THE
JOURNAL OF MENTAL SCIENCE

[*Published by Authority of the Medico-Psychological Association of Great Britain and Ireland.*]

No. 228 [NEW SERIES No. 192.] JANUARY, 1909. VOL. LV.

Part I.—Original Articles.

The Physical Basis of Consciousness. By H. MAUDSLEY, M.D.

THE body is a vital union and communion of an infinite multitude of differentiated cells which constitute its different tissues and organs, their several functions intimately co-ordinated to serve the functions of a bodily whole; so many diversities in unity, unity in so many diversities, which is just what all nature is, what all science, when perfect, must needs be, what every well-fashioned mental organisation ought to be.

The combination of individual elements in most intricate and complex structure proportionately—that is *rationally*—adapted to a whole end is effected without conscious co-operation, a purely vital work, yet a work which, were it accompanied by consciousness, we must needs think done with marvellous intelligence and skill. With an intelligence, indeed, which the best conscious intelligence cannot overtake, much less expound mathematically, or match practically in its workshops; for the swift-wheeling swallow on the wing excels, and is long likely to excel, the cumbrous flying-machine. The Power which with admiring awe the Psalmist conceived to have fashioned him in the womb and to have foreseen all his members when there was yet none of them, is the same organic power that has fashioned the ingenious mechanisms of flower-fertilisation, the admirable architecture of the beehive, the social industry and devotion of "the parsimonious emmet." To speak of the body as an

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

instrument worked by an in-dwelling spirit, so comparing it to a mechanical instrument which a man handles, is therefore much misleading. An organism is a most complex fabric which makes itself, keeps itself in being and repair for the term of its natural life, performs its various functions with apparent spontaneity. In it are contained, and by it displayed, all the qualities of intelligence and will except self-consciousness.

As ascent is made gradually in the scale of life from low to highest organisms, unconscious rises imperceptibly into conscious intelligence, reaching its utmost evolution in the highest or human organism. Now, in this passage from purely organic life to the life of sensory and motor relations with the external world, a like constructive intelligence is displayed in the organisation of a series of nervous complexes in the brain to perform perceptions, conceptions and judgments to that which works intelligently in the organisation of the lower nervous centres and the inferior organs of the body. By purely vital work is the exquisitely delicate and complex mental organisation formed, in whose fine-wrought and biochemically condensed structure are not only representations of the various organic functions, but also silent memories of all experiences made in the life of adaptive relation to the external world of men and things, these never forgotten organically, however consciously forgotten ; for let metaphysical fancy sport as it will in transcendental regions, the business of positive science is not with an abstract predetermining entity, but with a concrete mental organisation which has been fashioned gradually by the conditions and experiences of human life through the ages. The work is done unconsciously and a resultant consciousness is its reflective illumination ; mind the product of life in mind, and, delivering thought from the hampering bondage of words, of mind in life ; for there is mind in life as there is life in mind. To conceive and fabricate a poor poem is, after all, a less intelligent work than to fabricate a fly or a flea, although the neurotic poet thinks differently, just because he feels the ecstatic rapture of a productive discharge, and like-minded persons catch and enjoy a sympathetic infection.

In the motions of the fly which, whisking about among objects in its swift flight hither and thither, easily avoids them, and deftly settles where it wishes to settle ; in the sprightly motions of the bird flitting from branch to branch of a tree, or

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

pursuing with quick turns and twists of flight the insect which it captures with precise aim; in the agile movements of the arboreal monkey leaping from branch to branch of tree after tree with just estimate of the amount and direction of the exact force needed to reach and grasp the support aimed at, failing which it would fall with uncalculated crash to the ground; in these and multitudes of similar animal performances are contained elements of infinitely minute and exquisitely balanced proportions, which, were they set forth duly in formulæ of conscious ratios, would be a series of successfully solved mathematical problems: the mathematics of nature which, when he becomes conscious of them in himself, man is so mightily proud of. The ratio or proportion in structure reveals itself in the reason of the function, the unconsciously intelligent doing in the conscious intelligence of thought.

To see things clearly and distinctly as they are, it might be wise to eliminate from the actual work of intelligence the abstraction made into an entity called consciousness, to purge the mind, if possible, of its traditional implications. A nowise easy task, seeing that psychological language is infected with metaphysical notions which inevitably vitiate a scientific use of it and much hinder direct perception and unbiassed thought. There is really no such abstract and constant existence as consciousness, no consciousness apart from each particular state of consciousness, special consciousnesses being as many and diverse as the diverse perceptions, thoughts and feelings; no consciousness, in fact, but many consciousnesses, just as there is no one conscience but many consciences. To speak of consciousness as an agent doing this or that, governing and directing, is fallacious if not absurd; even to think of a mental state as rising above its threshold, as if consciousness were a constant and serene region illuming particular mental states, hinders rather than helps a right understanding of things.

That consciousness is an ultimate mental fact and that human beings could not feel and know as they do without it is, of course, a truism, although it is no less true that everybody is and thinks a great deal more than he is ever conscious of; but the consciouness is neither self-caused nor self-subsistent, it is always the attendant and exponent of the particular mental state which kindles it. The consciousness of a saint is of different quality and dignity from that of the sinner or the

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

savage, because the mental contents of the one are very different from those of the other. If an insane person is positively certain that he sees an enemy tracking him where no enemy is, or hears a voice threatening him when there is no voice, yet cannot be brought by the concurrent and consistent testimony of everybody about him and the plain physical impossibility of what he imagines even so much as to doubt the testimony of his own consciousness, it is because his consciousness shares in the derangement of the mental state which it mirrors when that state is active; for when that is not active he is not conscious of his enemy's presence or plots, but thinks and acts like any sane person. In like manner, when a person not insane claims the infallible testimony of his individual consciousness to a spiritual intuition transcending or actually contradicting reason, the authority which he invokes is just the special sublimated feeling exalting him then and there, be its value great or small. Were his nervous system perchance poisoned by a depressing toxin the urgent testimony of intuition might be a conviction of unpardonable sin and eternal damnation. In that sad case the pious priest or pastor who has sincerely preached to his congregation the duty of a steadfast faith and unfaltering trust in a divine order of things incontinently hangs or drowns himself, the inexorable logic of feeling springing from a low nervous vitality resistlessly sweeping away all the reasoned logic of theory.

Much deeper source has feeling than reason; for while reason represents the formulated ratios of adaptive relations to the very limited part of the universe with which man's senses bring him into relation, feeling goes back to a unity of universal being which is far beyond the scope of rational relations. Mankind would never have made the progress in evolution which it has made had it always acted rationally. Because the particular state of consciousness reflects the particular motions—swift or sluggish—of thought and feeling, therefore it is that man is now an elated being striking the stars with his sublime head, and now a miserable creature dragging through a weary round in a wretched show. The one end of all life being to live, to keep up its particular being as long and as well as it can in converse and conflict with surrounding forces which always threaten, often hurt, and finally end it, its abject declension naturally and necessarily weakens or destroys vital zest and reactive energy,

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

extinguishes the will to live. So it comes to pass that despairing melancholia and life-weary old age shrink not from, if they do not actually covet, the ending of mortality. If the individual life which is only suffering and sorrow feels it hard to tolerate its own continuance, that, after all, is no great matter, seeing that the instinct of life, ever fresh and strong in the species, provides surely for human continuance.

Having discarded the notion of an abstract and constant consciousness, the question is what happens when mental work becomes conscious. Forasmuch as it is now generally admitted, although the notion was long derided, that mind exists and works unconsciously, the necessary inference is that consciousness is not of the essence of mind but incidental to its work. That we are not conscious of the various functions of the organic life of the body which go on in quiet harmony with the nicest adaptations of means to end throughout its complex mechanism is presumably because they have no direct relations with the external world but are practically self-contained within their own domain, their rhythmical relations being mainly with one another. They need, it is true, food and air from without to nourish and sustain them—like all life postulate the essential co-operation and incorporation of external nature—but these they get indirectly from the liquid medium in which every element of them is bathed. The life of relation on the other hand is accompanied by consciousness and by fuller and more vivid consciousness the more special and complex it is. Plainly, then, consciousness comes into being somehow out of that relation—from the reflections seemingly which go on between the individual creature and its environments as it adapts itself to it and adapts it to itself, waxing with the progressive increase of reflections in the ascending scale of animal life to its highest expressions in man, and waning in the descending scale to the positive unconsciousness of mere tissue irritability. The completer the individuation, the more, that is, the individual offshoots grow into special and complex being, the clearer and more distinct is the consciousness. One can hardly imagine the amœba to feel in the sense of being conscious that it feels, although it has evidently a sensibility below conscious sense, any more than the fitly-tuned receiver of a wireless telegram, or even believe a jelly-fish and sundry higher creatures in the animal scale to have

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

more than a general feeling of ease or unease with such instinctive motor reactions as accompany the purely organic functions in man. Yet adaptive rhythmical reactions to impressions take place in low organisms just as they do in the delicate elements of the cerebro-mental organisation when perception is performed and, thought answering reflectively to thought, we speak of conscious choice (1).

As consciousness springs from the individual life of relation, it naturally dawns dimly and brightens gradually in its particular human development. There is a brief period at the beginning of its life when the infant is unconscious of anything but a few sensations, and a longer period elapses before it is conscious of the outer world as distinct from itself; indeed, for some time the child ascribes a sort of life like its life to non-living things, being instinct, perhaps, with a sense of its fundamental unity with Nature before it is much individuated, without ever being separated from it; and it is only with the increase of its sensori-motor relations in the process of action and reaction that it gradually learns to distinguish one thing from another and itself from other things, thus steadily building up a self. In the first instance it would grasp a red-hot bar of iron as eagerly as a stick of red sealing-wax; but the different sensations of pain to be eschewed and of pleasure to be pursued soon teach discrimination and excite answering intellectual consciousness. Thus it is, after the instruction of experience, that when the object is present to sight the impression is reflected in the child's brain, and it is taught to do or to forbear; whereupon we are in the habit of saying that the child reflects, just as though it were a separate something behind its own brain. To live and grow individually the organism cannot but choose and assimilate what suits and pleases, reject what hurts and displeases, so continually making discriminating reflections; the choice not a matter of predeter-

(1) The trouble in thinking on these adapted reactions comes from imagining that they cannot occur without some kind of consciousness because similar reactions occur in ourselves consciously. One might, of course, in like manner imagine that the adaptive movements of the viscera were accompanied by some kind of consciousness. But that would simple be to destroy the meaning of the word consciousness, and to give it no definite meaning. What it seems necessary to realise is that rhythmical impressions and reactions occur as properties of the simplest living matter; that they are more complex in the various organic rhythms of the diverse inter-related organs; that they do not need consciousness, although consciousness needs them; that they become conscious when in the complications of organic structure and their nervous inter-communications certain reflections of them take effect.

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

mining consciousness but an elective attraction or rejective repulsion of its nature. By experience it is that consciousness is thus evolved and progressively raised in quality and dignity; such development being just the brief abstract of that which has gone on by long detail in the birth and development of consciousness through the ages of ascending animal life. Rise is made from the simple action and reaction of living protoplasm which is called irritability—it might even be called sensibility (3)—to the simplest supposed sensation and its direct reaction, thence to the union of sensations in perception with its more complex reactions and answering more compound consciousness, and finally to the complexity of reflective interrelations whose reactions are most richly and fully conscious.

In this connection it is of course evident that other human beings, with their thoughts, feelings and doings, constitute a vastly important part of the interaction between the man and his environment and the therefrom ensuing consciousnesses. By the reflection of himself in others he becomes self-conscious; were he not closely kin to them, but he and they mutually insensible, he would remain humanly unconscious of himself; only by converse with that which is not self does self differentiate itself consciously. Neither virtue nor beauty would be self-conscious but for their reflection or reverberation in other selves. And in no case does the single person respond to the manifold varieties of human influence; his nature reacts only to those impressions which it is constitutionally fitted to reflect; not otherwise perhaps than as the various colours of flowers declare their special structural reflections of the different waves in a beam of white light.

Vital elements of an organism apparently work together much as individuals do in a social state. No state was ever constructed theoretically on *à priori* grounds of reason; the *à posteriori* facts of human feelings and doings would soon shatter any fabric so artificially built. The stable state has grown gradually as a living structure by organic adaptations of experience, conscious systematisation being a consequence. Analysis, in order to discriminate and react fitly to more special impressions, and subsequent synthesis in order to combine results into successfully higher unities of perception, conception and will—

(3) Sensibility and irritability are convenient divisions in language if not in thought; they do not mark a division in nature.

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

that is the fundamental law of progressive mental organisation in communities as in individuals. The process is developmental: first, synergy, or working together; next, *consentience*, or feeling together; then *consciousness*, or knowing together; synergies, consentiences and consciousnesses becoming more special and complex as the organisation advances in specialty and complexity of structure.

Conscience itself is a further natural evolution. It blossoms in the self from the knowing and feeling with other selves, the knowing being not of things only, but of other like beings and their relations to it and its relations to them in a social system. Action with regard to physical objects is simply conscious, right and rational or wrong and irrational; with regard to human objects who feel and respond sympathetically its consciousness is social or moral, and therefore called righteous or unrighteous. Naturally and necessarily therefore conscience differs much in different ages, nations, places and persons according to the sanctioned standard of right and wrong, which is far from uniform. Inasmuch as it is tinctured with feeling, is more than the "dry light" of reason it obeys the physiological law of mental organisation; the fusion of a special class of associated ideas respecting thought and conduct in a particular order of circumstances developing a corresponding emotional feeling which is, as it were, the effluence or fragrance of it, if it be fragrant, which is nowise always the case.

When a number of persons join together in a society, sect, union or corporation or the like having its special aims, interests and operations, there evolves imperceptibly an answering corporate consciousness which is something more than, and different from, the particular consciousness of each individual who goes to form it; a consciousness which is the result of the inter-feelings and inter-workings for a common purpose of the individual consciousnesses. The familiar saying that a corporation has no conscience is in great measure true, for an individual member of it sanctions without qualm or shame that which he would hesitate or shrink from doing on his own account; his sense of responsibility is weakened by the division or dispersion of responsibility, because his consciousness, merged into the corporate consciousness, sheds poor light on his personal obligation. He cannot well have a keen and tender conscience when he is little, or not at all, conscious of

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

it. At any rate, when a person puts his conscience into his pocket, it notoriously stays there very quietly, making no serious attempt to get out. Observation, viewing impartially the human drama, past and present, might not unjustly conclude that as man has been the greatest enemy of man, so Christian sects have been the greatest enemies of Christianity, notwithstanding that its essential principle is human brotherhood and brotherly love. A national consciousness, again, is far from being a national conscience; the conscience of one nation when its interests conflict with those of another nation is apt to be a complete abnegation of conscience; and the individual components of a frantic and howling mob, not quite fools singly, lose all sense of right and wrong and are monstrously irrational.

As metaphysical psychology has made mighty use of consciousness as a pure, constant, independent entity, so likewise it has seated the ego aloft on a quite spiritual and sacred throne. Calling to mind the rhetorical outpours in praise of the glory and grandeur of the conscious ego, it requires some courage to think and speak of it as a physical effect of mental organisation subject to physical laws of limitation and reflection. Two things, however, are pretty certain—first, that it is not an ego in the sense of being something separate from and independent of the external nature in, through, and by which it lives; secondly, that the concrete ego, be its essence ever so spiritual, is generally neither glorious nor grand. The ideal conscience, doomed always to remain ideal, and the unrealisable ideal of a perfect humanity which faith foresees, supply the inspiration which incites and sustains the ardent philanthropist to toil in altruistic service, albeit his actual intercourse with men and women as they are is apt sorely to disillusion him.

Would it not be strange, seeing that the body is a unity, if the conscious issue of its unified elements and energies in the supreme cerebral representative centres was not a unity? As the natural expression of the bodily ego, the conscious ego varies necessarily as it varies in different persons and in the same person in different moods and at different periods of life, and notoriously may be lamed or mutilated by suitable bodily lamings and mutilations. Take out of the individual mind the qualities which enter into its composition with the development of the reproductive functions at puberty and the result is an

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

incomplete ego—the eunuch's ego, which, however subtly intellectual, is destitute morally. New matter acting on the brain by hidden bio-chemical means, or some other silently infusing agency, works a quiet revolution, or rather evolution, of the sensibility and mode of outlook on the world. Let the thyroid gland suffer progressive degeneration, a progressively degenerate ego answers to the physical deterioration. Could any two persons, again, be more unlike mentally than the two different egos of the same person afflicted with so-called *folie circulaire*, according as he is in the elated, energetic, self-confident, self-assertive, enterprising state of exaltation, or in the dull, dejected, apathetic, self-distrustful, almost inert state of depression? So far from the conscious ego being a constant entity, one and indivisible, not only does disease heighten, lessen, change, even dismember it, but all sorts of tricks are played with its unity by hypnotic and similar experiments. Think on the humiliating spectacle of dissociated mind which he or she presents whose mutilated and enslaved ego with machine-like obedience servilely thinks, feels and does as the operator directs. Such a creature, too, as the operator sometimes is!

If it be asked why in such case, if the fundamental bodily unity persists, it does not hold the ego better together, the answer is because the bodily unity is not then justly represented in the mental organisation; a disjunction of the normal associations of its federal tracts disintegrates the confederate unity. Separate cerebral tracts or centres or complexes being almost exclusively active, and the functions of confederate tracts suspended, the ensuing consciousness naturally and necessarily goes along with the active function, and the character of the ego as naturally and necessarily varies according to the part which is in predominant action. Thus it falls out that the same bodily ego is at one time a sound social being and at another time an incomplete or positively anti-social being. Could we dive into the turbid recesses of the acutely melancholic mind in which panics of fear and horribly vivid delusions, more intense and real than any sane thought and feeling ever is, convert every impression on every sense—on eye, on ear, on organ of taste, of smell, of touch—into omens or threats or means of torture, and provoke shuddering recoil from expressions of sympathy and frantic resistance to

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

the ministrations of necessary help as signs and agents of assault, it might be easier to realise how closely and surely consciousness is tied to the nightmare of a mad-brained activity, and to picture what a monstrously frightful world it makes and projects for itself. Pity it is that every sane person cannot be taught to understand how much he, like every insane person, does to create his own external world, and thereupon learn by comparison to put its right value on it.

The vital work of the body following its natural course in continuance of Nature's great creative process, that is the fact which we have to do with in the complex mental organisation of the supreme cerebral centres. Therefore it is that when the relational function of mind is suspended in sleep while organic life continues, imagination is vitally active and silent pulses of a not quite quiescent thought or feeling of the day, or an outward impression apparently unperceived, or the least bodily derangement, stirs the scattered waves of the mental organisation to the usually disordered, yet always wonderfully creative and sometimes fairly coherent, activities of dreams. Think on the irresponsible, conscienceless, amazingly productive being which the person then is. What has become of the unity of his conscious ego? It would verily go hard with him were it not for the basic unity of the body which, persisting, holds him together as an organic unity, sometimes even as a tolerably coherent mental being, when his life of relation as a conscious being is suspended. The lesson of disintegrable ego is truly a large and wide-reaching one. Natural dislike of the pitiful wiles and guiles, the odious insincerities and hypocrisies, the mean vices and criminalities of persons who possess a weak, unstable conscious unity may easily provoke too hard a censure; for a feeble, fickle, and fluctuating conscience is the inevitable physical consequence of an unstable and easily disintegrated mental fabric whose explosive flash-point is low.

In the continual action and reaction between the individual and his environment whereby equilibrium is obtained and maintained it is necessary to look more deeply than on the superficial and seeming self—to peer into the organic depths of him. Innate in the forms and delicate intricacies of his constitution are embedded the many condensed essences of individuals of his line of descent; nay, more, the incorporate adaptations of the race through the ages of its evolution—all

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

the precedent acquisitions which have accumulated from human beginnings to endow him with his present capacities and make him feel, think, and act as he does in human fashion. Thus embodying in his organisation the long past adaptations of the species, as well as the later special adaptations of his own ancestors and the latest individual registrations of his particular experiences, it is obvious that the reflection between the man and his environment is not a simple and superficial affair, but a deep, subtle and complex excitation of the very intricacies of his being; its formulated expressions the outcome of all the finely intervolved motions, orderly and harmonious, of the elements constituting its organic unity. The stimulated self-consciousness of such a long-formed, much differentiated, complexly co-ordinated being, must needs be a very different thing from that of a creature low in the scale of animal development and embodying no such intricate complexities of special adaptations; the product not of individual adaptations only but also of those of the species and the family stock, all which go to constitute the silent contents of his composite self-consciousness.

To excite consciousness in the interactive adaptation between the organism and its environment it would seem necessary that the sensory impression be followed by its motor reaction, the ingoing motion *from* without reflected into the outgoing motion *to* the without—the circuit, in fact, completed. Note is easily taken of the sensible impressions which objects make, but it is not so easy adequately to realise that there would be no consciousness of any such object were the impression on sense not followed by its fit motor reaction. When the eye sees an object definitely there is the exact adjustment of ocular movements to grasp or apprehend it, and when the vision of it is vivid in memory to the mind's eye there is an understood, though not visible, motor grasp or apprehension of it. Even the thinker who reflects closely upon some problem or process of nature must, if he will get a clear and distinct notion, if not actually visualise his conception mentally, at all events make some ideal motor apprehension of it. So only can he grasp and think it clearly. No one would be conscious of an outer world, and therefore conscious of himself as a self, did he not react motorially to it.

The essential notion to be formed and kept clearly in mind plainly is that man is not something separate from the rest of

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

nature but a living part of it; although individual not divided from it, but just a body in it acted on and reacting in the continuous flux of its mysterious process; vitally rooted in it and growing out of it in proportion to the increase of sound relations with it. Individual he is, it is true, embodies a so-called principle of individuation, yet only as part of a whole from which he is derived, from which he is not severed, and into which he returns when his spent individuality, like that of a plant or animal, ends. When things are frankly viewed in this light mental organisation takes its natural place as crown and present consummation of organic evolution.

If the physical basis of mind be a rational structuralisation of experience, a true mental organisation, what happens when statical mind is discharged in function? Assuredly, exceeding swift and subtle motions of some kind spread from every active part along registered tracks of association and stir into activity other associated parts of the mental confederacy; many associations, more or less used, in the complex mental organisation which education and experience have richly edified; few only, constantly used, in the mind of simple structure. What is the nature of the fine waves of motion, and what are the modes of their complex inter-actions, regular no doubt when irregular they seem, we cannot tell; can only at best guess at lamely by help of such known likenesses as serve, using the inadequate language of known to describe unknown processes. The exquisite subtleties of such notions are, however, imaginable when we reflect that a free electron is now believed to travel easily between the atoms of a compact solid substance.

What happens physically, again, when the subtle motion of thought along the fine filaments of the brain—exactly measureable, no doubt, had we the sufficiently delicate instruments and appliances—becomes conscious? That the conditions of such consciousness is some kind of physical reflection, a conscious thought being a reflected thought, seems probable enough. The very word *reflection* may point to an instructive intuition of some such physical process. Certainly consciousness does not, as usually assumed, precede and originate the particular mental motion, whether it be motion of feeling, thought or imagination; it is really concomitant with or just sequent to it, sometimes notably sequent by an appreciable interval—is in

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

effect consequence if not fine physical reflection of it(8). So long as consciousness is thought of as a reality apart from the particular mental act, as an independent something which receives and reacts, the pure and serene attribute of a metaphysical ego which transcends the bodily ego, so long will it be hard to gain a positive notion of the real conditions of its existence and the laws of its function.

That consciousness is an ultimate fact is a truism which hardly needs the frequent reiteration it receives. We can no more explain what it is than we can explain what electricity is, or what ether or what anything in its ultimate reality is; all we can do is to study the conditions of its origin and different manifestations, which notably differ in degree from the simplest sensation in simple organisms to the fullest reflective consciousness in the most complex organic structure in the world, namely, the microcosm of the human brain. By imperceptible gradations its illumination increases from feeble glimmer to brightest glow. Why, then, ignore its spiritual independence, if it has such independence, when it first appears? Scientific inquiry is bound to take notice of its dawn in the simplest sensation, indistinguishable actually from so-called irritability of the lower organisms, in the first sensations or barely conscious sensibilities of the human infant, and in the so-called organic sensations or sympathies which, although not consciously felt, have so large and important a share in bodily and mental life. The physical conditions of its origin, whatever they be, are they not fundamentally the same on its lowest level of simplicity as those which obtain at its highest summit of evolution in the human brain? At its best it cannot decently disown its natural kinship. When a decapitated frog performs the same purposive action of defence or embracement which it would perform if not so mutilated, what is to be said of its consciousness? Although the creature

(8) Such momentary delay of consciousness may, perhaps, explain the sometimes strange flash of feeling and apparent reminiscence of having been in exactly the same circumstances before, notwithstanding that they are quite new. Although new to consciousness they are not really new, because they have made their impressions before the conscious perception by which they are illumined, and then, as it were, remembered. Impressed in the dark they seem familiar when the light is thrown on them. In like manner, an interval may occur between a remark made which a person is not conscious of hearing at the time, attention being otherwise fixed, yet he hears and replies to a moment afterwards when consciousness, so to speak, is released. Consciousness, in fact, cannot be in two places at the same time.

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

is not cerebrally conscious, its body is clearly sensible to, if not conscious of, the stimulus to which it has before made and now makes intelligent response. The autonomy of the ganglionic centres governing the requisite combination and fitly proportionate actions of muscles implies an intimate intersensibility or sympathy which, if not conscious sensibility, is at all events its equivalent.

It is common observation that the consciousness which accompanies the formation of a mental act lapses when, the act being definitely organised, the performance is perfect. Conscious of the learning and first performances of an idea or act, we are unconscious of its performance when it has been perfectly learnt. Organic memory then dispenses with the need of recollection. That is the case with all so-called acquired reflex acts, the organised machinery of which automatically performs so large a part of our daily thinking and doing. Plainly, consciousness is not an essential factor of the perfect function. A swift interplay of mental motions between federated parts—radiations at large, so to speak—proceeds until the proper motions are combined and fixed in the right neural complex. That which takes effect in the acquisition and perfection of an idea, in the clear and distinct apprehension of it, is exactly like that which goes on when anyone takes pains to join different muscles in fit degrees and nice adjustments of movement in order to learn and perform well a skilful bodily act; these being at first vague, clumsy and inexact, and only by practice made precise, close and fit in compact union. To apprehend an idea is literally to grasp or apprehend it, the clear and distinct idea the precise grasp or apprehension.

Note in this connection how loosely some wits wander in distracted motions when a new idea is suddenly offered to them, before they can combine—if they ever can—and steadily apply the proper apprehension; stagger, stumble, fumble in thinking, so to speak, instead of quietly and steadily thinking it. So far from making patient and firm application, they are apt, especially if they are women or feminine men, confusedly to resent, even angrily resist, the required adjustment. The new idea, being an invasion of their mental structure, is an offence to its self-conservative instinct and their self-love; it is resented and repelled accordingly as an unwelcome, if not unrighteous, intruder. Now, as in the union of movements to perform a

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

purposive act with ease and perfection consciousness lapses when the performance is perfect, so if it intervene when it is not wanted it hinders rather than helps, discomposing or distracting the proper complex of motions, as is commonly said. The truth, however, is that no interloping consciousness does anything of the kind; it is not consciousness which distracts or disintegrates, for it is the outcome and expression of the distraction or disintegration. The over-meditating person paralyses action because his conscious reflections dissipate at large the motion which ought to stream along the proper channels in definite work. For the same reason the old man, although useful in counsel, is bad in execution, lacking organic energy and dissipating what he has in reflections.

The disappearance of consciousness when the performance of an idea or act is perfect justifies the inference that it arises from the reflections which take place in the learning of the thought or act before the right combination of them is settled and fixed in structure. Naturally, therefore, it happens that when an unexpected jar, obstacle or failure occurs in the quiet process of automatic performance consciousness is instantly aroused, because the even flow along the settled tracts is dispersed in random reflections. Anyhow, whatever be the right physical explanation, certain it is that the best mental work is done actually without conscious reflection. The creative work of the poetic, artistic, scientific imagination is a spontaneous birth, comes, like a dream creation, not by conscious artifice, albeit a proper antecedent tuition is indispensable to sound creation. Patient contact with facts, disciplined observation and rational instruction by them are just the material which the truly creative imagination requires and uses, but fantastic and puerile imaginations gladly shirk and lack. A well-instructed imagination may notably do good work sometimes in dreams. Indeed, a man might dream every night of his life, yet, were his dreams dependent upon a pre-designing consciousness, never dream so creatively and dramatically as he does sometimes in a single night when he is vividly conscious of that over the construction of which he has no control. It would be no great paradox to say that the creative work of genius was excellent dreaming, and dramatic dreaming distracted genius.

The anomalous states of consciousness displayed in conditions of hysteria, catalepsy, epilepsy, hypnotism and similar

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

dissociations of mental function illustrate the essential connection of consciousness with the particular mental state and the signal disintegrations which the conscious ego suffers in consequence. When a group of cerebro-mental centres is stirred into quasi-spasmodic and exclusive activity, the rest of the cerebro-mental area being in a state of almost or entirely suspended function, consciousness is necessarily limited to the active parts and the personality of the self signally truncated. And if the abnormal states recur frequently or are repeatedly provoked and fostered, the person may seem to be two selves according as the strange or the normal self is in functional action. After all, nobody is constantly the same self. Not only is he a different self at different periods of his life and in different circumstances, but also on different days according to his different bodily states: sanguine and optimistic, gloomy and pessimistic, frank and genial, reserved and suspicious, apathetic or energetic. Although his intellectual powers are the same, nowise deranged, yet his judgment of the objective world and his relations to it is quite changed, because of the change in his moods and the nervous states which they imply. All which goes to show in a round-about way how much more fundamental is feeling than intellect, how futile reason is against its force, how poor a thing art or religion of any sort must be without feeling, and how little mankind might care to go on living were life a matter of pure reason. Be that as it may, reflecting that in every human being there are latent germs of being and doing what other human beings have been and done, imagination may suppose hypnotic suggestion or other agency to stir into predominant action one or another of these lurking human potentialities and thus compel the person for the time being to act under its temporary domination.

The disturbances of consciousness which occur in connection with epileptic fits are instructive morbid experiments, for in them there is no question of artificial suggestion on the part of an operator or of fraud on the part of the person operated on; no biassed quest of two persons in sympathetic conspiracy, conscious or unconscious, and on the expectant outlook to find the same result. Certainly it would be strange if the exquisitely subtle reflective motions of consciousness in the delicate, intricate and finely organised nervous structure of the cerebral plexuses were not deranged during the explosive outburst of

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

an epileptic fit. Simultaneous with the occurrence of disordered movements there is an instant abolition of consciousness, brief in the case of an attack of so-called minor epilepsy, where the victim performs a sudden gyration or some other odd movements, not knowing what he does, and then goes about his business as if nothing had happened; prolonged when he falls down and is shaken in a succession of violent convulsions, lying in a state of stupor for a while after they have spent themselves. Consciousness must needs vanish instantly when the regular fine physical motions which are the conditions of its existence are violently drawn into the explosive outward discharge; its torrent of convulsive energy engulfing the reflections of their subtle motions, which recur only when it is spent, and recur but slowly after violent convulsions because the exhausted nerve-elements need time to recover their squandered energy.

In minor epilepsy, where a slight local explosion of the cerebral cortex does not pass outwards into convulsions, the derangement of the fine and orderly motions within it is sometimes accompanied by a corresponding limited and confused consciousness. Then it is that the person carries through a succession of customary acts without being fully aware of what he is doing, or that he is doing that which, when fully conscious, he had no intention of doing—for example, when attacked in the street on his way to business, goes instead to his home, only realising when he arrives that he has done what he ought not to have done. The full reflective motion of normal consciousness being abolished by the commotion of the cerebral seizure, the dominant notion ruling in the disintegrated mental self directs the routine of conduct requisite to carry it into effect. It is then motion of thought along the beaten thoroughfare, so to speak; he has consciousness enough to do by rote the work he does but not reflective consciousness, not the power to make the fitting reflective motions.

The special *aura* or warning preceding the cerebral commotion of an ordinary epileptic fit is usually a strange sensation which seems to rise upwards from some part of the body, or perhaps a vivid hallucination of one of the special senses; a local sensory disturbance denoting the starting-post of the general commotion. In other cases, however, the precursory disturbance of consciousness is more intellectual than sensory,

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

a hazy aberration of thought and feeling which the sufferer feels it impossible to describe, so strange and alien is it. How ever describe the unintelligible abnormal in terms of the intelligible normal? It is a sudden irruption of dazed thought and feeling or a seeming reminiscence of a scene or dream confounding strangely the sense of self or producing the impression of two selves. Together with its abrupt invasion, or rather its explosive discharge, consciousness of outer relations is obscured or partly suspended and soon followed by temporary unconsciousness. Apparently a local or partial explosion of the cerebral area takes place before the entire area is implicated in this disordered commotion.

Similar incursions of hallucinations, hazy thoughts and odd reminiscences, unexpected and unwilled, with perhaps a loss of sense of self or strange sense of double self, notably occur frequently in the semi-conscious state between waking and sleep; for then the scattered and flickering notions of a mental organisation subsiding into functional inaction seem to meet at random and occasion corresponding flashes of consciousness. These states of fluttering consciousness in the transition from waking to sleep show plainly how consciousness flickers, like an expiring candle, with the waning activities of the mental organisation, as they cease irregularly in different parts of it. A like condition of things in one who is at the point of death gives occasion to the awe-stricken attendants on the solemn scene to detect in the muttered utterances prophetic aspirations or anticipations, and to behold proof of the immortal ego taking final flight from the mortal ego then fast ceasing to be an ego.

It is not altogether satisfactory to say, as is sometimes said, that the epileptic is unconscious of the impressions which, in a measure, direct what he does when he does a succession of seemingly purposive acts, because he is not then conscious of objects which, having no direct relations to his present actions, make no conscious impressions and he remembers not at all, or hazily and vaguely only, when he comes to his full self; for he sees encountered objects as he goes along and adapts his movements to avoid them and to accomplish the purpose which he has in mind and for the time being is his mind. The cerebral complexes which govern his performance are so far sensible and reactive to their impressions as to excite in

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

succession the limited consciousness required to enable the disintegrated ego to do what it does; they effect the necessary interworking of motions to ensure the successive steps of the right bodily actions. How should the individual, when he is again a complete self, remember clearly what a fragmentary self did separately? The reproduced fragmentary self could alone do that. When one nervous mechanism, sensitive and reactive to a particular order of impressions, acts independently, the whole self cannot have the consciousness of its parts acting together. This morbid distraction of a part of the mind (and a samll part only of the mind, after all, is engaged in its usual operations of thinking and doing) is but an extreme illustration of that which occurs naturally in daily life when a person lost in thought goes methodically through a customary performance without being apparently conscious at the time, certainly without remembering afterwards that he did it. Did he go to a usual destination through this street or that? He cannot say unless some forgotten circumstance which drew a momentary notice as he passed chanced to occur to his recollection. More than half of every life is lived automatically by rote; paradoxical as it sounds, when memory is perfect there is no recollection.

The lesson to be learnt is that sensitiveness to impressions with adaptive motor reactions, yet without the full light which we call consciousness, is a property of nervous substance, and that a mental organisation is thereby gradually fashioned(4). A receptive cerebral area is so modified by previous impressions and the reactions to them as to respond instantly; repetitions of impressions having fixed in the mobile colloid matter

(4) As, indeed, of much coarser matter when there is answering rhythm to received rhythm. The latest inquiries show that masses of matter in contact are seldom, if ever, without influence upon one another. Molecular interaction of the surface-layers takes place with incomplete chemical reactions and electrical charges. "Concentration, electric conductivity, all physical properties become abnormal," so that "when the surface energy forms a large fraction of the total molecular energy, as in films or fluids in fine capillaries, ordinary chemical or physical knowledge fails us. And there is "good evidence to prove that the life-like characteristics of colloidal matter, its capacity of storing impressions, the elusiveness of its chemical and physical states, are due to the fact that an exceptionally large fraction of its energy is in the form of surface energy." For it is certain that living matter contains a very large proportion per unit of mass. A French physicist, M. Perrin, has recently shown that by the use of minute quantities of salts one can fix in the surface-layer certain qualities which, for instance, define the electric properties of the surface. Moreover, the effect, once produced, endures; no amount of washing will undo it. In the absence of chemical intervention it will endure, exerting a directive influence upon the molecular events in its neighbourhood. ("The Physical Basis of Life," *Proceedings of Royal Institution*, 1906, William Bate Hardy.)

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

of its living structure qualities which render it thus specially sensitive and reactive to them. Once the special nervous matter thus modified is duly organised in an order of feeling and thought, it functions automatically, making no more demand on, or use of, conscious reflections than a similarly organised motor complex, consciously acquired in the first instance, does in accustomed bodily actions. As the different sciences represent different series of analyses and syntheses of ever-increasing specialty and complexity, the nervous complexes organised to subserve the special syntheses of one science are necessarily different and differently conscious from those of another science; those of the mathematician, for example, insensible and non-reactive to those which in the physiologist's brain are the subjective organisations of the objective facts which are his special study. So it is that, as Dugald Steward said, great mathematicians are often the most credulous of men outside their special domain of thought. In the ideal time to come, when the several sciences shall have perfected and completed their respective analyses and syntheses, it may perhaps come to pass that their specialisations, which now render them mutually unintelligible for the most part, shall be consistently harmonised as a full, true, and final philosophy in the duly sensitive and reactive plexuses of an adequately organised human brain; the exquisitely fine, special and complex structure of its microcosm then subserving an inconceivable maze of orderly motions compared to which the macrocosmic motions of the starry heavens are simple.

The definite conception of a mental organisation as something having extension, occupying space, fashioned differently in different persons, and subject to various places and degrees of disintegration, instead of the vague notion of an indivisible and intangible entity, possessing a constant unity of consciousness and incapable of disintegration, renders it easy to picture in mind the dissociations of federal tracts, their more or less independent and separate activities, and the consequent distractions of consciousness. Such dissociation may, of course, be not sudden and quasi-spasmodic only, as before said; it may be brought about, to some extent, gradually by the special and too exclusive exercise of a particular tract of thought and feeling, whereby it grows out of right relations into a settled habit of bad function and is shut off from the associations whose currents

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press

of activity ought to qualify, control or inhibit it. Immovable prejudice is a mild result of such unwholesome function ; when it is extreme an organised insanity is produced characterised by systematised delusions concerning self and a class of things in relation to self, which, known once as *monomania* or *partial mania*, has now received the not a whit more appropriate name, etymologically, of *paranoia*. Why should a person of good sense in regard to all the ordinary relations of life, able to think and act rationally in them, believe that he is the victim of a settled persecution in all sorts of impossible ways, or entertain the notion that he is a royal person unjustly kept out of his royal rights? The consistent and concurrent testimony of all those who come in contact with him and the plain exposition of the impossibilities of the imagined agencies utterly fail to shake the testimony of his own consciousness. His faith in that which is contrary to all reason is unshakeable ; he might heartily endorse Tertullian's maxim—*credo quia impossibile*," understanding thereby that the impossibilities of reason do not exhaust the possibilities of things, and distrusting the while the individual *credo* which confidently penetrates the mysteries. Were consciousness the pure light of a constant unity illuming the region of thought and feeling, it might be expected to expose, if not correct, the distraction of a disunited ego. It does not, because it has no such detached existence and independent authority, but, being incidental to the particular mental state, shares and declares its quality, attends submissively on the distracted action of confederate tracts.

Katatonia: in Relation to Dementia Præcox.

By W. JULIUS MICKLE, M.D., F.R.C.P., London.

IN youth, divided into its pubescent and adolescent periods, *and, in relation to our subject, taking only the forms of mental disease that may come into question or relevance*, besides idiocy's minor degrees, the chief to mention are simple dementia, hallucinatory, and confusional cases ; melancholic, maniacal, and "transitory" attacks ; periodical and circular psychoses; katatonia, hebephrenia, the paranoias ; hereditary forms marked chiefly by impulse or moral perversion ; cases on "mental

https://doi.org/10.1192/bjp.55.228.1 Published online by Cambridge University Press