quite* born, and so seems to form a sort of bridge between existence and nonentity. But that is a verbal quibble. The fact is that discontinuity comes in if a new nature comes in at all. The *quantity* of the latter is quite immaterial. The girl in 'Midshipman Easy' could not excuse the illegitimacy of her child by saying, 'it was a very small one.' And Consciousness, however small, is an illegitimate birth in any philosophy that starts without it, and yet professes to explain all facts by continuous evolution.

If evolution is to work smoothly, consciousness in some shape must have been present at the very origin of things. Accordingly we find that the more clear-sighted evolutionary philosophers are beginning to posit it there. Each atom of the nebula, they suppose, must have had an aboriginal atom of consciousness linked with it; and, just as the material atoms have formed bodies and brains by massing themselves together, so the mental atoms, by an analogous process of aggregation, have fused into those larger consciousnesses which we know in ourselves and suppose to exist in our fellow-animals. Some such doctrine of *atomistic hylozoism* as this is an indispensable part of a thorough-going philosophy of evolution. According to it there must be an infinite number of degrees of conscious- [p.150] ness, following the degrees of complication and aggregation of the primordial mind-dust. To prove the separate existence of these degrees of consciousness by indirect evidence, since direct intuition of them is not to be had, becomes therefore the first duty of psychological evolutionism.

SOME ALLEGED PROOFS THAT MIND-DUST EXISTS.

Some of this duty we find already performed by a number of philosophers who, though not interested at all in evolution, have nevertheless on independent grounds convinced themselves of the existence of a vast amount of sub-conscious mental life. The criticism of this general opinion and its grounds will have to be postponed for a while. At present let us merely deal with the arguments assumed to prove aggregation of bits of mind-stuff into distinctly sensible feelings. They are clear and admit of a clear reply.

The German physiologist A. Fick, in 1862, was, so far as I know, the first to use them. He made experiments on the discrimination of the feelings of warmth and of touch, when only a very small portion of the skin was excited through a hole in a card, the surrounding parts being protected by the card. He found that under these circumstances mistakes were frequently made by the patient,^[8] and concluded that this must be because the number of [p.151] sensations from the elementary nerve-tips affected was too small to sum itself distinctly into either of the qualities of feeling in question. He tried to show how a different manner of the summation might give rise in one case to the heat and in another to the touch.

" A feeling of temperatures," he says, " arises when the intensities of the units of feeling are evenly gradated, so that between two elements *a* and *b* no other unit can spatially intervene whose intensity is not also *between* that of *a* and *b*. A feeling of contact perhaps arises when this condition is not fulfilled. Both kinds of feeling, however, are composed of the same units."

But it is obviously far clearer to interpret such a gradation of intensities as a brain-fact than as a mind-fact. If in the brain a tract were first excited in one of the ways suggested by Prof. Fick, and then again in the other, it might very well happen, for aught we can say to the contrary, that the psychic accompaniment in the one case would be heat, and in the other pain. The pain and the heat would, however, not be composed of psychic units, but would each be the direct result of one total brain-process. So long as this latter interpretation remains open, Fick cannot be held to have proved psychic summation.

Later, both Spencer and Taine, independently of each other, took up the same line of thought. Mr. Spencer's reasoning is worth quoting *in extenso*. He writes:

"Although the individual sensations and emotions, real or ideal, of which consciousness is built up, appear to be severally simple, homogeneous, unanalyzable, or of inscrutable natures, yet they are not so. There is at least one kind of feeling which, as ordinarily experienced, seems elementary, that is demonstrably not elementary. And after resolving it into its proximate components, we can scarcely help suspecting that other apparently-elementary feelings are also compound, and may have proximate components like those which we can in this one instance identify.

"Musical sound is the name we give to this seemingly simple feeling which is clearly resolvable into simpler feelings. Well known experiments prove that when equal blows or taps are made one after another at a rate not exceeding some sixteen per second, the effect of each is perceived as a separate noise; but when the rapidity with which the blows follow one another exceeds this, the noises are no longer identified in separate states of consciousness, and there arises in place of them a continuous state of consciousness, called a tone. In further increasing [p.152] the rapidity of the blows, the tone undergoes the change of quality distinguished as rise in pitch; and it continues to rise in pitch as the blows continue to increase in rapidity, until it reaches an acuteness beyond which it is no longer appreciable as a tone. So that out of units of feeling of the same kind, many feelings distinguishable from one another in quality result, according as the units are more or less integrated.

"This is not all. The inquiries of Professor Helmholtz have shown that when, along with one series of these rapidly-recurring noises, there is generated another series in which the noises are more rapid though not so loud, the effect is a change in that quality known as its *timbre*. As various musical instruments show us, tones which are alike in pitch and strength are distinguishable by their harshness or sweetness, their ringing or their liquid characters; and all their specific peculiarities are proved to arise from the combination of one, two, three, or more, supplementary series of recurrent noises with the chief series of recurrent noises. So that while the unlikenesses of feeling known as differences of pitch in tones are due to differences of integration among the recurrent noises of one series, the unlikenesses of feeling known as differences of *timbre*, are due to the simultaneous integration with this series of other series having other degrees of integration. And thus an enormous number of qualitatively-contrasted kinds of consciousness that seem severally elementary prove to be composed of one simple kind of consciousness, combined and recombined with itself in multitudinous ways.

"Can we stop short here? If the different sensations known as sounds are built out of a common unit, is it not to be rationally inferred that so likewise are the different sensations known as tastes, and the different sensations known as odors, and the different sensations known as colors? Nay, shall we not regard it as probable that there is a unit common to all these strongly-contrasted classes of sensations? If the unlikenesses among the sensations of each class may be due to unlikenesses among the

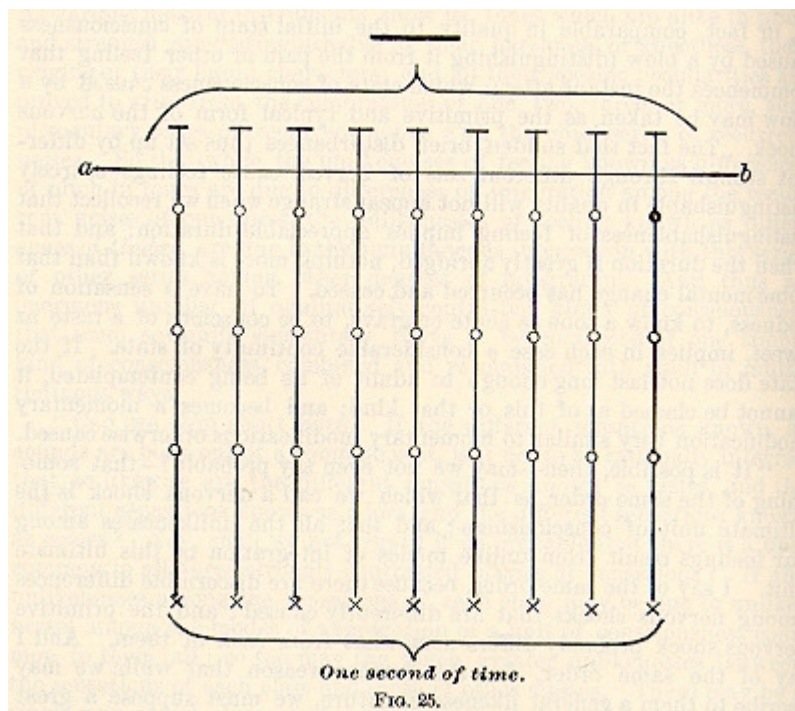
modes of aggregation of a unit of consciousness common to them all; so too may the much greater unlikenesses between the sensations of each class and those of other classes. There may be a single primordial element of consciousness, and the countless kinds of consciousness may be produced by the compounding of this element with itself and the recompounding of its compounds with one another in higher and higher degrees; so producing increased multiplicity, variety, and complexity.

"Have we any clue to this primordial element? I think we have. That simple mental impression which proves to be the unit of composition of the sensation of musical tone, is allied to certain other simple mental impressions differently originated. The subjective effect produced by a crack or noise that has no appreciable duration is little else than a nervous shock. Though we distinguish such a nervous shock as belonging to what we call sounds, yet it does not differ very much from nervous shocks of other kinds. An electric discharge sent [p.153] through the body causes a feeling akin to that which a sudden loud report causes. A strong unexpected impression made through the eyes, as by a flash of lightning, similarly gives rise to a start or shock; and though the feeling so named seems, like the electric shock, to have the body at large for its seat, and may therefore be regarded as the correlative rather of the efferent than of the afferent disturbance yet on remembering the mental change that results from the instantaneous transit of an object across the field of vision, I think it may be perceived that the feeling accompanying the efferent disturbance is itself reduced very nearly to the same form. The state of consciousness so generated is, in fact, comparable in quality to the initial state of consciousness caused by a blow (distinguishing it from the pain or other feeling that commences the instant after); which state of consciousness caused by a blow may be taken as the primitive and typical form of the nervous shock. The fact that sudden brief disturbances thus set up by different stimuli through different sets of nerves cause feelings scarcely distinguishable in quality will not appear strange when we recollect that distinguishableness of feeling implies appreciable duration; and that when the duration is greatly abridged, nothing more is known than that some mental change has occurred and ceased. To have a sensation of redness, to know a tone as acute or grave, to be conscious of a taste as sweet, implies in each case a considerable continuity of state. If the state does not last long enough to admit of its being contemplated, it cannot be classed as of this or that kind; and becomes a momentary modification very similar to momentary modifications otherwise caused.

"It is possible, then - may we not even say probable? - that something of the same order as that which we call nervous shock is the ultimate unit of consciousness, and that all the unlikenesses among our feelings result from unlike modes of integration of this ultimate unit. I say of the same order, because there are discernible differences among nervous shocks that are differently caused; and the primitive nervous shock probably differs somewhat from each of them. And I say of the same order, for the further reason that while we may ascribe to them a general likeness in nature, we must suppose a great unlikeness in degree. The nervous shocks recognized as such are violent - must be violent before they can be perceived amid the procession of multitudinous vivid feelings suddenly interrupted by them. But the rapidly-recurring nervous shocks of which the different forms of feeling consist, we must assume to be of comparatively moderate, or even of very slight intensity. Were our various sensations and emotions composed of rapidly-recurring shocks as strong as those ordinarily called shocks, they would be unbearable; indeed life would cease at once. We must think of them rather as successive faint pulses of subjective change, each having the same quality as the strong pulse of subjective change distinguished as a nervous shock." [9]

[p.154] **REFUTATION OF THESE PROOFS.**

Convincing as this argument of Mr. Spencer's may appear on a first reading, it is singular how weak it really is.[10] We do, it is true, when we study the connection between a musical note and its outward cause, find the note simple and continuous while the cause is multiple and discrete. Somewhere, then, there *is* a transformation, reduction, or fusion.



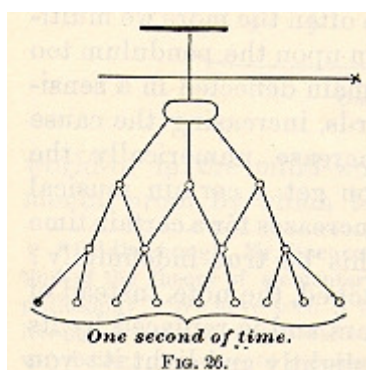
The question is, Where - in the nerve-world or in the mind-world? Really we have no experimental proof by which to decide; and if decide we must, [p.155] analogy and *a priori* probability can alone guide us. Mr. Spencer assumes that the fusion must come to pass in the mental world, and that the physical processes get through air and ear, auditory nerve and medulla, lower brain and hemispheres, without their number being reduced. Figure 25, on the previous page, will make the point clear.

Let the line *a - b* represent the threshold of consciousness: then everything drawn below that line will symbolize a physical process, everything above it will mean a fact of mind. Let the crosses stand for the physical blows, the circles for the events in successively higher orders of nerve-cells, and the horizontal marks for the facts of feeling. Spencer's argument implies that each order of cells transmits just as many impulses as it receives to the cells above it; so that if the blows come at the rate of 20,000 in a second the cortical cells discharge at the same rate, and one unit of feeling corresponds to each one of the 20,000 discharges. Then, and only then, does 'integration' occur, by the 20,000 units of feeling 'compounding with themselves' into the 'continuous state of consciousness' represented by the short line at the top of the figure.

Now such an interpretation as this flies in the face of physical analogy, no less than of logical intelligibility. Consider physical analogy first.

A pendulum may be deflected by a single blow, and swing back. Will it swing back the more often the more we multiply the blows? No; for it they rain upon the

pendulum too fast, it will not swing at all but remain deflected in a sensibly stationary state. In other words, increasing the cause numerically need not equally increase numerically the effect. Blow through a tube: you get a certain musical note; and increasing the blowing increases for a certain time the loudness of the note. Will this be true indefinitely? No; for when a certain force is reached, the note, instead of growing louder, suddenly disappears and is replaced by its higher octave. Turn on the gas slightly and light it: you get a tiny flame. Turn on more gas, and the breadth of the flame increases. Will this relation increase indefinitely? No, again; for at a certain moment up shoots the flame into a ragged streamer and begins to hiss. Send slowly [p.156] through the nerve of a frog's gastrocnemius muscle a succession of galvanic shocks: you get a succession of twitches. Increasing the number of shocks does not increase the twitching; on the contrary, it stops it, and we have the muscle in the apparently stationary state of contraction called tetanus. This last fact is the true analogue of what must happen between the nerve-cell and the sensory fibre. It is certain that cells are more inert than fibres, and that rapid vibrations in the latter can only arouse relatively simple processes or states in the former. The higher cells may have even a slower rate of explosion than the lower, and so the twenty thousand supposed blows of the outer air may be 'integrated' in the cortex into a very small number of cell-discharges in a second.



This other diagram will serve to contrast this supposition with Spencer's. In Fig. 26 all 'integration' occurs below the threshold of consciousness. The frequency of cell-events becomes more and more reduced as we approach the cells to which feeling is most directly attached, until at last we come to a condition of things symbolized by the larger ellipse, which may be taken to stand for some rather massive and slow process of tension and discharge in the cortical centres, to which, *as a whole*, the feeling of musical tone symbolized by the line at the top of the diagram *simply and totally* corresponds. It is as if a long file of men were to start one after the other to reach a distant point. The road at first is good and they keep their original distance apart. Presently it is intersected by bogs each worse than the last, so that the front men get so retarded that the hinder ones catch up with them before the journey is done, and all arrive together at the goal.[\[11\]](#)

[p.157] On this supposition there *are* no unperceived units of mind-stuff preceding and composing the full consciousness. The latter is itself an immediate psychic fact and bears an immediate relation to the neural state which is its unconditional accompaniment. Did each neural shock give rise to its own psychic shock, and the psychic shocks then combine, it would be impossible to understand why severing one part of the central nervous system from another should break up the integrity of the consciousness. The cut has nothing to do with the psychic world. The

atoms of mind-stuff ought to float off from the nerve-matter on either side of it, and come together over it and fuse, just as well as if it had not been made. We know, however, that they do not; that severance of the paths of conduction between a man's left auditory centre or optical centre and the rest of his cortex will sever all communication between the words which he hears or sees written and the rest of his ideas.

Moreover, if feelings can mix into a *tertium quid*, why do we not take a feeling of greenness and a feeling of redness, and make a feeling of yellowness out of them? Why has optics neglected the open road to truth, and wasted centuries in disputing about theories of color-composition which two minutes of introspection would have settled forever?[12] We cannot mix feelings as such, though we may mix the objects we feel, and from *their* mixture get new feelings. We cannot even (as we shall later see) have two feelings in our mind at once. At most we can compare together *objects previously presented* to us in distinct feelings; but then we find each object stubbornly maintaining [p.158] its separate identity before consciousness, whatever the verdict of the comparison may be.[13]

SELF-COMPOUNDING OF MENTAL FACTS IS INADMISSIBLE.

But there is a still more fatal objection to the theory of mental units 'compounding with themselves' or 'integrating.' It is logically unintelligible; it leaves out the essential feature of all the 'combinations' we actually know.

All the 'combinations' which we actually know are EFFECTS, wrought by the units said to be 'combined,' UPON SOME ENTITY OTHER THAN THEMSELVES. Without this feature of a medium or vehicle, the notion of combination has no sense.

"A multitude of contractile units, by joint action, and by being all connected, for instance, with a single tendon, will pull at the same, and will bring about a dynamical effect which is undoubtedly the resultant of their combined individual energies. . . . On the whole, tendons are to muscular fibres, and bones are to tendons, combining recipients of mechanical energies. A medium of composition is indispensable to the summation of energies. To realize the complete dependence of mechanical resultants on a combining substratum, one may fancy for a moment all the individually contracting muscular elements severed from their attachments. They might then still be capable of contracting with the same energy as before, yet no co-operative result would be accomplished. The medium of dynamical combination would be wanting. The multiple energies, singly exerted on no common recipient, would lose themselves on entirely isolated and disconnected efforts." [14]

In other words, no possible number of entities (call them as you like, whether forces, material particles, or mental elements) can sum *themselves* together. Each remains, in the sum, what it always was; and the sum itself exists only *for a bystander* who happens to overlook the units and to [p.159] apprehend the sum as such; or else it exists in the shape of some other *effect* on an entity external to the sum itself. Let it not be objected that H₂ and O combine of themselves into 'water,' and thenceforward exhibit new properties. They do not. The 'water' is just the old atoms in the new position, H-O-H; the 'new properties' are just their combined *effects*, when in this position, upon external media, such as our sense-organs and the various reagents on which water may exert its properties and be known.

"Aggregations are organized wholes only when they behave as such in the presence of other things. A statue is an aggregation of particles of marble; but as such it has no unity. For the spectator it is one; in itself it is an aggregate; just as, to the consciousness of an ant crawling over it, it may again appear a mere aggregate. No summing up of parts can make an unity of a mass of discrete constituents, unless this unity exist for some other subject, not for the mass itself." [15]

Just so, in the parallelogram of forces, the 'forces' themselves do not combine into the diagonal resultant; a *body* is needed on which they may impinge, to exhibit their resultant effect. No more do musical sounds combine *per se* into concords or discords. Concord and discord are names for their combined effects on that external medium, the *ear*.

[p.160] Where the elemental units are supposed to be feelings, the case is in no wise altered. Take a hundred of them, shuffle them and pack them as close together as you can (whatever that may mean); still each remains the same feeling it always was, shut in its own skin, windowless, ignorant of what the other feelings are and mean. There would be a hundred-and-first feeling there, if, when a group or series of such feelings were set up, a consciousness *belonging to the group as such* should emerge. And this 101st feeling would be a totally new fact; the 100 original feelings might, by a curious physical law, be a signal for its *creation*, when they came together; but they would have no substantial identity with it, nor it with them, and one could never deduce the one from the others, or (in any intelligible sense) say that they *evolved* it.

Take a sentence of a dozen words, and take twelve men and tell to each one word. Then stand the men in a row or jam them in a bunch, and let each think of his word as intently as he will; nowhere will there be a consciousness of the whole sentence. [16] We talk of the 'spirit of the age,' and the 'sentiment of the people,' and in various ways we hypostatize 'public opinion.' But we know this to be symbolic speech, and never dream that the spirit, opinion, sentiment, etc., constitute a consciousness other than, and additional to, that of the several individuals whom the words 'age,' 'people,' or 'public' denote. The private minds do not agglomerate into a higher compound mind. This has always been the invincible contention of the spiritualists against the associationists in Psychology, - a contention which we shall take up at greater length in Chapter X. The associationists say the mind is constituted [p.161] by a multiplicity of distinct 'ideas' *associated* into a unity. There is, they say, an idea of *a*, and also an idea of *b*. *Therefore*, they say, there is an idea of *a + b*, or of *a* and *b* together. Which is like saying that the mathematical square of *a* plus that of *b* is equal to the square of *a + b*, a palpable untruth. Idea of *a* + idea of *b* is *not* identical with idea of (*a + b*). It is one, they are two; in it, what knows *a* also knows *b*; in them, what knows *a* is expressly posited as not knowing *b*; etc. In short, the two separate ideas can never by any logic be made to figure as one and the same thing as the 'associated' idea.

This is what the spiritualists keep saying; and since we do, as a matter of fact, have the 'compounded' idea, and do know *a* and *b* together, they adopt a farther hypothesis to explain that fact. The separate ideas exist, they say, but *affect* a third entity, the soul. *This* has the 'compounded' idea, if you please so to call it; and the compounded idea is an altogether new psychic fact to which the separate ideas stand in the relation, not of constituents, but of occasions of production.

This argument of the spiritualists against the associationists has never been answered by the latter. It holds good against any talk about self-compounding amongst feelings, against any 'blending,' or 'complication,' or 'mental chemistry,' or 'psychic synthesis,' which supposes a resultant consciousness to float off from the constituents *per se*, in the absence of a supernumerary principle of consciousness which

they may affect. The mind-stuff theory, in short, is unintelligible. Atoms of feeling cannot compose higher feelings, any more than atoms of matter can compose physical things! The 'things,' for a clear-headed atomistic evolutionist, are not. Nothing is but the everlasting atoms. When grouped in a certain way, *we* name them this 'thing' or that; but the thing we name has no existence out of our mind. So of the states of mind which are supposed to be compound because they know many different things together. Since indubitably such states do exist, they must exist as single new facts, effects, possibly, as the spiritualists say, on the Soul (we will not decide that [p.162] point here), but at any rate independent and integral, and not compounded of psychic atoms.[17]

CAN STATES OF MIND BE UNCONSCIOUS?

The passion for unity and smoothness is in some minds so insatiate that, in spite of the logical clearness of these reasonings and conclusions, many will fail to be influenced by them. They establish a sort of disjointedness in things which in certain quarters will appear intolerable. They [p.163] sweep away all chance of 'passing without break' either from the material to the mental, or from the lower to the higher mental; and they thrust us back into a pluralism of consciousness - each arising discontinuity in the midst of two disconnected worlds, material and mental - which is even worse than the old notion of the separate creation of each particular soul. But the malcontents will hardly try to refute our reasonings by direct attack. It is more probable that, turning their back upon them altogether, they will devote themselves to sapping and mining the region roundabout until it is a bog of logical liquefaction, into the midst of which all definite conclusions of any sort may be trusted ere long to sink and disappear.

Our reasonings have assumed that the 'integration' of a thousand psychic units must be either just the units over again, simply rebaptized, or else something real, but then other than and additional to those units; that if a certain existing fact is that of a thousand feelings, it cannot at the same time be that of ONE feeling; for the essence of feeling is to be felt, and as a psychic existent *feels*, so it must *be*. If the one feeling feels like no one of the thousand, in what sense can it be said to *be* the thousand? These assumptions are what the monists will seek to undermine. The Hegelizers amongst them will take high ground at once, and say that the glory and beauty of the psychic life is that in it all contradictions find their reconciliation; and that it is just because the facts we are considering *are* facts of the self that they are both one and many at the same time. With this intellectual temper I confess that I cannot contend. As in striking at some unresisting gossamer with a club, one but overreaches one's self, and the thing one aims at gets no harm. So I leave this school to its devices.

The other monists are of less deliquescent frame, and try to break down distinctness among mental states by *making a distinction*. This sounds paradoxical, but it is only ingenious. The distinction is that *between the unconscious and the conscious being of the mental state*. It is the sovereign means for believing what one likes in psychology, and of turning what might become a science into a tumbling-ground for whimsies. It has numerous champions, [p.164] and elaborate reasons to give for itself. We must therefore accord it due consideration. In discussing the question: **DO UNCONSCIOUS MENTAL STATES EXIST?**, it will be best to give the list of so-called proofs as briefly as possible, and to follow each by its objection, as in scholastic books.[18]

First Proof. The *minimum visible*, the *minimum audible*, are objects composed of parts. How can the whole affect the sense unless each part does? And yet each part

does so without being separately sensible. Leibnitz calls the total consciousness an '*aperception*,' the supposed insensible consciousness by the name of '*petites perceptions*.'

"To judge of the latter," he says, "I am accustomed to use the example of the roaring of the sea with which one is assailed when near the shore. To hear this noise as one does, on must hear the parts which compose its totality, that is, the noise of each wave, . . . although this noise would not be noticed if its wave were alone. One must be affected a little by the movement of one wave, one must have some perception of each several noise, however small it be. Otherwise one would not hear that of 100,000 waves, for of 100,000 zeros one can never make a quantity."[\[19\]](#)

Reply. This is an excellent example of the so-called 'fallacy of division,' or predicating what is true only of a collection, of each member of the collection distributively. It no more follows that if a thousand things together cause sensation, one thing alone must cause it, than it follows that if one pound weight moves a balance, then one ounce weight must move it too, in less degree. One ounce weight does not move it *at all*; its movement *begins* with [p.165] the pound. At most we can say that each ounce affects it in *some* way which helps the advent of that movement. And so each infra-sensible stimulus to a nerve no doubt affects the nerve and helps the birth of sensation when the other stimuli come. But this affection is a nerve-affection, and there is not the slightest ground for supposing it to be a 'perception' unconscious of itself. "A certain *quantity* of the cause may be a necessary condition to the production of *any* of the effect,"[\[20\]](#) when the latter is a mental state.

Second Proof. In all acquired dexterities and habits, secondarily automatic performances as they are called, we do what *originally* required a chain of deliberately conscious perceptions and volitions. As the actions still keep their intelligent character, intelligence must still preside over their execution. But since our consciousness seems all the while elsewhere engaged, such intelligence must consist of unconscious perceptions, inferences, and volitions.

Reply. There is more than one alternative explanation in accordance with larger bodies of fact. One is that the perceptions and volitions in habitual actions may be performed consciously, only so quickly and inattentively that no *memory* of them remains. Another is that the consciousness of these actions exists, but is *split-off* from the rest of the consciousness of the hemispheres. We shall find in Chapter X numerous proofs of the reality of this split-off condition of portions of consciousness. Since in man the hemispheres indubitably co-operate in these secondarily automatic acts, it will not do to say either that they occur without consciousness or that their consciousness is that of the lower centres, which we know nothing about. But either lack of memory or split-off cortical consciousness will certainly account for all of the facts.[\[21\]](#)

Third Proof. Thinking of A, we presently find ourselves thinking of C. Now B is the natural logical link between A and C, but we have no consciousness of having thought of B. It must have been in our mind '*uncon-* [p.166] *sciously*,' and in that state affected the sequence of our ideas.

Reply. Here again we have a choice between more plausible explanations. Either B was consciously there, but the next instant forgotten, or its *brain-tract* alone was adequate to do the whole work of coupling A with C, without the idea B being aroused at all, whether consciously or 'unconsciously.'

Fourth Proof. Problems unsolved when we go to bed are found solved in the morning when we wake. Somnambulists do rational things. We awaken punctually at an hour predetermined overnight, etc. Unconscious thinking, volition, time-registration, etc., must have presided over these acts.

Reply. Consciousness forgotten, as in the hypnotic trance.

Fifth Proof. Some patients will often, in an attack of epileptiform unconsciousness, go through complicated processes, such as eating a dinner in a restaurant and paying for it, or making a violent homicidal attack. In trance, artificial or pathological, long and complex performances, involving the use of the reasoning powers, are executed, of which the patient is wholly unaware on coming to.

Reply. Rapid and complete oblivescence is certainly the explanation here. The analogue again is hypnoticism. Tell the subject of an hypnotic trance, during his trance, that he *will* remember, and he may remember everything perfectly when he awakes, though without your telling him no memory would have remained. The extremely rapid oblivescence of common *dreams* is a familiar fact.

Sixth Proof. In a musical concord the vibrations of the several notes are in relatively simple ratios. The mind must unconsciously count the vibrations, and be pleased by the simplicity which it finds.

Reply. The brain-process produced by the simple ratios may be as directly agreeable as the conscious process of comparing them would be. No counting, either conscious or 'unconscious,' is required.

Seventh Proof. Every hour we make theoretic judgments and emotional reactions, and exhibit practical tendencies, [p.167] for which we can give no explicit logical justification, but which are good inferences from certain premises. We know more than we can say. Our conclusions run ahead of our power to analyze their grounds. A child, ignorant of the axiom that two things equal to the same are equal to each other, applies it nevertheless in his concrete judgments unerringly. A boor will use the *dictum de omni et nullo* who is unable to understand it in abstract terms.

"We seldom consciously think how our house is painted, what the shade of it is, what the pattern of our furniture is, or whether the door opens to the right or left, or out or in. But how quickly should we notice a change in any of these things! Think of the door you have most often opened, and tell, if you can, whether it opens to the right or left, out or in. Yet when you open the door you never put the hand on the wrong side to find the latch, nor try to push it when it opens with a pull. . . . What is the precise characteristic in your friend's step that enables you to recognize it when he is coming? Did you ever consciously think the idea, 'if I run into a solid piece of matter I shall get hurt, or be hindered in my progress'? and do you avoid running into obstacles because you ever distinctly conceived, or consciously acquired and thought, that idea?"[22]

Most of our knowledge is at all times potential. We act in accordance with the whole drift of what we have learned, but few items rise into consciousness at the time. Many of them, however, we may recall at will. All this co-operation of unrealized principles and facts, of potential knowledge, with our actual thought is quite inexplicable unless we suppose the perpetual existence of an immense mass of *ideas in an unconscious state*, all of them exerting a steady pressure and influence upon our conscious thinking, and many of them in such continuity with it as ever and anon to become conscious themselves.

Reply. No such mass of ideas is supposable. But there are all kinds of short-cuts in the brain; and processes not aroused strongly enough to give any 'idea' distinct enough to be a premise, may, nevertheless, help to determine just that resultant process of whose psychic accompaniment the said idea *would* be a premise, if the idea existed at all. A certain overtone may be a feature of my friend's voice, and [p.168] may conspire with the other tones thereof to arouse in my brain the process which suggests to my consciousness his name. And yet I may be ignorant of the overtone *per se*, and unable, even when he speaks, to tell whether it be there or no. It leads me to the idea of the

name; but it produces in me no such cerebral process as that to which the *idea of the overtone* would correspond. And similarly of our learning. Each subject we learn leaves behind it a modification of the brain, which makes it impossible for the latter to react upon things just as it did before; and the result of the difference may be a tendency to act, though with no idea, much as we should *if* we were consciously thinking about the subject. The becoming conscious of the latter at will is equally readily explained as a result of the brain-modification. This, as Wundt phrases it, is a 'predisposition' to bring forth the conscious idea of the original subject, a predisposition which other stimuli and brain-processes may convert into an actual result. But such a predisposition is no 'unconscious idea;' it is only a particular collocation of the molecules in certain tracts of the brain.

Eighth Proof. Instincts, as pursuits of ends by appropriate means, are manifestations of intelligence; but as the ends are not foreseen, the intelligence must be unconscious.

Reply. Chapter XXIV will show that all the phenomena of instinct are explicable as actions of the nervous system, mechanically discharged by stimuli to the senses.

Ninth Proof. In sense-perception we have results in abundance, which can only be explained as conclusions drawn by a process of unconscious inference from data given to sense. A small human image on the retina is referred, not to a pygmy, but to a distant man of normal size. A certain gray patch is inferred to be a white object seen in a dim light. Often the inference leads us astray: e.g., pale gray against pale green looks red, because we take a wrong premise to argue from. We think a green film is spread over everything; and knowing that under such a film a red thing would look gray, we wrongly infer from the gray appearance that a red thing must be there. Our study of space-perception in Chapter XVIII will give abundant additional examples both of the truthful and illu- [p.169] sory percepts which have been explained to result from unconscious logic operations.

Reply. That chapter will also in many cases refute this explanation. Color- and light-contrast are certainly purely sensational affairs, in which inference plays no part. This has been satisfactorily proved by Hering,[23] and shall be treated of again in Chapter XVII. Our rapid judgments of size, shape, distance, and the like, are best explained as processes of simple cerebral association. Certain sense-impressions directly stimulate brain-tracts, of whose activity ready-made conscious percepts are the immediate psychic counterparts. They do this by a mechanism either connate or acquired by habit. It is to be remarked that Wundt and Helmholtz, who in their earlier writings did more than any one to give vogue to the notion that unconscious inference is a vital factor in sense-perception, have seen fit on later occasions to modify their views and to admit that results *like* those of reasoning may accrue without any actual reasoning process unconsciously taking place.[24] Maybe the excessive and riotous applications made by Hartmann of their principle have led them to this change. It would be natural to feel towards him as the sailor in the story felt towards the horse who got his foot into the stirrup, - "If you're going to get on, I must get off."

Hartmann fairly boxes the compass of the universe with the principle of unconscious thought. For him there is no namable thing that does not exemplify it. But his logic is so lax and his failure to consider the most obvious alternatives so complete that it would, on the whole, be a waste of time to look at his arguments in detail. The same is true of Schopenhauer, in whom the mythology reaches its climax. The visual perception, for example, of an object in space results, according to him, from the intellect performing the following operations, all unconscious. First, it apprehends the inverted retinal image and turns it right side up, constructing *flat space* as a preliminary

operation; [p.170] then it computes from the angle of convergence of the eyeballs that the two retinal images must be the projection of but a single *object*; thirdly, it constructs the third dimension and sees this object *solid*; fourthly, it assigns its *distance*; and fifthly, in each and all of these operations it gets the objective character of what it 'constructs' by unconsciously inferring it as the only possible *cause* of some sensation which it unconsciously feels.[25] Comment on this seems hardly called for. It is, as I said, pure mythology.

None of these facts, then, appealed to so confidently in proof of the existence of ideas in an unconscious state, prove anything of the sort. They prove either that conscious ideas were present which the next instant were forgotten; or they prove that certain results, *similar* to results of reasoning, may be wrought out by rapid brain-processes to which no ideation seems attached. But there is one more argument to be alleged, less obviously insufficient than those which we have reviewed, and demanding a new sort of reply.

Tenth Proof. There is a great class of experiences in our mental life which may be described as discoveries that a subjective condition which we have been having is really something different from what we had supposed. We suddenly find ourselves bored by a thing which we thought we were enjoying well enough; or in love with a person whom we imagined we only liked. Or else we deliberately analyze our motives, and find that at bottom they contain jealousies and cupidities which we little suspected to be there. Our feelings towards people are perfect wells of motivation, unconscious of itself, which introspection brings to light. And our sensations likewise: we constantly discover new elements in sensations which we have been in the habit of receiving all our days, elements, too, which have been there from the first, since otherwise we should have been unable to distinguish the sensations containing them from others nearly allied. The elements must exist, for we use them to discriminate by; but they must exist in [p.171] an unconscious state, since we so completely fail to single them out.[26] The books of the analytic school of psychology abound in examples of the kind. Who knows the countless associations that mingle with his each and every thought? Who can pick apart all the nameless feelings that stream in at every moment from his various internal organs, muscles, heart, glands, lungs, etc., and compose in their totality his sense of bodily life? Who is aware of the part played by feelings of innervation and suggestions of possible muscular exertion in all his judgments of distance, shape, and size? Consider, too, the difference between a sensation which we simply *have* and one which we *attend to*. Attention gives results that seem like fresh creations; and yet the feelings and elements of feeling which it reveals must have been already there - in an unconscious state. We all know *practically* the difference between the so-called sonant and the so-called surd consonants, between D, B, Z, G, V, and T, P, S, K, F, respectively. But comparatively few persons know the difference *theoretically*, until their attention has been called to what it is, when they perceive it readily enough. The sonants are nothing but the surds plus a certain element, which is alike in all, superadded. That element is the laryngeal sound with which they are uttered, surds having no such accompaniment. When we hear the sonant letter, both its component elements must really be in our mind; but we remain unconscious of what they really are, and mistake the letter for a simple quality of sound until an effort of attention teaches us its two components. There exist a host of sensations which most men pass through life and never attend to, and consequently have only in an unconscious way. The feelings of opening and closing the glottis, of making tense the tympanic membrane, of accommodating for near vision, of intercepting the passage from the nostrils to the throat, are instances of what I mean. Every one gets these feelings many times an hour;

but few readers, probably, are conscious of exactly what sensations are meant by the names I have just used. All these facts, and an enormous number more, seem to [p.172] prove conclusively that, in addition to the fully conscious way in which an idea may exist in the mind, there is also an unconscious way; that it is unquestionably the same identical idea which exists in these two ways; and that therefore any arguments against the mind-stuff theory, based on the notion that *esse* in our mental life is *sentiri*, and that an idea must consciously be felt as what it is, fall to the ground.

Objection. These reasonings are one tissue of confusion. Two states of mind which refer to the same external reality, or two states of mind the later one of which refers to the earlier, are described as the same state of mind, or 'idea,' published as it were in two editions; and then whatever qualities of the second edition are found openly lacking in the first are explained as having really been there, only in an 'unconscious' way. It would be difficult to believe that intelligent men could be guilty of so patent a fallacy, were not the history of psychology there to give the proof. The psychological stock-in-trade of some authors is the belief that two thoughts about one thing are virtually the same thought, and that this same thought may in subsequent reflections become more and more *conscious* of what it really *was* all along from the first. But once make the distinction between simply *having an idea* at the moment of its presence and subsequently knowing all sorts of things *about it*; make moreover that between a state of mind itself, taken as a subjective fact, on the one hand, and the objective thing it knows, on the other, and one has no difficulty in escaping from the labyrinth.

Take the latter distinction first: Immediately all the arguments based on sensations and the new features in them which attention brings to light fall to the ground. The sensations of the B and the V when we attend to these sounds and analyze out the laryngeal contribution which makes them differ from P and F respectively, are *different sensations* from those of the B and the V taken in a simple way. They stand, it is true, for the *same letters*, and thus mean the *same outer realities*; but they are different mental affections, and certainly depend on widely different processes of cerebral activity. It is unbelievable that two mental [p.173] states so different as the passive reception of a sound as a whole, and the analysis of that whole into distinct ingredients by voluntary attention, should be due to processes at all similar. And the subjective difference does not consist in that the first-named state *is* the second in an 'unconscious' form. It is an absolute psychic difference, even greater than that between the states to which two different surds will give rise. The same is true of the other sensations chosen as examples. The man who learns for the first time how the closure of his glottis feels, experiences in this discovery an absolutely new psychic modification, the like of which he never had before. He had another feeling before, a feeling incessantly renewed, and of which the same glottis was the organic starting point; but that was not the later feeling in an 'unconscious' state; it was a feeling *sui generis* altogether, although it took cognizance of the same bodily part, the glottis. We shall see, hereafter, that the same reality can be cognized by an endless number of psychic states, which may differ *toto coelo* among themselves, without ceasing on that account to refer to the reality in question. Each of them is a conscious fact; none of them has any mode of being whatever except a certain way of being felt at the moment of being present. It is simply unintelligible and fantastical to say, because they point to the same outer reality, that they must therefore be so many editions of the same 'idea,' now in conscious and now in an 'unconscious' phase. There is only one 'phase' in which an idea can be, and that is a fully conscious condition. If it is not in that condition, then it is not at all. Something else is, in its place. The something else may be a merely physical brain-process, or it may be another conscious idea. Either of these things may perform

much the same *function* as the first idea, refer to the same object, and roughly stand in the same relations to the upshot of our thought. But that is no reason why we should throw away the logical principle of identity in psychology, and say that, however it may fare in the outer world, the mind at any rate is a place in which a thing can be all kinds of other things without ceasing to be itself as well.

Now take the other cases alleged, and the other distinc- [p.174] tion, that namely between *having* a mental state and knowing all *about* it. The truth is here even simpler to unravel. When I decide that I have, without knowing it, been for several weeks in love, I am simply giving a name to a state which previously *I have not named*, but which was fully conscious; which had no residual mode of being except the manner in which it was conscious; and which, though it was a feeling towards the same person for whom I now have much more inflamed feeling, and though it continuously led into the latter, and is similar enough to be called by the same name, is yet in no sense identical with the latter, and least of all in an 'unconscious' way. Again, the feelings from our viscera and other dimly-felt organs, the feelings of innervation (if such there be), and those of muscular exertion which, in our spatial judgments, are supposed unconsciously to determine what we shall perceive, are just exactly what we feel them, perfectly determinate conscious states, not vague editions of other conscious states. They may be faint and weak; they may be very vague cognizers of the same realities which other conscious states cognize and name exactly; they may be unconscious of much in the reality which the other states are conscious of. But that does not make them *in themselves* a whit dim or vague or unconscious. They *are* eternally as they feel when they exist, and can, neither actually nor potentially, be identified with anything else than their own faint selves. A faint feeling may be looked back upon and classified and understood in its relations to what went before or after it in the stream of thought. But it, on the one hand, and the later state of mind which knows all these things about it, on the other, are surely not two conditions, one conscious and the other 'unconscious,' of the same identical psychic fact. It is the destiny of thought that, on the whole, our early ideas are superseded by later ones, giving fuller accounts of the same realities. But none the less do the earlier and the later ideas preserve their own several substantive identities as so many several successive states of mind. To believe the contrary would make any definite science of psychology impossible. The only identity to be found among our successive ideas is their similarity of cognitive or representa- [p.175] tive function as dealing with the same objects. Identity of *being*, there is none; and I believe that throughout the rest of this volume the reader will reap the advantages of the simpler way of formulating the facts which is here begun.[27]

So we seem not only to have ascertained the unintelligibility of the notion that a mental fact can be two things at once, and that what seems like one feeling, of blueness for example, or of hatred, may really and 'unconsciously' be ten thousand elementary feelings which do not resemble blueness or hatred at all, but we find that we can express all the observed facts in other ways. The mind- [p.176] stuff theory, however, though scotched, is, we may be sure, not killed. If we ascribe consciousness to unicellular animalcules, then single cells can have it, and analogy should make us ascribe it to the several cells of the brain, each individually taken. And what a convenience would it not be for the psychologist if, by the adding together of various doses of this separate-cell-consciousness, he could treat thought as a kind of stuff or material, to be measured out in great or small amount, increased and subtracted from and baled about at will! He feels an imperious craving to be allowed to *construct* synthetically the successive mental states which he describes. The mind-stuff theory so easily admits of the construction being made, that it seems certain that 'man's unconquerable mind' will

devote much future pertinacity and ingenuity to setting it on its legs again and getting it into some sort of plausible working-order. I will therefore conclude the chapter with some consideration of the remaining difficulties which beset the matter as it at present stands.

DIFFICULTY OF STATING THE CONNECTION BETWEEN MIND AND BRAIN.

It will be remembered that in our criticism of the theory of the integration of successive conscious units into a feeling of musical pitch, we decided that whatever integration there was was that of the air-pulses into a simpler and simpler sort of physical effect, as the propagations of material change got higher and higher in the nervous system. At last, we said (p. 23), there results some simple and massive process in the auditory centres of the hemispherical cortex, to which, *as a whole*, the feeling of musical pitch directly corresponds. Already, in discussing the localization of functions in the brain, I had said (pp.158-9) that consciousness accompanies the stream of innervation through that organ and varies in quality with the character of the currents, being mainly of things seen if the occipital lobes are much involved, of things heard if the action is focalized in the temporal lobes, etc., etc.; and I had added that a vague formula like this was as much as one could safely venture on in the actual state of physiology. The facts of mental [p.177] deafness and blindness, of auditory and optical aphasia, show us that the whole brain must act together if certain thoughts are to occur. The consciousness, which is itself an integral thing not made of parts, 'corresponds' to the entire activity of the brain, whatever that may be, at the moment. This is a way of expressing the relation of mind and brain from which I shall not depart during the remainder of the book, because it expresses the bare phenomenal fact with no hypothesis, and is exposed to no such logical objections as we have found to cling to the theory of ideas in combination.

Nevertheless, this formula which is so unobjectionable if taken vaguely, positivistically, or scientifically, as a mere empirical law of concomitance between our thoughts and our brain, tumbles to pieces entirely if we assume to represent anything more intimate or ultimate by it. The ultimate of ultimate problems, of course, in the study of the relations of thought and brain, is to understand why and how such disparate things are connected at all. But before that problem is solved (if it ever is solved) there is a less ultimate problem which must first be settled. Before the connection of thought and brain can be explained, it must at least be *stated* in an elementary form; and there are great difficulties about so stating it. To state it in elementary form one must reduce it to its lowest terms and know which mental fact and which cerebral fact are, so to speak, in immediate juxtaposition. We must find the minimal mental fact whose being reposes directly on a brain-fact; and we must similarly find the minimal brain-event which will have a mental counterpart at all. Between the mental and the physical minima thus found there will be an immediate relation, the expression of which, if we had it, would be the elementary psycho-physic law.

Our own formula escapes the unintelligibility of psychic atoms by *taking the entire thought* (even of a complex object) *as the minimum with which it deals on the mental side*. But in taking the entire brain-process as its minimal fact on the material side it confronts other difficulties almost as bad.

[p.178] In the first place, it ignores analogies on which certain critics will insist, those, namely, between the composition of the total brain-process and that of

the *object* of the thought. The total brain-process is composed of parts, of simultaneous processes in the seeing, the hearing, the feeling, and other centres. The object thought of is also composed of parts, some of which are seen, others heard, others perceived by touch and muscular manipulation. "How then," these critics will say, "should the thought not itself be composed of parts, each the counterpart of a part of the object and of a part of the brain-process?" So natural is this way of looking at the matter that it has given rise to what is on the whole the most flourishing of all psychological systems - that of the Lockian school of associated ideas - of which school the mind-stuff theory is nothing but the last and subtlest offshoot.

The second difficulty is deeper still. *The 'entire brain-process' is not a physical fact at all.* It is the appearance to an onlooking mind of a multitude of physical facts. 'Entire brain' is nothing but our name for the way in which a million of molecules arranged in certain positions may affect our sense. On the principles of the corpuscular or mechanical philosophy, the only realities are the separate molecules, or at most the cells. Their aggregation into a 'brain' is a fiction of popular speech. Such a fiction cannot serve as the objectively real counterpart to any psychic state whatever. Only a genuinely physical fact can so serve. But the molecular fact is the only genuine physical fact - whereupon we seem, if we are to have an elementary psycho-physic law at all, thrust right back upon something like the mind-stuff theory, for the molecular fact, being an element of the 'brain,' would seem naturally to correspond, not to the total thoughts, but to elements in the thought.

What shall we do? Many would find relief at this point in celebrating the mystery of the Unknowable and the 'awe' which we should feel at having such a principle to take final charge of our perplexities. Others would rejoice that the finite and separatist view of things with which we started had at last developed its contradictions, and was [p.179] about to lead us dialectically upwards to some 'higher synthesis' in which inconsistencies cease from troubling and logic is at rest. It may be a constitutional infirmity, but I can take no comfort in such devices for making a luxury of intellectual defeat. They are but spiritual chloroform. Better live on the ragged edge, better gnaw the file forever!

THE MATERIAL - MONAD THEORY.

The most rational thing to do is to suspect that there may be a third possibility, an alternative supposition which we have not considered. Now there *is* an alternative supposition - a supposition moreover which has been frequently made in the history of philosophy, and which is freer from logical objections than either of the views we have ourselves discussed. It may be called the *theory of polyzoism or multiple monadism*; and it conceives the matter thus:

Every brain-cell has its own individual consciousness, which no other cell knows anything about, all individual consciousness being 'ejective' to each other. There is, however, among the cells one central or pontifical one to which *our* consciousness is attached. But the events of all the other cells physically influence this arch-cell; and through producing their joint effects on it, these other cells may be said to 'combine.' The arch-cell is, in fact, one of those 'external media' without which we saw that no fusion or integration of a number of things can occur. The physical modifications of the arch-cell thus form a sequence of results in the production whereof every other cell has a share, so that, as one might say, every other cell is represented therein. And similarly, the conscious correlates to these physical modifications form a sequence of thoughts or

feelings, each one of which is, as to its substantive being, an integral and uncompounded psychic thing, but each one of which may (in the exercise of its *cognitive* function) be *aware of THINGS* many and complicated in proportion to the number of other cells that have helped to modify the central cell.

By a conception of this sort, one incurs neither of the [p.180] internal contradictions which we found to beset the other two theories. One has no unintelligible self-combining of psychic units to account for on the one hand; and on the other hand, one need not treat as the physical counterpart of the stream of consciousness under observation, a 'total brain-activity' which is non-existent as a genuinely physiological fact. But, to offset these advantages, one has physiological difficulties and improbabilities. There is no cell or group of cells in the brain of such anatomical or functional pre-eminence as to appear to be the keystone or centre of gravity of the whole system. And even if there were such a cell, the theory of multiple monadism would, in strictness of thought, have no right to stop at it and treat it as a unit. The cell is no more a unit, materially considered, than the total brain is a unit. It is a compound of molecules, just as the brain is a compound of cells and fibres. And the molecules, according to the prevalent physical theories, are in turn compounds of atoms. The theory in question, therefore, if radically carried out, must set up for its elementary and irreducible psycho-physic couple, not the cell and its consciousness, but the primordial and eternal atom and its consciousness. We are back at Leibnitzian monadism, and therewith leave physiology behind us and dive into regions inaccessible to experience and verification; and our doctrine, although not self-contradictory, becomes so remote and unreal as to be almost as bad as if it were. Speculative minds alone will take an interest in it; and metaphysics, not psychology, will be responsible for its career. That the career may be a successful one must be admitted as a possibility - a theory which Leibnitz, Herbart, and Lotze have taken under their protection must have some sort of a destiny.

THE SOUL - THEORY.

But is this my last word? By no means. Many readers have certainly been saying to themselves for the last few pages: "Why on earth doesn't the poor man say *the Soul* and have done with it?" Other readers, of antispiritualistic training and prepossessions, advanced thinkers, or popular evolutionists, will perhaps be a little surprised [p.181] to find this much-despised word now sprung upon them at the end of so physiological a train of thought. But the plain fact is that all the arguments for a 'pontifical cell' or an 'arch-monad' are also arguments for that well-known spiritual agent in which scholastic psychology and common-sense have always believed. And my only reason for beating the bushes so, and not bringing it in earlier as a possible solution of our difficulties, has been that by this procedure I might perhaps force some of these materialistic minds to feel the more strongly the logical respectability of the spiritualistic position. The fact is that one cannot afford to despise any of these great traditional objects of belief. Whether we realize it or not, there is always a great drift of reasons, positive and negative, towing us in their direction. If there be such entities as Souls in the universe, they may possibly be affected by the manifold occurrences that go on in the nervous centres. To the state of the entire brain at a given moment they may respond by inward modifications of their own. These changes of state may be pulses of consciousness, cognitive of objects few or many, simple or complex. The soul would be thus a medium upon which (to use our earlier phraseology) the manifold brain-

processes *combine their effects*. Not needing to consider it as the 'inner aspect' of any arch-molecule or brain-cell, we escape that physiological improbability; and as its pulses of consciousness are unitary and integral affairs from the outset, we escape the absurdity of supposing feelings which exist separately and then 'fuse together' by themselves. The separateness is in the brain-world, on this theory, and the unity in the soul-world; and the only trouble that remains to haunt us is the metaphysical one of understanding how one sort of world or existent thing can affect or influence another at all. This trouble, however, since it also exists inside of both worlds, and involves neither physical improbability nor logical contradiction, is relatively small.

I confess, therefore, that to posit a soul influenced in some mysterious way by the brain-states and responding to them by conscious affections of its own, seems to me the line of least logical resistance, so far as we yet have attained.

[p.182] If it does not strictly *explain* anything, it is at any rate less positively objectionable than either mind-stuff or a material-monad creed. *The bare PHENOMENON, however, the IMMEDIATELY KNOWN thing which on the mental side is in apposition with the entire brain-process is the state of consciousness and not the soul itself.* Many of the staunchest believers in the soul admit that we know it only as an inference from experiencing its *states*. In Chapter X, accordingly, we must return to its consideration again, and *ask ourselves whether, after all, the ascertainment of a blank unmediated correspondence, term for term, of the succession of states of consciousness with the succession of total brain-processes, be not the simplest psychophysic formula, and the last word of a psychology which contents itself with verifiable laws, and seeks only to be clear, and to avoid unsafe hypotheses.* Such a mere admission of the empirical parallelism will there appear the wisest course. By keeping to it, our psychology will remain positivistic and non-metaphysical; and although this is certainly only a provisional halting-place, and things must some day be more thoroughly thought out, we shall abide there in this book, and just as we have rejected mind-dust, we shall take no account of the soul. The spiritualistic reader may nevertheless believe in the soul if he will; whilst the positivistic one who wishes to give a tinge of mystery to the expression of his positivism can continue to say that nature in her unfathomable designs has mixed us of clay and flame, of brain and mind, that the two things hang indubitably together and determine each other's being, but how or why, no mortal may ever know.

Footnotes

[1] Psychol. § 62.

[2] *Ibid.* § 272.

[3] Fragments of Science, 5th ed., p. 420.

[4] Belfast Address, 'Nature,' August 20, 1874, p. 318. I cannot help remarking that the disparity between motions and feelings on which these authors lay so much stress, is somewhat less absolute than at first sight it seems. There are categories common to the two worlds. Not only temporal succession (as Helmholtz admits, *Physiol. Optik*, p. 445), but such attributes as intensity, volume, simplicity or complication, smooth or impeded change, rest or agitation, are habitually predicated of both physical facts and mental facts. Where such analogies obtain, the things do have something in common.

[5] *Psychology*, § 131.

[6] 'Nature,' as above, 317-8.

[7] 'Nascent' is Mr. Spencer's great word. In showing how at a certain point consciousness must appear upon the evolving scene this author fairly outdoes himself in vagueness.

"In its higher forms, Instinct is probably accompanied by a rudimentary consciousness. There cannot be co-ordination of many stimuli without some ganglion through which they are all brought into relation. In the process of bringing them into relation, this ganglion must be subject to the influence of each - must undergo many changes. And the quick succession of changes in a ganglion, implying as it does perpetual experiences of differences and likenesses, constitutes the *raw material* of consciousness. The *implication* is that as fast as Instinct is developed, some kind of consciousness becomes nascent." (*Psychology*, § 195.) The words 'raw material' and 'implication' which I have italicized are the words which do the *evolving*. They are supposed to have all the rigor which the 'synthetic philosophy' requires. In the following passage, when 'impressions' pass through a common 'centre of communication' in succession (much as people might pass into a theatre through a turnstile) consciousness, non-existent until then, is supposed to result: "Separate impressions are received by the senses - by different parts of the body. If they go no further than the places at which they are received, they are useless. Or if only some of them are brought into relation with one another, they are useless. That an effectual adjustment may be made, they must be all brought into relation with one another. But this implies some centre of communication common to them all, through which they severally pass; and as they cannot pass through it simultaneously, they must pass through it in succession. So that as the external phenomena responded to become greater in number and more complicated in kind, the variety and rapidity of the changes to which this common centre of communication is subject must increase - there must result an unbroken series of these changes - *there must arise a consciousness*. "Hence the progress of the correspondence between the organism and its environment necessitates a gradual reduction of the sensorial changes to a succession; and by so doing *evolves a distinct consciousness* - a consciousness that becomes higher as the succession becomes more rapid and the correspondence more complete." (*Ibid.* § 179.) It is true that in the *Fortnightly Review* (vol. XIV. p. 716) Mr. Spencer denies that he means by this passage to tell us anything about the origin of consciousness at all. It resembles, however, too many other places in his *Psychology* (e.g. §§ 43, 110, 244) not to be taken as a serious attempt to explain how consciousness must at a certain point be 'evolved.' That, when a critic calls his attention to the inanity of his words, Mr. Spencer should say he never meant anything particular by them, is simply an example of the scandalous vagueness with which this sort of 'chromo-philosophy' is carried on.

[8] His own words are: "Mistakes are made in the sense that he admits having been touched, when in reality it was radiant heat that affected his skin. In our own before-mentioned experiments there was never any deception on the entire palmar side

of the hand or on the face. On the back of the hand in one case in a series of 60 stimulations 4 mistakes occurred, in another case 2 mistakes in 45 stimulations. On the extensor side of the upper arm 3 deceptions out of 48 stimulations were noticed, and in the case of another individual, 1 out of 31. In one case over the spine 3 deceptions in a series of 11 excitations were observed; in another, 4 out of 19. On the lumbar spine 6 deceptions came among 29 stimulations, and again 4 out of 7. There is certainly not yet enough material on which to rest a calculation of probabilities, but any one can easily convince himself that on the back there is no question of even a moderately accurate discrimination between warmth and a light pressure so far as but small portions of skin come into play. It has been as yet impossible to make corresponding experiments with regard to sensibility to cold." (Lehrb. d. Anat. u. Physiol. d. Sinnesorgane (1862), p. 29.)

[9] Principles of Psychology, § 60.

[10] Oddly enough, Mr. Spencer seems quite unaware of the *general* function of the theory of elementary units of mind-stuff in the evolutionary philosophy. We have seen it to be absolutely indispensable, if that philosophy is to work, to postulate consciousness in the nebula, - the simplest way being, of course, to suppose every atom animated. Mr. Spencer, however, will have it (e.g. First Principles, § 71) that consciousness is only the occasional result of the 'transformation' of a certain amount of 'physical force' to which it is 'equivalent.' Presumably a brain must already be there before any such 'transformation' can take place; and so the argument quoted in the text stands as a mere local detail, without general bearings.

[11] The compounding of colors may be dealt with in an identical way. Helmholtz has shown that if green light and red light fall simultaneously on the retina, we see the color yellow. The mind-stuff theory would interpret this as a case where the feeling green and the feeling red 'combine' into the *tertium quid* of feeling, yellow. What really occurs is no doubt that a third kind of nerve-process is set up when the combined lights impinge on the retina, - not simply the process of red plus the process of green, but something quite different from both or either. Of course, then, there *are* no feelings, either of red or of green, present to the mind at all; but the feeling of yellow which *is* there, answers as directly to the nerve-process which momentarily then exists, as the feelings of green and red would answer to their respective nerve-processes did the latter happen to be taking place.

[12] Cf. Mill's Logic, book VI. chap. IV. § 3.

[13] I find in my students an almost invincible tendency to think that we can immediately perceive that feelings do combine. "What!" they say, "is not the taste of lemonade composed of that of lemon *plus* that of sugar?" This is taking the combining of objects for that of feelings. The physical lemonade contains both the lemon and the sugar, but its taste does not contain their tastes, for if there are any two things which are certainly *not* present in the taste of lemonade, those are the lemon-sour on the one hand and the sugar-sweet on the other. These tastes are absent utterly. The entirely new taste which is present *resembles*, it is true, both those tastes; but in Chapter XIII we shall see that resemblance can not always be held to involve partial identity.

[14] E. Montgomery, in 'Mind,' V. 18-19. See also pp. 24-5.

[15] J. Royce, 'Mind,' VI. p. 376. Lotze has set forth the truth of this law more clearly and copiously than any other writer. Unfortunately he is too lengthy to quote. See his Microcosmus, bk. II. ch. I. § 5; Metaphysik, §§ 242, 260; Outlines of Metaphysics, part II. chap. I. §§ 3, 4, 5. Compare also Reid's Intellectual Powers, essay V, chap. III *ad fin.*; Bowne's Metaphysics, pp. 361-76; St. J. Mivart: Nature and Thought, pp. 98-101; E. Gurney: 'Monism,' in 'Mind,' VI. 153; and the article by Prof. Royce, just quoted, on 'Mind-stuff and Reality.' *In defence of the mind-stuff view*, see

W. K. Clifford: 'Mind,' III. 57 (reprinted in his 'Lectures and Essays,' II. 71); G. T. Fechner, *Psychophysik*, Bd. II. cap. XLV; H. Taine: on Intelligence, bk. III; E. Haeckel. 'Zellseelen u. Seelenzellen' in *Gesammelte pop. Vorträge*, Bd. I. p. 143; W. S. Duncan. *Conscious Matter*, *passim*; H. Zollner; *Natur d. Cometen*, pp. 320 ff.; Alfred Barratt: 'Physical Ethic' and *Physical Metempiric*, *passum* J. Soury: 'Hylozoismus,' in *Kosmos*, V. Jahrg., Heft X. p. 241; A. Main: 'Mind,' I. 292, 431, 566; II. 129, 402; *Id.* *Revue Philos.*, II. 86, 88, 419; III. 51, 502; IV. 402; F. W. Frankland: 'Mind,' VI. 116; Whittaker: 'Mind,' VI. 498 (historical); Morton Prince: *The Nature of Mind and Human Automatism* (1885); A. Riehl: *Der philosophische Kriticismus*, Bd. II. Theil 2, 2ter Abschnitt, 2tes Cap. (1887). The clearest of all these statements is, as far as it goes, that of Prince.

[16] "Someone might say that although it is true that neither a blind man nor a deaf man by himself can compare sounds with colors, yet since one hears and the other sees they might do so both together . . . But whether they are apart or close together makes no difference; not even if they permanently keep house together; no, not if they were Siamese twins, or more than Siamese twins, and were inseparably grown together, would it make the assumption any more possible. Only when sound and color are represented in the same reality is it thinkable that they should be compared." (Brentano; *Psychologie*, p. 209.)

[17] The reader must observe that we are reasoning altogether about the *logic* of the mind-stuff theory, about whether it can *explain the constitution* of higher mental states by viewing them as *identical with lower ones* summed together. We say the two sorts of fact are not identical: a higher state *is* not a lot of lower states; it is itself. When, however, a lot of lower states have come together, or when certain brain-conditions occur together which, *if they occurred separately, would produce* a lot of lower states, we have not for a moment pretended that a higher state may not emerge. In fact it does emerge under those conditions; and our Chapter IX will be mainly devoted to the proof of this fact. But such emergence is that of a new psychic entity, and is *toto coelo* different from such an 'integration' of the lower states as the mind-stuff theory affirms.

It may seem strange to suppose that anyone should mistake criticism of a certain theory about a fact for doubt of the fact itself. And yet the confusion is made in high quarters enough to justify our remarks. Mr. J. Ward, in his article *Psychology* in the *Encyclopaedia Britannica*, speaking of the hypothesis that "a series of feelings can be aware of itself as a series," says (p. 39): "Paradox is too mild a word for it, even contradiction will hardly suffice." Whereupon, Professor Bain takes him thus to task: "As to 'a series of states being aware of itself, I confess I see no insurmountable difficulty. It may be a fact, or not a fact; it may be a very clumsy expression for what it is applied to; but it is neither paradox nor contradiction. A series merely contradicts an individual, or it may be two or more individuals as coexisting; but that is too general to exclude the possibility of self-knowledge. It certainly does not bring the property of self-knowledge into the foreground, which, however, is not the same as denying it. An algebraic series might know itself, without any contradiction: the only thing against it is the want of evidence of the fact." ('Mind,' XI, 459). Prof. Bain thinks, then, that all the bother is about the difficulty of seeing how a series of feelings can have the knowledge of itself *added to it!!!* As if anybody ever was troubled about that. That, notoriously enough, is a fact: our consciousness is a series of feelings to which every now and then is *added* a retrospective consciousness that they have come and gone. What Mr. Ward and I are troubled about is merely the silliness of the mind-stuffists and associationists continuing to say that the 'series of states' *is* the 'awareness of itself;' that if the states be

posited severally, their collective consciousness is *eo ipso* given; and that we need no farther explanation, or 'evidence of the fact.'

[18] The writers about 'unconscious cerebration' seem sometimes to mean that and sometimes unconscious thought. The arguments which follow are culled from various quarters. The reader will find them most systematically urged by E. von Hartmann: *Philosophy of the Unconscious*, vol. I, and by E. Colsonet: *La vie Inconsciente de l'Esprit* (1880). Consult also T. Laycock: *Mind and Brain*, vol. I. chap. V (1860); W. B. Carpenter: *Mental Physiology*, chap. XIII; F. P. Cobbe: *Darwinism in Morals and other Essays*, essay XI, *Unconscious Cerebration* (1872); F. Bowen: *Modern Philosophy*, pp. 428-480; R. H. Hutton: *Contemporary Review*, vol. XXIV. p. 201; J. S. Mill: *Exam. of Hamilton*, chap. XV; G. H. Lewes; *Problems of life and Mind*, 3d series, Prob. II. chap. X, and also Prob. III. chap. II; D. G. Thompson: *A System of Psychology*, chap. XXXIII; J. M. Baldwin, *Hand-book of Psychology*, chap. IV.

[19] *Nouveaux Essais*, Avant-propos.

[20] J. S. Mill, *Exam of Hamilton*, chap. XV.

[21] Cf. Dugald Stewart, *Elements*, chap. II.

[22] J. E. Maude: 'The Unconscious in Education,' in 'Education' vol. I. p. 401 (1882).

[23] *Zur Lehre vom Lichtsinne* (1878).

[24] Cf. Wundt: *Ueber den Einfluss der Philosophie*, etc. - *Antrittsrede* (1876), pp. 10-11; - Helmholtz: *Die Thatsachen in der Wahrnehmung*, (1879), p. 27.

[25] Cf. *Satz vom Grunde*, pp. 59-65. Compare also F. Zöllner's *Natur der Kometen*, pp. 342 ff., and 425.

[26] Cf. the statements from Helmholtz to be found later in Chapter XIII.

[27] The text was written before Professor Lipps's *Grundtatsachen des Seelenlebens* (1883) came into my hands. In Chapter III of that book the notion of unconscious thought is subjected to the clearest and most searching criticism which it has yet received, [sic] Some passages are so similar to what I have myself written that I must quote them in a note. After proving that dimness and clearness, incompleteness and completeness do not pertain to a state of mind *as such* - since every state of mind must be *exactly* what it is, and nothing else - but only pertain to the way in which states of mind stand for objects, which they more or less dimly, more or less clearly, *represent*; Lipps takes the case of those sensations which attention is said to make more clear. "I perceive an object," he says, "now in clear daylight, and again at night. Call the content of the day-perception *a*, and that of the evening-perception *a*¹. There will probably be a considerable difference between *a* and *a*¹. The colors of *a* will be varied and intense, and will be sharply bounded by each other; those of *a*¹ will be less luminous, and less strongly contrasted, and will approach a common gray or brown, and merge more into each other. Both percepts, however, as such, are completely determinate and distinct from all others. The colors of *a*¹ appear before my eye neither more nor less decidedly dark and blurred than the colors of *a* appear bright and sharply bounded. But now I know, or believe I know, that one and the same real Object A corresponds to both *a* and *a*¹. I am convinced, moreover, that *a* represents A better than does *a*¹. Instead, however, of giving to my conviction this, its only correct, expression, and keeping the content of the consciousness, and the real object, the representation and what it means, distinct from each other, I substitute the real object for the content of the consciousness, and talk of the experience as if it consisted in one and the same object (namely, the surreptitiously introduced real one), constituting twice over the content of my consciousness, once in a clear and distinct, the other time in an obscure and vague fashion. I talk now of a distincter and of a less

distinct *consciousness* of A, whereas I am only justified in talking of two consciousnesses, *a* and *a*¹, equally distinct *in se*, but to which the supposed external object A corresponds with different degrees of distinctness." (P. 38-9.)