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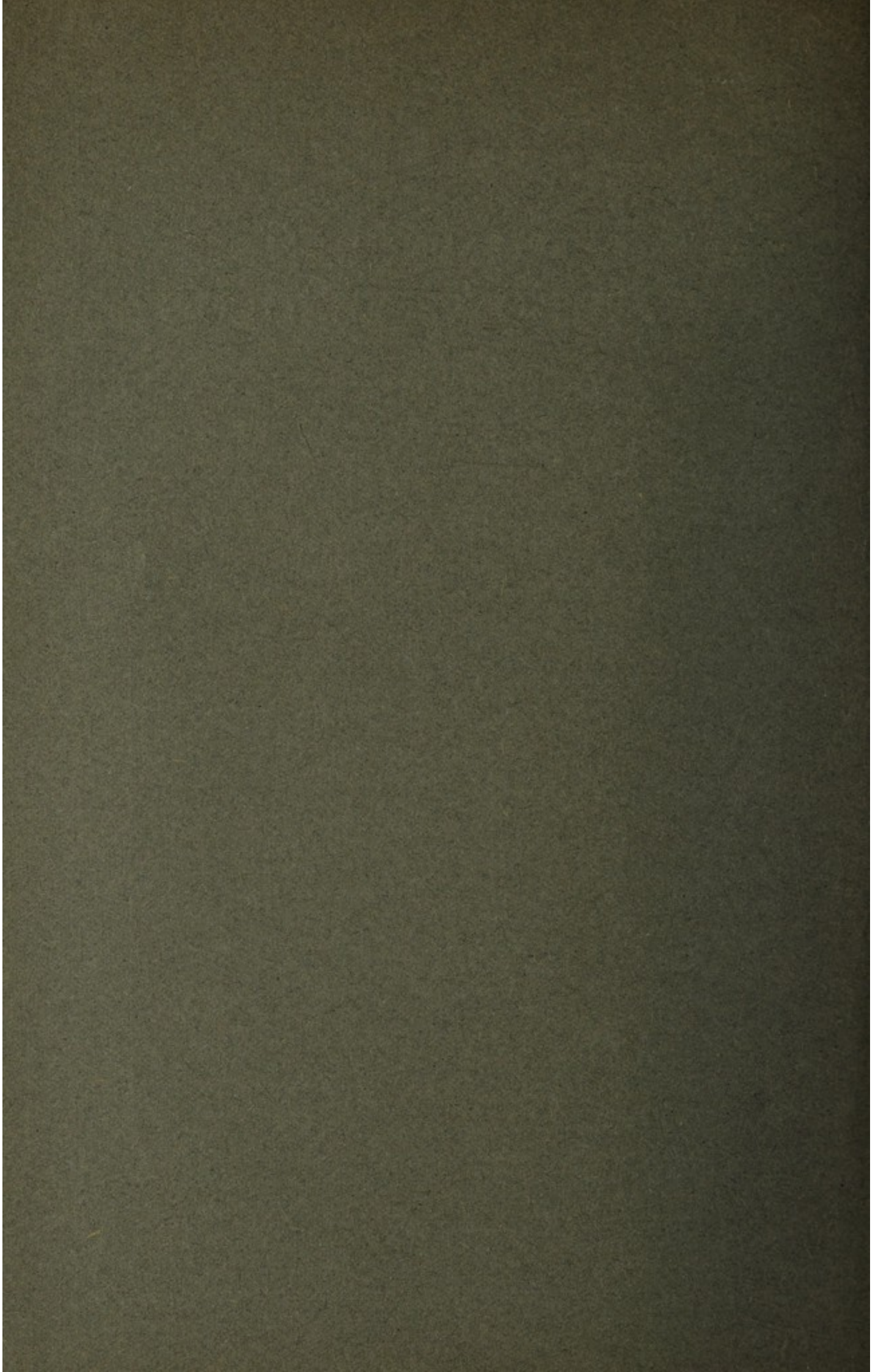
## SOME PRESENT TENDENCIES OF PSYCHOLOGY

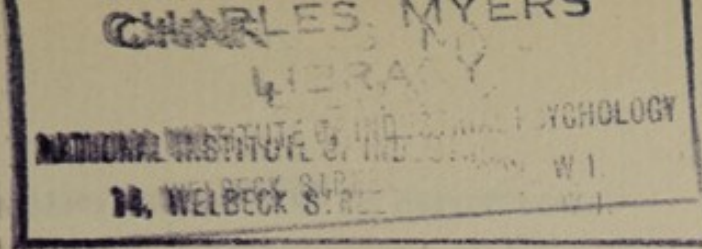
By C. S. MYERS

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## SOME PRESENT TENDENCIES OF PSYCHOLOGY<sup>1</sup>

By C. S. MYERS

Director of the National Institute of Industrial Psychology, London

In this address I shall not attempt to prophesy what Psychology will achieve or what changes it will undergo in the far distant future. My purpose is rather to examine present-day tendencies and, by contrasting them with the past history of Psychology, to reach some fairly valid predictions of the more immediately forthcoming developments of the science.

Hitherto, psychologists have generally adopted the physicist's methods of analysing composite into more elementary phenomena, and the physicist's thorough-going mechanical explanation. But the inadequacy of these procedures is fast becoming recognised. The doctrine, for example, of the association of ideas has proved by no means sufficient to explain the processes of recognition and thought. More careful introspection has discovered in these processes thoughts without words, mere acts of knowing and states of knowledge, which embrace far more than can be stated in terms of the elements of which the machinery of associationism is composed.

Psychologists are beginning to recognise that the elements which they have abstracted are conceptions which are never experienced as such, and from which—as such—living experience has never really been developed. For example, the perception of objects has not arisen, as many of the older psychologists supposed, from a synthesis of different elementary sensations. A sensation is an abstraction never actually experienced in isolation. The young organism's consciousness develops by the experience of 'situations' and 'objects'. The so-called 'complex' perception comes *first*, growing with experience in complexity, and analysed, as it thus grows, into so-called 'simpler' parts,—mere abstractions,—which by ultimate analysis become relatively lifeless, formless and meaningless.

Again, the comparison, or the association, between two experiences *a* and *b* does not involve merely these separate, isolated experiences, but the primary 'more complex' experience *a-b*, which must be treated as a unitary whole, and be regarded as a necessary precedent to the act of comparison or reproduction of the parts which may be carved out of it.

The psychology of the future will come to realise that the combination of simple mental processes into complex ones plays a far less important part in the mental development of the race

<sup>1</sup>An address delivered at Cornell University, August, 1924.

and in the mental life-history of the individual than the differentiation of vague, ill-defined wholes into parts and their crystallisation into clearer, cleaner-cut facets. The development of meaning in cognition, of emotion in feeling, and of purpose in volition is not to be described or explained in terms merely of originally almost meaningless sensations and images, of a hypothetically elementary series of feeling-tones ranging between pleasure and displeasure, and of blind impulse, respectively,—the mental atoms reached by introspection biased by analogies from the realm of physics. Atomism of this sort can yield only part—no doubt an important part—of the truth in psychology and physiology. It deals only with mechanism and leaves out of account meaning, purpose and selective direction.

Yet another defect of this mental anatomy and atomism must be mentioned. Psychologists have been content to assume that dissociated parts of experience represent the elements of which the whole is made up. The psychology of the future must avoid such doubtful assumptions. The abnormal gait of a tabetic does not represent the ancestral gait at a remote epoch; nor do the personalities obtained under conditions of mental dissociation necessarily represent by-gone personalities.

There are still many who, on similar erroneous grounds, believe that the protopathic and epicritic systems, as conceived and distinguished by Head and his collaborators, represent two different stages in the evolution of cutaneous sensibility, that an 'all-or-none sensibility' preceded a 'graded' sensibility which alone permitted of effective spatial localisation and discrimination. It has likewise been supposed by Rivers that in the evolution of living forms instinct preceded intelligence, the latter representing a totally new system which suddenly entered, displacing or incorporating various parts of the old. It is not thus that evolution has proceeded.

The inadequacy and the unreliability of experimental introspection are becoming evident. In the Müller-Lyer illusion, for example, it has been found by Lewis and others that continued practice may gradually reduce and finally abolish the illusion, though the subject be throughout unaware of its presence or nature. Or again, the subject may in absolutely good faith advance reasons for his conduct based on introspection,—reasons which are mere rationalisations,—in place of the actual motives or causes of which, for various reasons, he is in utter ignorance. Closer study of post-hypnotic suggestion, of dreams, of multiple personality, automatic writing, somnambulism, etc., and of intuition, genius and inspiration, is clearly showing how much goes on of which introspection is quite impotent to give any account.

Indeed the view is developing that mind is by no means confined to conscious processes, that mental process—'mental energy', if we may use this doubtful term—must be conceived as something more fundamental than the consciousness of or belonging to the self (the only consciousness available in and for any organism), something which may or may not be accompanied by consciousness, something on which introspection may not always be able to throw light. Mind is thus coming to be conceived as something more primary than consciousness. Psychologists accordingly are finding it convenient (absurd as it may sound) to speak of unconscious, as well as of conscious, mental processes.

This conception of the unconscious mind is, of course, a mere hypothesis, affording a useful terminology in which to describe observed phenomena. The contradiction which, at first sight, seems to be an insuperable objection to combining the two terms 'unconscious' and 'mental' is not more serious than that involved in the physicist's conception of the ether, to which he has attributed qualities and properties quite unthinkable, quite unrealisable in actual experience.

The fact that conscious experiences are the subject's own private property and that they can never be communicated to others save by physical expression,—by gesture or by spoken or written language, *i. e.*, by movement, conduct or behaviour,—has induced some psychologists to endeavour to banish the mental element wholly from psychology, and to insist that scientific psychology means the study of behaviour, the study of outward responses. They claim that psychology can proceed without the consideration or employment of mental terms at all. What, in fact, they are doing is to study the behaviour of the organism for its own sake. They call themselves 'Behaviourists'. In point of fact, they are physiologists, observing reactions to stimuli in the intact organism, instead of—as in most physiological experiments—in isolated organs, tissues, or parts of systems. They have escaped the difficulty of dealing with mental processes, by ignoring, if not by denying, their existence. Such perversity breaks down in actual practice. The Behaviourists, as we see from their writings, cannot get along without employing terms implicative of consciousness. They cannot consider sensation, *e. g.*, colour vision and its defects, the varieties of imagery, processes of imagination, deliberation and the like, without using psychological language. Behaviour must certainly be studied by the psychologist. Psychology must include the investigation of nervous impulses, muscular contractions, glandular secretions and other activities which constitute the reactions of the living body. But nervous processes and the like are not *identical* with conscious processes,—sensa-

tions, percepts, ideas, decisions or emotions. Psychology studies bodily behaviour not, as the physiologist attempts to study it, for its own sake, but for the light it throws on mental processes and on the relation between them and bodily processes.

What this relation may turn out to be it is, of course, impossible to predict. But it is quite likely that neither of the two chief alternative hypotheses now offered may prove ultimately acceptable. It may well be that nervous process and conscious process are not to be regarded as running *parallel* with and separate from one another, like the opposite surfaces, the inside and the outside, of a curved mirror. It may also well be that nervous process and conscious process cannot be crudely conceived as *causally* interacting one on the other. We may one day come to realise that mental and nervous processes are fundamentally inseparable, and that their distinction is possible only by abstraction, the use of which is justifiable only because without it scientific research cannot be carried out. If we consider 'mental energy' as spread far wider than (and not necessarily always associated with) consciousness, there is no part of the nervous system in which we can logically deny its presence. It becomes coexistent with what we term nervous energy, which is itself but a specialised form of the energy of living substance. Because electrical manifestations are all that we know of nervous energy, we are not justified in saying that there is naught but electric energy in the activities of the nervous system. So too, in living matter generally, while physical and chemical reactions are undoubtedly present, who can be certain that we shall not be compelled one day to recognise that such physical and chemical energy is harnessed to, nay rather is manifest as a degradation of, still higher forms of inherent energy, which distinguish the living from the lifeless body? In particular, may not the electric responses accompanying nervous impulses be merely the result of degradation of such a higher form of energy, and may not this 'psycho-neural' energy, as I propose to term it, take on a more specifically *mental* form, as higher nervous tissues, especially the cerebral hemispheres, become involved, and as these higher structures come to be distinguished by increasingly plastic, interdependent and complex functions, as contrasted with lower functions relatively fixed, isolated and simple?

Does mental activity differ so widely from material, above all from vital, activity as hitherto philosophers have taught, and as the general and the scientific public still suppose? Let any one who wishes to answer this question impartially consider the nature of matter according to the most recent hypotheses of physicists. What remains of substance but localised, corpuscular centres of electrical energy, set (perhaps it may be

necessary to suppose) in a frameless, almost inconceivable ether? And what is to prevent us in the future from supposing that such energy may be raised to still higher powers in the form of consciousness? I know nothing, not even the doctrine of conservation of energy, that would make such an hypothesis *a priori* impossible.

What psychology and physiology will have to face is a common problem,—that both in life and in mind there is something which differentiates them from the activities of lifeless substance. A living organism is continually engaged in building up higher from lower forms of energy, in making living substance which is continually breaking down into simpler bodies and liberating simpler, more degraded forms of energy through its own ceaseless activity. Outside the living body, such constructive anabolic processes fade into relative insignificance or occur only under artificially arranged conditions. The lifeless world is characterised by a degradation of energy rather than by progress into higher and still higher forms. *Pari passu* with this distinction, which becomes more evident as we ascend the evolutionary scale of living forms, purpose comes more and more prominently on the scene as something superadded to the apparently blind mechanism of isolated non-living bodies. The living organism is characterised by a struggle for self-existence; it *selects* its environment for the purpose. And it is this 'purpose' that characterises both life and consciousness, dependent on a plasticity, an adaptability, which increases from the lowest forms of living matter to the highest and most developed regions of nervous matter, beginning with a 'purposefulness' imposed on the organism, ending with a 'purposiveness', *i. e.*, a self-consciousness fully realising the existence of purpose, as well as of mechanism, in its activities.

Both physiology and psychology can make, and have made, progress on the supposition that our vital and mental functions are determined by mere mechanism. So they are,—but that is not the whole story; it is a mere abstraction essential, as I have already said, for scientific research. The imperfection of this view is becoming increasingly glaring. All that natural science can say is —given such and such conditions, such and such results must follow. But prophecy of what will follow is possible only within the narrowest limits; it can only be determined by, and based on analogy from, past experience. Who could have foretold that the properties of hydrogen and oxygen, when chemically combined, would yield the totally different properties of water? Who could have foretold the properties of radioactive substances, or the appearance of new living forms in the course of evolution? When once we know all the conditions determining these results, we can safely assume the blindly



mechanical standpoint of natural science, and say that, given a repetition of certain conditions, certain results can be anticipated. But are the conditions and their results given merely by chance? Is there truth only in our experience of mechanism, and is our experience of purpose, of the employment of means to an end, a mere illusion? Are variations in living forms merely continuous, blind, accidental and preserved by their suitability in the struggle for existence? Or may they not arise by sudden discontinuous leaps and bounds, and be indicative of some perpetual directive attempt at harmony between the environment and the responses of the organism? Are the marvellous instincts, say in the insect world, explicable by chance variations? Are they even explicable as the inherited habits of acts determined and learnt throughout countless former generations?

Few thoughtful modern biologists would be satisfied with a reply to such questions in the affirmative. Determinateness undoubtedly exists in life, but it is only a part of the whole truth. So it is in mind. We may agree with those psychologists who assert that, given such and such conditions, such and such results must occur. But can we say—given such and such an end, or an obstruction thereto, such and such behaviour will appear so as to achieve that end? Clearly, prediction is possible only within the narrowest limits. Creation, the construction and differentiation of the new, is always proceeding in mental, as well as in biological forms. New thoughts occur, both as conscious creations by the purposive self, and as the 'sports' or inspirations of genius, unconsciously elaborated and presented to the conscious, more fully purposive self for intelligent criticism and acceptance or rejection.

The physicist has always endeavoured to foist physical conceptions on to the psychologist. Fechner endeavoured to change Weber's law from its actually relative to an absolute character. Since then physicists have largely adopted the standpoint of relativity which has long been so prominent in psychology. Psychology has been silently insisting that physiological inhibition is not the mere negation, or absence, of activity, but is itself an active process. So, too, in the future I have no doubt that physical science will recognise that there is more in heaven and earth than is now dreamed of in physical philosophy; that mere mechanism is only a partial expression of the energy of the universe and that, in addition, there lies a directing, differentiating factor immanent in the universe as a unitary system, still further developed in the unitary system of the living, individual organism, reaching its climax in the unitary system of the mental conscious, individual self. Mechanical energy is the blind, purposeless activity that makes a train travel along its rails. But there must be an 'energy' responsible

for a higher kind of work, which directs the train now along one, now along another of alternative paths, in conformity with the needs of the environment and with the preservation and evolution of the universe, the living organism and the conscious self. Is it too fanciful to see the germs of this view in present-day attempts to combine into one comprehensible scheme the two conflicting, but necessary, hypotheses, the corpuscular and the undulating conceptions, of light, the corpuscles apparently representing the luminiferous machine, the other the directive vehicle of its energy?

With the first appearance of consciousness, purposefulness, as I have previously stated, becomes translated into purposiveness. By that I meant that purpose not only exists in the universe, but that the living organism becomes conscious of purpose in its own activity. Consciousness, we shall come to recognise, has been evolved for the prime object of purposive choosing,—the choosing of the best of alternative responses, and the choosing of the best of surrounding stimuli. What there be of rudimentary choice in lower mental systems becomes developed, differentiated, distilled as it were, within the highest mental systems. Behaviour or conduct in the living organism is to be regarded not, fundamentally, as a mere blind mechanical conflict between purposeful instincts, each with its own driving impulse towards activity; it results rather from the sanction of the directive, purposive self, the function of the highest and most plastic, complex regions of the nervous system. In illustration of this, let me point out that an instinct differs from a reflex in that it is imperfect in performance on the first occasion of its appearance, and in that it is improvable by experience. Thus instinct must come to be regarded as involving, and as being inseparable from, intelligence.

The situation which calls for emotional behaviour makes a dual appeal to consciousness—a *cognitive* awareness of the situation, as well as an *affective* reaction manifested as excitement, depression, appetite, aversion, interest, fear, anger, sexual feeling or the like. But none of these affective changes is to be considered as bound up with merely one definite instinctive expression. Thus, to achieve its end, the sexual feeling may manifest itself in various reactions,—by courting, by attack, etc. So too, fear may manifest itself in flight, in (rigid or flaccid) quiescence, in fighting at bay, in clinging to the parent, etc. Moreover, it will be realised that each act that forms part of an instinctive reaction, *e. g.*, a bird's spreading of its feathers, may be connected with and evoked by more than one kind of situation or affective experience associated therewith, and that many instinctive reactions—for example, those connected with sex and reproduction—form a chain the links of which develop

at different periods of life determined by chemical stimuli (hormones), by external environment, by heredity and by experience.

We see now more clearly the important function of consciousness,—the process of selection from among alternative reactions, which culminates in deliberate choice. This selective function enables the Ego to choose which of alternative reactions to the environment it shall evoke, and—most important of all—to discover appropriate stimuli, that is, to choose its own environment. The Ego is the final court of appeal for all volitional conduct. Aided—even burdened—by its vast experience, and by the interests and sentiments derived therefrom, it may at one time strengthen the impulse of one of alternative motives, while at another it may weakly sanction, or even passively observe, the issue of an irresistible impulse, the development of which may have been unconsciously, but by no means purposelessly, determined in conflict with other antagonistic unconscious impulses. Some day it may even be proved that we inherit mutually incompatible mental characters, one or other of which may be similarly selected or inhibited, now at one period of life-history, now at another, by unconscious direction.

If, on the other hand, each situation gave rise only to one single possible reaction, the sole remaining function of consciousness would be to assure that the situation did produce its own effects. This would be and is achieved by maintaining the situation, by facilitating its effects on the self, and by inhibiting other effects that might interfere with the bodily activities which the situation would naturally evoke,—in other words, by preserving a favourable attitude of the self, or attentiveness. No doubt this function is especially related to the affective modes of consciousness: emotion-feelings have been developed for the very object of preventing other consciousness from entering into the experience of the Ego and from interfering with the expression of those feelings.

The environment, as most now believe, acts on the organism by releasing its internal energy. The striated muscle-fibres and certain sensory end-organs secrete material which is stored up, ready to explode, as it were, after the receipt of the appropriate stimulus. Somewhat similarly, parts of the central nervous system have been regarded as mapped out into mechanisms which are thrown into action on the receipt of the appropriate stimulus. Thus psychologists have come to look on the stimulus as merely a trigger mechanism, which enables the organism to fire off its appropriate sensory or motor response.

But the psychology of the future is likely to see the inadequacy of this view. Muscle-fibres maintain a variable state of partial contraction throughout their life,—exhibiting what is

known as 'tone',—without signs of fatigue. So too posture can be preserved and daylight can be tolerated for hours without signs of fatigue. We are beginning to recognise another living function besides that of intensive momentary explosion,—namely, the function of long-continued extensive 'set' or 'attitude', involving, and involved in, the simultaneous control over antagonistic activities by adequate facilitation and inhibition. Such control we see on a higher plane in the attitude of attention, the long-continued set which at the same time involves an inhibition of themes or acts which would conflict with the maintenance of the theme or act under attention.

At lower levels such reciprocal inhibition is reflexly involved in all muscular action. When the spinal cord calls forth flexion of a limb, there is simultaneously set up inhibition—active relaxation—of those muscles that would otherwise extend the limb. It is important to recognise that actual work is performed in effecting such inhibition. On the higher levels we recognise it at once in the conscious or unconscious repression of emotional experience and in the resistance with which such repressions meet in order, as we say, to re-enter consciousness. But, to revert once again to the spinal level, poisons such as strychnine or tetanus may, as is now well known, convert such reflex inhibition into reflex excitation, whereupon every attempt in the spinal cord to bend or to extend a limb brings in simultaneous contraction of opposing flexors and extensors and hence produces the well-known spasms. Thus the functions of the nervous system at a given point are so 'poised' that at one time inhibition, at another excitation may result. Such reversals are especially characteristic of the cerebral cortex, where stimulation of the same cortical spot may at one time produce extension, and at another flexion, yet at another both extension and flexion simultaneously.<sup>2</sup> Here, once again, we meet with a kind of directive agency superposed on, or should we not say integrated with, blind mechanism; a reversing gear or, more generally, a setting of the points, as it were, now in one direction, now in another, now keeping both open, according to internal conditions and requirements.

I believe that psychology will come to recognise this fundamental difference between 'act' and 'attitude', using the former term to denote the firing-off of momentary reactions, and the latter to denote that prolonged activity of the living organism involving directive setting, and consequent activity in reciprocal facilitation and inhibition.<sup>3</sup> According to this view, inhibition

<sup>2</sup>Cf. Graham Brown and C. S. Sherrington, *Proc. Roy. Soc.*, 85, 1912, 277.

<sup>3</sup>Is it too fanciful to seek an analogy in the physicist's conception of definite forces locking at definite points the molecules in a crystal or the atom in a molecule, and so exerting a directive attitude in regard to the whole unit?

is an active process,—not the effect, as some have supposed, of the mere drainage of energy into those paths which are at the same time excited.

They who hold the latter view are naturally inclined to regard the central nervous system as possessing a 'common fund of energy', which may be drained now in one direction, now in another, according to the needs of the organism. The same conception has given rise to the notion of a factor of 'general intelligence' which can be employed now in conjunction with one specific ability, now in conjunction with another.

But the existence of a general factor of intelligence—which, we must bear in mind, is merely a useful working hypothesis, as yet unproven—may be considered from a different aspect, that of evolution. It is conceivable that the different specific abilities in which general intelligence is believed to play a part may really involve different specific intelligences, which have been differentiated out of such general intelligence and for that reason—because of their common ancestry—share in a common factor or feature.

The idea of drainage of energy of some general ability now into one part of the brain, now into another, is an outcome of the still prevailing view that different conscious processes have their seat in different parts of the brain. Physiologists, or rather neuro-pathologists, have for two generations past been endeavouring to map out the cerebral cortex into various sensory centres and sensori-psychic centres in which they suppose visual, auditory and other sensations, perceptions and images to be respectively developed. I am confident that future psychology and future physiology will discard this notion in favour of the view that there are no separate seats of consciousness in the brain, but that consciousness involves activity throughout a very wide region, if not throughout the whole, of the cerebral cortex, and that such terminology as the 'splitting' of consciousness is inadmissible.

For many years now, as a teacher of psychology, I have been wont to emphasize, by the following illustration, the fallacy of inferring that, because blindness or deafness results when a specific area of the cortex is destroyed or interfered with, therefore that area constitutes the 'centre' in which those sensations are produced. If I had to travel by train from Cambridge (representing the stimulus) to King's Cross (representing the correspondent consciousness), it would be absolutely necessary for me to pass through Hitchin. A block occurring at Hitchin would make it impossible for me to reach King's Cross, but I should not be so foolish as therefore to identify Hitchin with King's Cross,—to identify the seat of the block with the centre or seat of the particular consciousness. So too when a given

cortical area suffers injury and the lesion results in some particular loss in consciousness, we are justified in saying only that the integrity of that area is essential for the development of that particular form of consciousness, just as an open path at Hitchin is essential for me to get to London.

I remember communicating this view some twelve years ago to the late Sir Victor Horsley, and it is noteworthy that within the last few months it has been independently enunciated by Henry Head mainly as the outcome of his researches into aphasia. Hitherto the preconceived ideas of neurologists, together with their ignorance of general psychology and their lack of training in the psychophysical methods,—that inestimable legacy of experimental psychology,—have led them to fit the facts of their cases to their theories. They have thus adduced evidence for at least four centres of word-memory: "(1) the auditory word-centre, where the sounds of words are registered; (2) the visual word-centre, where the visual images of letters and words are registered; (3) a glosso-kinaesthetic centre, where the combined impressions which pass to the cortex as the result of movements of the lips, tongue, larynx and other parts concerned with articulate speech are registered; and (4) a cheiro-kinaesthetic (eupractic) centre, where the sensory impressions resulting from movements concerned in the act of writing are registered."<sup>4</sup>

I have no doubt that the future will prove the absurdity of the conclusion that different kinds of word memories are registered in different centres of the cerebral cortex. Even a neurologist like Head whose psychological insight is acute may fall into a similar fallacy, as when he attempts to deduce the kind of consciousness which he supposes to be inherent in the optic thalamus. The thalamus cannot be regarded as a 'seat' of consciousness. In the future we shall come to recognise that there is only one consciousness—the consciousness of the self—and that there are no special seats of consciousness, although different areas of the cortex and the thalamus are differently involved in producing special kinds and characters of consciousness. But the demarcation of these areas is far from constant, and if they be but slowly destroyed other areas may readily take their place. Even after relatively small sudden lesions, and even after the loss of a considerable amount of cerebral cortex, remarkable recovery may still take place.

So far we have been dealing with the views likely to be held by psychologists in the future. Meanwhile psychological research still proceeds, dividing up investigations, just as ceaseless research divides the investigations in other sciences, into

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<sup>4</sup>*A System of Medicine*, edited by Sir Clifford Allbutt. Article "Aphasia" by Bastian and Collier.

compartments of specialists, each unfortunately so separated from the rest by water-tight doors that workers find it difficult to obtain a good view of the progress of the subject in its entirety. This differentiation seems likely only to increase in the future; it is only to be hoped that the accompanying isolation may be reduced. In one direction we see the workers in laboratory psychology, dealing with problems of general psychology; in another, psychologists concerned with behaviour, human or animal; in a third, those studying individual and racial mental differences; in a fourth, those comparing the behaviour and the institutions of social units; in a fifth, those investigating the mental changes which may be associated with disorders and diseases of the mental and nervous systems or may occur from accidental or experimental lesions; in a sixth, those engaged in determining the nature, number and interrelation of 'general', 'group' and 'specific' abilities; in a seventh, those studying the best conditions for the exercise of those abilities in the individual or for their transmission to future generations. We may even foresee a group of psychologists occupied in scientifically examining the purposeful unconscious mental archetypes, supposed to occur by Jung, or the spiritualistic claims of what is known as 'psychical research'.

And so we reach an aspect of psychology which has hitherto received no attention in this paper,—its application to everyday and possibly to future life. The prospects of Applied Psychology are already so dazzling that from very fear of exaggeration one hesitates to attempt an estimate of its possible developments.

For even already the progress in Industrial Psychology has clearly demonstrated the assistance which can be rendered by vocational guidance, by vocational selection and by the study of the worker's movements, his spells of work and rest, and his environment, in enhancing not only the health and the happiness of the worker but also the efficiency of his work. With the right man on the right job, with his needless efforts eliminated, the most advantageous arrangement of his material, the most effective distribution of his hours of work and rest, and the most healthy conditions of light, temperature, ventilation, etc., installed, what a Paradise during man's working hours can be envisaged!

Not less promising are the advances in abnormal and educational psychology,—especially in the prevention and treatment of mental and moral disorders, in replacing the current, often unjust, but easily workable conceptions of crime, responsibility and punishment by views that are truer, and more generous, however unwelcome to psychologically untrained minds; in providing suitable education and social environment

for those persons whose mental and moral abilities demand special consideration; and, above all, in spreading wide that knowledge of the working of our own minds which will enable each member of a social unit effectively to control not only his own conduct but the conduct of his fellows according to his own legitimate desires or according to the dictates of the social unit of which he is a member. The future of applied physical, chemical, and biological knowledge pales beside the promising brilliance and the inestimable human value of the application of psychological science.



